Phonological Variation in French

Illustrations from three continents

Edited by
Randall Gess
Chantal Lyche
Trudel Meisenburg

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CHAPTER 1

Introduction to phonological variation in French

Illustrations from three continents

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1. Introduction

The current volume is the first book-length, English-language presentation of results stemming from the international Phonology of Contemporary French project (Phonologie du Français Contemporain, henceforth PFC – www.projet-pfc.net). The major features of this project are presented in some detail in Section 3 of this chapter. First, though, in Section 2, we provide the reader with an overview of some of the classic problems in French phonology. These problems are presented in the same order in which they are found in the individual chapters of the volume, although not each of them (for example, prosody) is treated in every chapter. In Section 4 we provide an overview of the chapters of the volume, which present new empirical findings on phonological variation in French from survey points in Africa (Central African Republic, Senegal, and Mali), Europe (Southern France, Belgium, Paris, and Switzerland) and North America (Acadia, Quebec, Louisiana, Ontario, and Alberta).

2. French phonology

The purpose of this section is to introduce to the reader who is relatively unfamiliar with French phonology, those problems which are most salient to analysts and which have, as a result, had the biggest influence on the field of French (as well as general) phonology over the decades. The reader will also find in this section some of the terms that are commonly used in French phonology, or in French linguistics generally.

Two such terms are relevant to the object of study itself: French. When we talk about variation in French, what exactly is the point of reference? This question, posed in our context by linguists with an objective purpose and a firm grasp of the descriptive/prescriptive dichotomy, shares with superficially similar questions with less benign motivations, like *"What consitutes 'good French'?"*, definitional difficulties that have defied any simple solution for centuries. One useful term that we adopt, following Morin (2000), is 'français de référence', which is abbreviated throughout this volume as FR. Although there is general agreement that French pronunciation norms are largely determined on the basis of geography (Paris) and social class ("well-educated"), the term FR remains far from being either straightforward or unambiguous (Laks 2002). Nevertheless, in the absence of a better alternative we adopt the term in the common-sense way it is understood in Lyche (2010), as the usage described in most pronunciation materials developed for teaching French as a Foreign Language purposes. Another term in common usage (and used throughout this volume), but with which the reader may be unfamiliar, is a purely geographically determined one, i.e., that of Hexagonal French, which refers very simply to the shape of mainland France.

In the following sub-sections we provide a brief overview of major points of interest, i.e., points around which there is significant variation with respect to FR, in the vowel inventory, the consonant inventory, the behavior of schwa, the realization of liaison consonants, and the system of prosody.

2.1 Vowel inventory

The basic vowel inventory of FR comprises the high vowels /i, y, u/, the mid-high vowels /e, ø, o/, the mid-low vowels, /ɛ, œ, ɔ/, the low vowels /a/, and marginally /ɑ/, and the nasal vowels /ɛ̃, ɔ̃, ɑ̃/ and marginally /œ̃/. Already with reference to marginal segments we see points of important variation. With respect to FR, /ɑ/ and /œ̃/ are considered very conservative, i.e., reflective of a norm that is more or less in the past. Given the history of the dispersion of the French language within what is now referred to as 'la francophonie' (the French-speaking world), the presence of these segments in some areas with a long history with France is unsurprising.

Marginal segments aside, there is uncontroversially a low vowel, two mid-vowel series and a high series. In the mid and high series, there are expected front unrounded and back rounded members, as well as the typologically more marked (although far from rare) front rounded members /y, ø, œ/. Given their relative markedness, variation with respect to these segments is anticipated, and indeed found. For consistency, we treat the two mid-vowel series as distinguished

by tongue height, i.e., as a mid-high and a mid-low series. It is not unusual to see works in which these series are distinguished on the basis of tense versus lax, or +/–Advanced Tongue Root (ATR). There is no evidence from any of the contributions to this volume bearing on the question of which type of distinction may be more appropriate, and there are no analytical repercussions from our choice of the tongue height distinction.

There are important distributional constraints on the mid vowels, governed largely by what is known in the literature on French phonology as the *loi de position*. We will abbreviate this term throughout the volume as LdP. This "law", which is more properly considered a tendency or a preference, at least in FR (unlike in southern French, where it is much more robust, to near absolute (see Coquillon & Turcsan, this volume)), militates in favor of the mid-high series in open syllables and the mid-low series in closed syllables. In FR, the effect of the LdP is manifested more in word-final (stressed) position than it is word-internally. Exceptions in word-final position are limited to the occurrence of mid-low [ɛ] in open syllables (marking the conditional *dirais* [diʁɛ], for example, as opposed to the future *dirai* [diʁe]), and the mid-high vowels [o] and [ø] in closed syllables (in increasingly marginal minimal pairs like *paume* [pom] versus *pomme* [pɔm] and *jeûne* [ʒøn] and *jeune* [ʒœn]). The situation is more complex (and more subject to variability) in word-internal position, where it is possible to find mid-low [ɛ] and [ɔ] in open syllables (e.g., *pêcheur* [pɛʃœʁ] vs. *pécheur* [peʃœʁ] and *botté* [bɔte] vs. *beauté* [bote]), and the mid-high vowels, [e] and [o], in internal closed syllables (e.g., *médecin* [medsɛ̃] and *cauchemar* [koʃmaʁ]). With respect to the latter two, when [e] appears in internal closed syllables it is usually in free variation with its mid-low counterpart, while [o] is more stable and likely linked to orthography. Given the considerable complexity of the mid-vowel system in FR, it is expected that this is an area of fairly robust variation across areas of the French-speaking world.

As mentioned earlier, the opposition between /a/ and /ɑ/, found in conservative varieties in such pairs as *patte* [pat] versus *pâte* [pɑt], is disappearing in FR. The result of this development is a vowel that is more or less central on the front-back dimension – i.e., neither extremely anterior or posterior, although typically represented in transcription as the anterior variant /a/.

A feature often invoked in discussions of French vowels, especially when the focus is diachronic, is that of length. While vowel length is not distinctive in FR, and its presence, distinctiveness, and persistence over the history of the language is a subject of some debate (see Gess 2001, 2006, 2008; Morin 2006; Picard 2004), it is a feature relevant, in varying degrees, to a number of current varieties (see especially the contributions to this volume by Côté and Racine & Andreassen).

Any discussion of French vowels will include the famous schwa, treated in detail in Section 2.3 below, the defining characteristic of which is its alternation with zero. Its status in the phonemic inventory is not clearcut, as it is defined principally by its particular behavior and it tends to overlap, when it is realized, partially or completely with /œ/ and/or /ø/ (most extensively with the former) or, in some cases, to occupy a partially distinct vowel space around the IPA [ə]. Whether schwa occupies its own vowel space, or whether and how much it overlaps with the two front rounded mid vowels is a point of variability across dialects.

Finally, in our transition to the section on consonants we mention the three glides, corresponding in place of articulation with the high vowels /i, y, u/: /j, ɥ, w/. Variously described as semi-vowels or semi-consonants, they may be discussed with either group in the individual contributions that make up this volume.

We end this section with the tables below that summarize the vowel and glide inventory of FR, indicating marginal segments with parentheses.

Table 1. Oral vowels (and glides) in FR

Oral	**Front**		**Back**	
	unrounded	**rounded**	**unrounded**	**rounded**
high	i / j	y / ɥ		u / w
mid-high	e	ø		o
mid-low	ɛ	œ (ə)		ɔ
low	a		(ɑ)	

Table 2. Nasal vowels in FR

Nasal	**Front**		**Back**	
	unrounded	**rounded**	**unrounded**	**rounded**
high				
mid-high				
mid-low	ɛ̃	(œ̃)		ɔ̃
low			ɑ̃	

2.2 Consonant inventory

For the most part, there is nothing particularly striking about the FR consonant system. There are voiced and voiceless stops at the major points of articulation, bilabial, dental and velar, as well as labiovelar, alveolar, and alveopalatal fricatives, all occurring in symmetrical pairs with respect to voicing. The FR rhotic, which patterns phonologically as a liquid, is realized phonetically as a fricative, a voiced one at the uvular place of articulation. The place, manner, and even voicing of the

Table 3. Consonant inventory of FR

	Bilabial	Labio-dental	Dental	Alveolar	Alveo-palatal	Palatal	Velar	Uvular
stops	p / b		t / d				k / g	
fricatives		f / v		s / z	ʃ / ʒ			ʁ
nasals	m		n			(ɲ)	(ŋ)	
lateral				l				

rhotic are points of considerable variation within the French-speaking world. In the FR nasal series we have bilabial and dental members, as well as more marginal palatal and velar ones. There is evidence, with considerable variability however, of some ongoing reanalysis of the palatal nasal as /nj/. At the same time, the velar nasal, originally introduced via borrowings from English, appears to becoming entrenched.

The consonant inventory of FR is summarized in Table 3. When there are two members per cell, the left is voiceless and the right is voiced. All segments appearing alone in a cell are voiced.

Missing from the consonant inventory FR is a glottal fricative, /h/, which will surprise no one with any familiarity with this variety of the language. However, many non-hexagonal varieties have a pronounced counterpart to the silent, so-called *'h-aspiré'* of FR, which reflects an older stage of the language. Even in varieties with no pronounced *'h-aspiré'*, such as FR, the presence of an erstwhile consonant is felt in the blocking of liaison and elision (e.g., *les haricots* [leaʁiko] vs. *[lezaʁiko], and *le héro* [ləeʁo] versus **l'héro* [leʁo]).

2.3 Schwa

Although French schwa remains a highly debated topic, often used as testing ground for different phonological theories, there exists a general consensus on its nature as a vowel with limited lexical distribution (schwa must be preceded by an onset) which alternates with zero. Three characteristics of schwa prevail in the literature: (i) it can be omitted altogether under variable conditions; (ii) when realized, its usual quality is that of [œ], [ø] or even IPA [ə]; (iii) it normally corresponds to a written *e* (excluding occurrences in the digraph *eu* and the trigraph *eau*) not followed by a consonant within the same syllable (*cheval* with a schwa vs. *cherchons* with [ɛ]). The left context crucially conditions the behavior of the vowel: a schwa is usually present after two consonants, while it may not be realized after a single one. Following Grammont, authors refer to this as the *loi des trois consonnes* (see the discussion in Durand & Laks 2000), which will be

abbreviated throughout the book as LTC. Within PFC (see Section 3), our definition of schwa integrates the three characteristics presented above. It thus entails that we consider that none of the first two vowels in *peuplement* are a schwa: although the first one is realized [œ], it is not variable and it corresponds to a digraph; the characteristics (ii) and (iii) above apply to the second vowel, but appearing after an obstruent + liquid cluster, the vowel is stable and therefore not a schwa.[1] This decision presupposes a theoretical bias whereby not every graphic *e* is a schwa. An overview of the different treatments proposed in the literature lies beyond the scope of this introduction, but suffice it to say that the general distribution of the vowel varies across the French-speaking world. The distribution and the nature of schwa in Midi French, in African French and in Louisiana French for example do not pattern according to the FR model, as shown in this volume (see the contributions by Coquillon & Turcsan; Bordal; Boutin, Gess & Guèye and Klingler & Lyche).

Most authors stress the variability of the phenomenon and as Dell (1973/1985: 195), in his classical treatment of schwa, puts it: "Le comportement de schwa est l'un des domaines où les variations d'un locuteur à l'autre sont très fréquentes, même entre gens dont les prononciations sont très semblables".[2]

A number of factors interact in this variability, most of them non phonological. To simplify matters somewhat, we will base our presentation on Dell's (1973/1985) treatment, where his own speech (northern French) is analyzed. In Dell's presentation, schwa is an underlying vowel subject to a number of deletion rules: when preceded by one consonant only, schwa is deleted categorically word-internally and word-finally. In the same contexts, the deletion of the vowel in monosyllables (e.g., *le, ce,* etc.) and in the initial syllable of a polysyllable is optional. Thus *doucement* is always pronounced [dusmɑ̃] in this variety, while *dans le train* may be realized [dɑ̃lœtrɛ̃] or [dɑ̃ltrɛ̃]. Dell does not dwell on the many factors susceptible to influence the presence/absence of the vowel. Among others, the nature of the surrounding consonants has been invoked (Malécot 1976), its position within a prosodic group (Côté 2007; Lacheret & Lyche 2008), the presence of initial stress (Walter 1990), the syllabic structure (Noske 1988; Tranel 2000), the age and the sex of the speakers, and their social class (Léon 1993). Interestingly enough, few studies only (see however Morin 1983; Eychenne 2006) are exclusively devoted to schwa behavior in specific varieties outside of the Paris

1. For some authors, on the other hand (e.g., Charette 1991), a schwa is present in this position, but its left context (a cluster) prohibits its deletion.

2. "The behavior of schwa is one of the domains where variations from one speaker to another are extremely frequent, even between persons whose pronunciation is quite similar" (our translation RG/CL/TM)

region (Hansen 2000). This volume will partially fill this gap since each chapter devotes a specific section to schwa.

2.4 Liaison

The complexity of liaison, interacting with all components of the grammar, may account for the interest it has attracted among phonologists. Similar to schwa, liaison has been a testing ground for theoretical proposals, but contrary to schwa, it has benefited from several large corpus studies (e.g., Ågren 1973; Encrevé 1988; De Jong 1994), although each one was restricted in some way (Durand & Lyche 2008; Durand et al. 2011). Liaison is the remnant of a historical process whereby final consonants were generally deleted except in prevocalic position between words belonging to a single prosodic unit. French thus contrasts fixed consonant words like *lac* /lak/ where the plosive is always realized (*lac* [lak] *de Garde; lac* [lak] *immense; un lac* [lak]) with liaison consonant words like *petit* /pəti(t)/ where the plosive may only appear when the next syllable of the prosodic group is vowel initial (*petit* [pəti] *train; petit* [pətit] *ami, il est petit* [pəti]). The presence of liaison usually implies a resyllabification of the string so that in *petit ami,* the [t] constitutes an onset ([ti.ta.mi]). While there is no restriction on the nature of fixed final consonants, liaison consonants constitute a small subset of the total consonant inventory. Only five consonants are attested in the PFC corpus (ranked here according to decreasing frequency): /z/ > /n/ > /t/ > /r/ > /p/. The fricative /z/ with its 11,000 occurrences (Durand et al. 2011) is by far the most frequent liaison consonant in the corpus (only 14 occurrences of /p/). Durand et al. show as well that an extremely limited number of contexts (21) accounts for more than 90% of all realized liaisons. The different chapters in this volume confirm these findings with some important nuances, liaison contexts being for example more restricted in African and North American French than in European French.

As mentioned above, liaison has been analyzed from a number of theoretical perspectives, arguments being drawn for example from acquisition (e.g., Chevrot, Chabanal & Dugua 2007), perception (e.g., Spinelli & Meunier 2005) or dialectal studies (e.g., Côté 2005).[3] Part of the current debate focuses on whether or not liaison should be analyzed as a uniform phenomenon, with for example all liaison consonants floating with respect to the skeleton (Wauquier-Gravelines forthc.), or whether it is best accounted for with a non-uniform treatment (Côté 2005; Durand

3. We refer here the reader to Côté (2011) who offers a detailed presentation and discussion of a wide array of theoretical treatments.

& Lyche 2008). The latter approach might be warranted by the complexity of this typical interface phenomenon, involving morphology, syntax, lexicon, and more.

Liaison is first and foremost characterized by its variability: it has been shown to be sensitive to social class (Encrevé 1988), its frequency increasing with the level of the speakers' education. It is also less frequent in informal styles than in formal ones (Mallet 2008) where it might even be unlinked. In his major study of public speech, Encrevé (1988) shows that politicians often refrain from linking, resulting in liaison consonant being realized as a coda of word-1 rather than as an onset of word-2 (*il faut arriver* /il.fot.a.ʁi.ve/ and not the expected /il.fo.ta.ʁi.ve/). The contexts in which liaison applies present a high degree of variability and remain a subject upon which phonologists fail to agree. Thus, the definition of what constitutes a categorical, variable or erratic context differs with each analysis (as a case in point, see the excellent table (28) in Côté 2011).

Within PFC, a coding system was devised (see Section 3) with the objective of renewing the empirical base for future theoretical analyses. The coding system allows for a better understanding and an up-to-date classification of what constitutes a categorical, variable or erratic context, in other words when liaison is compulsory, facultative or simply not allowed, as expressed in prescriptive terms (Delattre 1966).

2.5 Prosody

Prosody involves variations in pitch, temporal organization and intensity. Discourse is structured in chunks of variable degree of (in-)dependence by silent pauses, pre-boundary lengthening and/or tonal marking. The intonation of utterances originates from variations in fundamental frequency (F0): high and low tones associate with boundaries of prosodic constituents and with metrically strong (or accented) syllables, and the contour results from interpolation between these. Apart from the change in fundamental frequency, accented syllables are usually marked by duration and/or intensity, which make them more prominent (Ladd 1996).

By deleting all segmental material following the accented syllable and allowing only for schwa syllables in this position, Old French had (re)acquired a fixed lexical accent that always hit the final full vowel of a lexical word. But in its further evolution, the language has lost this lexical accent in favor of a prominence that falls regularly on the last full vowel of a somewhat larger group, the so-called *groupe rythmique* or accent phrase (AP). This unit, which may contain more than one lexical word and serves as the basic domain for sandhi rules and resyllabification, is hard to define: with a typical length of three to seven syllables,

its size and structure depend not only on semantic and syntactic factors but also on individual speech rate and style. In addition to the final accent, there is often another tonal movement somewhere at the beginning of the group, usually on the first syllable of the first content word. Originally used to signal emphasis or insistence, this initial accent seems to be becoming more and more generalized and grammaticalized, losing its emphatic power and serving primarily to indicate the beginning of the phrase. While form and function of both accents (as well as the existence of residual lexical accents within the group) are subject to controversial debate (see, for example, Fouché 1959; Delattre 1966; Fónagy 1980; Lyche & Girard 1995; Rossi 1999; Astésano 2001; Astésano et al. 2007; Di Cristo 2011), their main purpose today seems to be to act as a support for phrasing, with accents indicating the boundaries of the accent phrase. APs group into Intonation Phrases (IP), which end in a high, low or eventually unspecified (mid) boundary tone.

The vagueness of French accentuation has led to different approaches to account for French intonation. While one group of researchers, namely Post (2000, 2011) and Di Cristo (1998), posit metrically strong syllables at the word level – that is, post-lexical accentuation on the last and first syllable of every content word with the surplus of accents being deleted in the evaluation process or by adaptation rules – others, namely Jun and Fougeron (2000, 2002), Welby (2003, 2006) and Miller (2007) distinguish between a phrase-final pitch accent, (L)H*, and an (intermediary) phrasal or boundary tone, LH- or (L)Hi (high initial), the latter associating with the left edge of the accent phrase and being quite flexible in its alignment properties. The underlying contour for French would thus be /LHiLH*/: consisting of two rising movements, a phrase-initial and a phrase-final rise.

Prosodic variation between dialects of French would then result from differences in tonal and/or temporal organization of the segmental structure. Pitch accents and boundary tones may display specific tonal configurations as well as particular alignment properties, and there might also be divergences in the basic units of phrasing. As far as fundamental frequency is concerned, the size of the pitch span between the highest and the lowest F0-values that speakers of a variety usually display also interacts: the bigger the pitch span, the more important the melodic variation in this variety, which thus tends to be perceived as "singing". Speakers of FR on the contrary seem to apply a rather small pitch span (see Coquillon 2005; Coquillon & Turcsan, this volume). Differences in phrasing can be due to a (eventually contact-induced) preference for the content word (or clitic group) to replace the accentual phrase as smallest prosodic unit marked by its own accent (see, for instance, Bordal; Boutin et al.; Klingler & Lyche; all this volume).

Another important factor for prosodic variation is duration. Whereas in FR duration is mainly used to mark phrase boundaries, with minor lengthening signaling the end of an AP and major lengthening the end of an IP, duration may

mark penultimate or initial syllables in other varieties of French (see e.g., Hambye & Simon, this volume).

Variation in rhythm also contributes to prosodically characterize different varieties of French. Like most other Romance languages French is usually classified as syllable-timed, i.e., syllables appear to be all more or less of the same length, whereas stress-timed languages display rather regular intervals between stresses (Abercrombie 1967). Instead of pursuing this dichotomic conception, recent research has brought about rhythm indices which help to establish different degrees of these rhythmic types (see, e.g., Ramus et al. 1999; Grabe & Low 2002). To average over fluctuations in syllable duration, rhythm metrics measure, among other things, the standard deviation of vocalic and consonantal intervals. A more even distribution of these intervals, as might result from a higher presence of schwa syllables, would thus contribute to the perception of a more constant syllable-timing, while the influence of a stress-timed contact language such as English might bring about a less syllable-timed pattern (see Tennant, this volume).

3. The PFC project

The PFC project stemmed from the observation that a large number of phonological analyses of French rested on the same dubious data (Morin 1987), "the linguistic Frankenstein dubbed *Standard French*" (Durand 2006: 81). As new technologies favored the collection, storage and treatment of large collections of data, a renewal of the empirical base appeared feasible in the wake of classical sociolinguistic surveys. The project was launched in 2000 and it now seems close to fulfilling its ambition to build a reference corpus for French spoken throughout the world. We will present here the quintessence of the methodology adopted since it has already been detailed in a number of publications (Durand, Laks & Lyche 2002; Durand & Lyche 2003; Durand 2006; Lyche 2007; Durand, Laks & Lyche 2009).

Inspired by the classical work of Labov (1966, 1972), the PFC methodology involves four tasks: all speakers read a wordlist and a short text, and all speakers are recorded while they interact in two different situations, a formal conversation and an informal one. Around ten speakers are recorded per investigation point and they are selected on a network principle, following the standard investigations techniques used by the Milroys (Milroy 1980). Each cohort of speakers is balanced for sex and includes three age groups, but does not reflect true social diversity, as this proved to be an unattainable goal when operating with few speakers in a dense social network. The database now includes 36 surveys online, 396 speakers and about 360 hours of speech.

The wordlist is made up of 84 items followed by ten items constituting five minimal pairs. The ten elements of the minimal pairs appear first randomly in the list before being repeated at the end, thus providing us with two occurrences of the same item. The speakers read the number preceding each word in the list in order to somewhat distract their attention from the word itself and to facilitate automatic treatment of the acoustic signal. The wordlist targets classical phonemic oppositions and concentrates on vocalic contrasts although consonants and glides are also well represented. It does not however capture a number of fine-grained oppositions, nor does it consider phenomena characteristic of varieties of French spoken outside the French borders. Our collaborators are then encouraged to devise wordlists for their own survey points, should they deem this necessary or helpful to elucidate particularities of the variety in question, to be read after the standard one.

The PFC text, read as well by all informants, has been artificially constructed, and takes the shape of a short newspaper article. It integrates a number of words from the wordlist (e.g., *pâte, patte, jeune, jeûne*), allows for a more robust inventory of the speaker's phonemic system, and contains a variety of contexts enabling a closer study of schwa and liaison in a reading style. Again, should a certain phonological phenomenon require closer scrutiny in a particular survey point, this can be easily achieved via the addition of a paragraph or two. The PFC wordlist and text can be found as appendices to this chapter.

The wordlist(s) and the entire text are transcribed in standard orthography with the transcription aligned to the signal. Praat (Boersma 2001) is the tool we selected for the alignment and the transcription as it allows for acoustic analyses as well. Five to ten minutes of each conversation are transcribed in addition. Our decision to favor standard orthography over a phonemic one or one closer to the actual pronunciation of the speaker was warranted by the usual lack of agreement among specialists and by the fact that a phonemic transcription, for example, presupposes that the phonemic system of the speaker is already known, while this very system is the subject of our investigation (Durand & Tarrier 2006, 2008). Instead of a pseudo-phonemic transcription, we chose to take advantage of the flexibility of Praat and to integrate in the textgrids two new tiers, one to code for schwa and the second to code for liaison. We then duplicate the transcription tier and code each phenomenon within the transcription. The coding system we adopted is alphanumeric and the search engine of the database allows us to extract the different occurrences across contexts. The analyses presented in the chapters of this volume are based on data extracted from the result of this coding process.

Both coding systems share the objective to be theory independent and to offer a general overview of the different possible realizations in distinct contexts. They do not provide an analysis – their purpose is to provide comparable and reliable

data. Both coding systems are applied to the entire text and to three to five minutes of each conversation (three minutes for schwa and five for liaison).

The schwa coding system is numerical and is made up of four digits. As discussed above, by schwa, we understand a vowel usually pronounced [ø, œ, ə] and liable to drop in certain contexts. It typically corresponds to a graphic *e*, which is, on our schwa tier, the insertion site of the numerical code. In addition, the code is inserted after a final pronounced consonant, as such a consonant is seen as a possible trigger for an epenthetic schwa (Candea 2000; Hansen this volume). However, if the vowel follows an obstruent + liquid cluster (e.g., *vendredi*), it is not coded as it does not correspond to our definition of schwa; rather, it is a stable vowel. The code for each potential schwa integrates four digits: (1) presence/absence of schwa; (2) position within the word, i.e., is the schwa in a monosyllable, or if not, is it in the first, middle or final syllable of the word; (3) the left context, i.e., is the schwa preceded by one or two consonants or by a pause; (4) the right context testing the same possibilities as the previous field. The third field gives the additional possibility of testing for consonant simplification: one of the possible code values indicates that the schwa is preceded by a simplified cluster.

The liaison coding system is alphanumerical and follows the same principles as the schwa coding system. It is inserted after an orthographic consonant located in a potential liaison context (e.g., *les*adorables*enfants*arrivent*ensemble*, where * indicates a potential liaison context). The first coding position specifies whether the word is monosyllabic or not while the second position indicates whether the liaison is absent or whether it is present and forward linked, present but not forward linked, uncertain or epenthetic. If a liaison is realized, a third field will indicate its nature ([z], [n], [t], etc.).

4. The current volume

The contributions to this volume reflect the maturity of the PFC project in a variety of ways. Most importantly, each provides a first published report on the core areas of the survey point in question, thus extending the already impressive coverage of the project.[4] Moreover, several of the studies use data from one or more survey points to investigate in depth one or more questions of particular interest. This is mostly the case for the section on Europe, where more surveys have been conducted and where comparative issues and more nuanced questions are

4. The only exception is the contribution by Bordal (Chapter 2), although the brief presentation (in French) in Bordal (2009) is limited to the vowel and consonant inventories (and allophony therein), with no coverage of schwa, liaison, or prosody.

therefore more likely to have arisen. In this section we present a brief overview of the chapters, by geographical region, as they appear in the volume itself.

4.1 Africa

Beginning in the highly multilingual context of Africa, in Chapter 2, Bordal presents her findings from Bangui, in the Central African Republic, where between 50 and 100 languages are spoken, although only French and the vehicular language, Sango, have official status. The contribution from Boutin, Gess and Guèye, in Chapter 3, focuses on the French spoken in Dakar, Senegal, where despite the fact that only 25% of the population have any real competence in the language, French is the official language of the country next to the 18 indigenous "national" languages, of which Wolof clearly stands out as having a special status, with 80% of Senegalese speaking or understanding it. In Chapter 4, Lyche and Skattum treat the French spoken in Bamako, Mali, where French is the official language although it is no one's mother tongue (Mali is considered the least francophone country south of the Sahara). While all of these surveys have in common the multilingual context of Africa, the surveys presented by Bordal and Boutin, Gess and Guèye focus on the French of only one native language group, Sango and Wolof, respectively, while the Bamako survey includes speakers of five different, and typologically distinct, first languages.

4.2 Europe

The contributions from Europe reflect the maturity of the PFC project in particular given the number of surveys completed in and around France. With this number of surveys, special areas of exploration, and areal studies using data from more than one survey point, are now possible. In Chapter 5, for example, Coquillon and Turcsan illustrate Southern French using data from two surveys: one focused on Marseille proper and another on the general Marseille-Aix region. The study in Chapter 6, by Hambye and Simon, uses data from three survey points in Belgium to illustrate the diversity present in Belgian French. Despite the diversity, however, there is something identifiable about a Belgian French accent that the authors look for in the area of prosody. Hansen's particular focus in Chapter 7 is on younger speakers in Paris, but representing two socio-cultural profiles in terms of education. Despite the small scale of the study, it may reveal "tendencies that could well be those of tomorrow's *français de référence*" (Hansen, this volume). Finally, in Chapter 8, Racine and Andreassen present new data from

the canton of Neuchâtel in Switzerland, as well as using data from the canton of Vaud for comparative purposes.

4.3 North America

In Chapter 9, Cichocki provides an overview of the variety of French spoken in the municipality of Tracadie-Sheila, on New Brunswick's Gulf of St. Lawrence. Côté's focus in Chapter 10 is on Laurentian French (commonly referred to as Quebec French) as spoken in Trois Rivières. Moving to the west and north in Chapter 12, Tennant provides coverage of a Laurentian variety that is not in Quebec, but rather in rural Ontario, although it is the majority language of the community in question, namely Hearst. In the Canadian West proper, Walker focuses, in Chapter 13, on the Albertan community of Peace River. The focus of Klingler and Lyche, in Chapter 11, falls far south of the border, on the 'Cajun' French of Ville Platte, Louisiana. The contributions from North America contrast on whether the variety covered is in a majority setting (Tracadie-Sheila, Trois-Rivières, and Hearst), or in a minority setting (Peace River and Ville Platte).

5. Conclusion

Having whet your appetites with our brief overview of the chapters to follow, we leave you now to enjoy the tour of spoken French in Africa (Part I), Europe (Part II), and North America (Part III). A regional map is provided at the beginning of each part.

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Appendix I: Word-list

Note that the subject is asked to pronounce the number before each word.

1. roc
2. rat
3. jeune
4. mal
5. ras
6. fou à lier
7. des jeunets
8. intact
9. nous prendrions
10. fêtard
11. nièce
12. pâte
13. piquet
14. épée
15. compagnie
16. fête
17. islamique
18. agneau
19. pêcheur
20. médecin
21. paume
22. infect
23. dégeler
24. bêtement
25. épier
26. millionnaire
27. brun
28. scier
29. fêter
30. mouette
31. déjeuner
32. ex-femme
33. liège
34. baignoire
35. pécheur
36. socialisme
37. relier
38. aspect
39. niais
40. épais
41. des genêts
42. blond
43. creux
44. reliure
45. piqué
46. malle
47. gnôle
48. bouleverser
49. million
50. explosion
51. influence
52. mâle
53. ex-mari
54. pomme
55. étrier
56. chemise
57. brin
58. lierre
59. blanc
60. petit
61. jeûne
62. rhinocéros
63. miette
64. slip
65. compagne
66. peuple
67. rauque
68. cinquième
69. nier
70. extraordinaire
71. meurtre
72. vous prendriez
73. botté
74. patte
75. étriller
76. faites
77. feutre
78. quatrième
79. muette
80. piquais
81. trouer
82. piquer
83. creuse
84. beauté
85. patte
86. pâte
87. épais
88. épée
89. jeune
90. jeûne
91. beauté
92. botté
93. brun
94. brin

Appendix II: Text (© PFC Project)

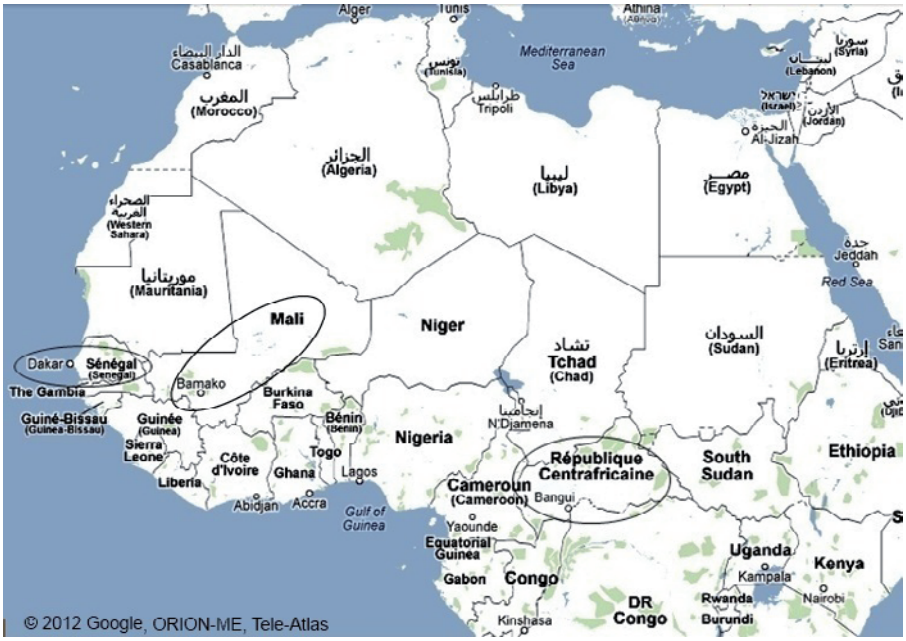
"Le Premier Ministre ira-t-il à Beaulieu? Le village de Beaulieu est en grand émoi. Le Premier Ministre a en effet décidé de faire étape dans cette commune au cours de sa tournée de la région en fin d'année. Jusqu'ici les seuls titres de gloire de Beaulieu étaient son vin blanc sec, ses chemises en soie, un champion local de course à pied (Louis Garret), quatrième aux jeux olympiques de Berlin en 1936, et plus récemment, son usine de pâtes italiennes. Qu'est-ce qui a donc valu à Beaulieu ce grand honneur? Le hasard, tout bêtement, car le Premier Ministre, lassé des circuits habituels qui tournaient toujours autour des mêmes villes, veut découvrir ce qu'il appelle "la campagne profonde".

Le maire de Beaulieu – Marc Blanc – est en revanche très inquiet. La cote du Premier Ministre ne cesse de baisser depuis les élections. Comment, en plus, éviter les manifestations qui ont eu tendance à se multiplier lors des visites officielles? La côte escarpée du Mont Saint-Pierre qui mène au village connaît des barrages chaque fois que les opposants de tous les bords manifestent leur colère. D'un autre côté, à chaque voyage du Premier Ministre, le gouvernement prend contact avec la préfecture la plus proche et s'assure que tout est fait pour le protéger. Or, un gros détachement de police, comme on en a vu à Jonquière, et des vérifications d'identité risquent de provoquer une explosion. Un jeune membre de l'opposition aurait déclaré: "Dans le coin, on est jaloux de notre liberté. S'il faut montrer patte blanche pour circuler, nous ne répondons pas de la réaction des gens du pays. Nous avons le soutien du village entier." De plus, quelques articles parus dans La Dépêche du Centre, L'Express, Ouest Liberté et Le Nouvel Observateur indiqueraient que des activistes des communes voisines préparent une journée chaude au Premier Ministre. Quelques fanatiques auraient même entamé un jeûne prolongé dans l'église de Saint Martinville.

Le sympathique maire de Beaulieu ne sait plus à quel saint se vouer. Il a le sentiment de se trouver dans une impasse stupide. Il s'est, en désespoir de cause, décidé à écrire au Premier Ministre pour vérifier si son village était vraiment une étape nécessaire dans la tournée prévue. Beaulieu préfère être inconnue et tranquille plutôt que de se trouver au centre d'une bataille politique dont, par la télévision, seraient témoins des millions d'électeurs.

PART I

Africa



Map 1. Africa

CHAPTER 2

A phonological study of French spoken by multilingual speakers from Bangui, the capital of the Central African Republic*

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1. Introduction

This chapter presents the main phonological features of the French spoken in Bangui, the capital of the Central African Republic (CAR), henceforth Central African French (CAF). As in other French speaking countries of Africa (e.g., Boutin et al.; Lyche & Skattum, this volume), the essential characteristic of the linguistic situation in the CAR is multilingualism. Whereas different African languages are the speakers' first languages (L1), French is generally acquired as a second language (L2) through formal education. The L1 of the speakers (or the dominant L1 for bi- and multilinguals) of the PFC Bangui corpus is Sango (a Ngbandi-based language – see Section 2.2), which is also the vehicular language in the CAR.

The aim of the present study is to provide a general description of the phonological system of CAF, concentrating on the following aspects: phonemic inventories, schwa, liaison and prosody. Moreover, the study aims to contribute to the discussion on contact phenomena in phonological variation. In the description of the phonemic inventories and prosodic system, special attention will be paid to the impact of possible transfers from the speakers' L1 on their phonological system of French. We will thus bring a few elements to the debate on whether transfers from L1 actually constitute an important source of linguistic variation in multilingual contexts. An argument against postulating such transfers is that

* I would like to express my gratitude to Chantal Lyche for detailed and helpful comments on this text. I would also like to acknowledge the help of Robert Beyom who assisted me during the fieldwork and made this study possible. Finally I should like to thank all of the speakers who agreed to participate in the study.

identical variation phenomena are found in contexts where both linguistic situation and languages are different (cf. Gadet & Jones 2008). This is also the case for the phenomena that will be described in this study; in fact, nearly all of the particularities of CAF are also attested in other colloquial varieties of French (Bordal 2009b). However, a comparison of the particularities of CAF with the phonological system of Sango shows that the transfer hypothesis cannot be excluded. The observed particularities correspond largely with the system of Sango or to parts of the French system that constitute obvious problems for L2 learners. The overall picture of the data therefore indicates that the influence of Sango is an important factor in the phonology of CAF.

2. The languages of the CAR

Only French and the vehicular African language Sango have official status in the CAR, but between 50 and 100 different languages are spoken in the country. Most Central African speakers know several languages and use more than one language in their everyday conversations. Both usage and knowledge of the different languages depend on different factors such as level of education, ethnic origin, and whether the speakers live in an urban or rural area. Only a minority of the country's population speaks French, which is confined to the formal sphere. Sango is spoken by the large majority of Central Africans and is used as a *lingua franca* between people with different L1s. It is also the most widely spoken language in Bangui. The use of other languages is restricted to specific regions and will henceforth be referred to as *regional languages*.

2.1 The regional languages

Several ethnic groups live in the different regions of the geographical area that today constitutes the CAR, and each of these traditionally has its own language or dialect. The languages of the CAR mainly belong to the Niger-Congo or the Nilo-Saharan families of African languages (Queffélec, Déchamps-Wenezoui & Daloba 1997). Niger-Congo is most heavily represented; a majority of the languages in the CAR belong to the Adamawa-Ubangi branch of the Niger-Congo family (Boyd 1989), for instance Gbaya and Banda, the two most important regional languages.

In rural areas, use of the regional languages is widespread; most children acquire one or more regional languages as an L1 and they are used in everyday communication between people from the same region. In Bangui, however, the situation is different. The capital is a melting pot, where several ethnic groups

are represented and interethnic marriages are common. As a consequence of this situation, the vehicular language, Sango, is adopted by an increasing percentage of the urban population.

2.2 Sango

Sango is an Adamawa-Ubangi language and has its roots in the language spoken by the *Ngbandis*, the ethnic group who traditionally lived by the Ubangi River (Boyeldieu & Diki-Kidiri 1982). Today's Sango is probably the result of several changes in the Ngbandi language, and some researchers (cf. Pasch 1993; Samarin 2000) classify it as a creole language. The arguments for this analysis stem from the context of emergence of Sango and from its linguistic structure. The changes in the Ngbandi language took place because it expanded as a trade language in the region around the Ubangi River and was therefore acquired by people with different L1s. This resulted in a pidginization of the language. The pidginized Ngbandi was then acquired as an L1 and became a creole language – today's Sango. Furthermore, Sango exhibits several structural similarities with creoles, such as reduced derivational morphology and lost grammatical tone (Pasch 1993). This theory, however, is contested by other scholars, who argue that the evolution of the Ngbandi language does not differ from other kinds of diachronic change (cf. Diki-Kidiri 1981).

In Bangui, Sango is replacing the regional languages in everyday communication (Déchamps-Wenezoui 1981; Thornell 1997). It is the most widely used language, independent of its speakers' ethnic origins, and children born in Bangui tend to acquire it as their L1. Even though the regional languages are disappearing from the linguistic scene in the capital, language is still an identity marker. For instance, there are phonological differences between the Sango used by the different ethnic groups (Boyeldieu & Diki-Kidiri 1982).

Since 1991, Sango shares the status of official language with French and is today widely used in official contexts such as radio, television, the President's speeches, as well as in religious ceremonies. Sango also has an official orthography (Diki-Kidiri 1977) and certain texts, e.g., in advertising, are written in Sango. However, despite the increased usage of Sango in official contexts, French remains to this date the language of social promotion.

2.3 French

French was introduced in the CAR by the French colonists who governed the country from the beginning of the 20th century up until 1960. It has kept its

official status after independence and is still the main language of education and administration. It is also frequently used in other formal contexts but, as seen above, not exclusively. Nevertheless, French is dominant in written communication; newspapers, school materials and official documents are almost exclusively written in French.

Some families tend to speak French to their children before they start school, but in most cases Central Africans learn it at school, and only people with a certain level of formal education master the language fully; this is estimated to be about 8% of the population (Queffélec, Déchamps-Wenezoui & Daloba 1997: 52). Nevertheless, most Central Africans have some – at least passive – knowledge of French, and it has been pointed out that it should not be considered as a "foreign language" (Queffélec, Déchamps-Wenezoui & Daloba 1997); most speakers in Bangui are in contact with French on a daily basis and people working in public administration use it actively in their everyday life.

3. The Bangui corpus

The data in the PFC CAR corpus were collected during fieldwork conducted in Bangui from January to March, 2008 in cooperation with the University of Bangui. Thirty speakers were recorded according to the PFC research protocol and 12 of the recordings were transcribed and coded.

In the process of selecting informants, the combination of languages spoken was the most important variable; the objective was to focus on French-Sango bilinguals in order to enable the study of transfers. However, in a context where

Table 1. Speakers in the PFC Bangui corpus

Code PFC	Age	Sex	Education level
rcayn1	28	F	*Licence*
rcaat1	28	M	*Licence*
rcadt1	28	F	*Licence*
rcatp1	31	M	*5ème*
rcakn1	32	M	*Première*
rcark1	33	M	*Bac*
rcamp1	39	F	*Première*
rcarn1	41	F	*Seconde*
rcamy1	44	F	*Première*
rcamk1	46	F	*Première*
rcaiy1	58	M	*Bac*
rcascm1	59	M	*5ème*

multilingualism is the rule, one could not exclude the possibility that the speakers had knowledge of other languages. The essential criteria were therefore that the speakers used French on a daily basis and that Sango was the language that they used most often in everyday communication. Three age groups (20–30, 30–40, and 40+) and different levels of education are also represented (see Table 1).[1]

4. Phonemic inventories and realizations

In this section, the main characteristics of the phonemic inventories and their realizations in CAF will be presented. As pointed out above, many of the particularities in segmental realizations in CAF also exist in the phonological system of Sango; the similarities of the systems will be the focus of the discussion. In order to compare CAF with Sango, a short overview of the phonological characteristics of Sango will first be presented.

4.1 Phonological characteristics of Sango

The phonemic inventory of Sango consists of the following phonemes:[2]

Table 2. The phonemes of Sango (Diki-Kidiri 1977)

Vowels					**Consonants**					
i		u	(ĩ)	(ũ)	b p	f v	t d	s z	k g	k͡p g͡b
e		o			m͡b	m͡v	n͡d	n͡z	n͡g	ng͡b
ɛ		ɔ	ɛ̃	ɔ̃	m		n	n͡y		
	a			ã			l	ɥ	h	w
							r			

Some differences between the phonemic inventories of Sango (Diki-Kidiri 1977; Pasch 1993; Walker & Samarin 1997) and *français de réference* (Morin 2000) (henceforth FR – see Chapter 1) are evident from this table. Sango has two more nasal vowels than FR and several co-articulated consonants that do not occur in

1. The Central African school system is identical to the French school system. U.S. equivalents: *5ème* = not completed Middle School, *Second* = first year of High School, *Première* = second year of High school, *Bac* = High School Exam, *Licence* = Bachelor's Degree.

2. Phonemes in parentheses are disappearing and are not necessarily present in all speakers' inventories.

French, but it lacks the French front rounded vowels (/y/, /ø/, /œ/) and the post-alveolar fricatives (/ʃ/, /ʒ/). Another important difference is the realization of the rhotic consonant, which is realized as an alveolar trill [r] in Sango, in contrast with most varieties of French where it is a uvular fricative [ʁ]. The pronunciation of the rhotic consonant is discussed in detail in 4.3.1. Given its high degree of variability, for consistency and ease of exposition it is transcribed throughout this chapter as /R/, unless one of the variants is the object of focus. Other characteristics of the segmental realizations in Sango, such as vowel harmony and palatalization, are discussed in more detail below.

The prosodic systems of Sango and FR also differ considerably. Whereas FR is said not to have any word-level prosodic system, Sango is a tone language with distinctive lexical tones. It has three register tones (L, M and H) and three contour tones (HL, LH, ML) with maximal tonal density, i.e., every syllable is specified for tone (Diki-Kidiri p.c.).

Regarding syllabic structures, Sango has almost exclusively CV-syllables (Pasch 1993) with only a few exceptions: syllables without onsets (V) can occur as monosyllables or in word-initial position and syllables with codas (CVC) are attested in word-internal positions (Diki-Kidiri 1977).

4.2 Vowels

The inventory of oral vowels in CAF consists of the phonemes described in Table 3. As in many other varieties of French, the behavior of mid vowels is complex, and the symbols /ø/ and /o/ in Table 3 are provisory, used to refer to both the mid-high and mid-low variants, since this distinction is not phonemic. The different constraints that seem to operate in the distribution of these vowels will be discussed in detail below, in 4.2.1. Another factor affecting the realization of oral vowels that deserves special attention is regressive harmony, discussed in 4.2.2.

As regards nasal vowels, there is some inter-speaker variation in the inventories. Most speakers have an inventory of three nasal vowels /ɛ̃, ɔ̃, ɑ̃/, as in most European varieties. However, one speaker (rcamp1) systematically made the opposition between the rounded and unrounded nasal vowels, /œ̃, ɛ̃/. For instance,

Table 3. Vowel inventory

Oral vowels			Nasal vowels		
i	y	u			
e	ø	o			
ɛ			ɛ̃	(œ̃)	ɔ̃
a		(ɑ)			ɑ̃

she realized the word *brun* with a rounded nasal vowel both when reading the word list and in spontaneous conversation. Apart from this particular case, the inventory is stable.

4.2.1 *The mid vowels*

A constraint on the distribution of French mid vowels is the *loi de position* (LdP – see Chapter 1), favoring mid-high vowels /e, ø, o/ in open syllables (CV) and mid-low ones /ɛ, œ, ɔ/ in closed syllables (CVC). This constraint seems to play a role in the distribution of the mid vowels in the Bangui corpus. The choice of the vowels /o, ɔ/ is always determined by the LdP. For example, both *rauque* and *roc* are realized with a mid-low vowel, [ʁɔk] as is *gauche,* [gɔʃ]. The realization of the other vowels follows the LdP in certain contexts: only the mid-high vowel /ø/ is found in open syllables (CV) independent of their position in the word, whereas the distribution of the vowels /e ɛ/ follows the LdP in non word-final syllables for instance, the first vowel in *pêcheur* is mid-high [peʃœʁ] (compare with [pɛʃœʁ] in certain varieties of French, contrasting with [peʃœʁ] *pécheur*).

However, there are two contexts where the LdP is not respected: as in FR, both the mid-high and the mid-low vowels /e/ and /ɛ/ are found in open final syllables (CV#), whereas closed final syllables (CVC#) can contain both the mid-low /œ/ and the mid-high /ø/. Table 4 gives an overview of the inventory of mid vowels in word-final syllables.

Table 4. Distribution of mid vowels in final syllables

	Final syllable –coda .(C)V			**Final syllable +coda .(C)VC**		
Mid-high	e	ø	o		ø	
Mid-low	ɛ			ɛ	œ	ɔ

4.2.1.1 /e/ *and* /ɛ/. The phonemic opposition between /e/ and /ɛ/ in open final syllables is being neutralized in many varieties of French in Europe (Lyche & Østby 2009; Pustka 2009) but is stable in Bangui. For instance, the speakers make the distinction between different grammatical forms such as the infinitive *parler,* realized as [paʁle], and the imperfect past *parlait,* pronounced [paʁlɛ]. Words such as *jamais*, *après* and *intérêt* are systematically pronounced with a mid-low final vowel. The fact that Sango also distinguishes mid-low and mid-high front vowels (see Table 2) probably contributes to keeping this opposition stable in CAF compared to many other varieties.

4.2.1.2 /ø/ *and* /œ/. The distribution of /ø/ and /œ/ seems to be allophonic. Some conditioned realizations are attested, though, such as those influenced by the

presence of the coda consonant /R/. Whether it is realized or not (see 4.3.1), /R/ in a coda position lowers the vowel as in the pronoun *leur*, systematically realized with the mid-low vowel [lœʁ]. The realizations of the front rounded mid vowels show, however, a high degree of variation. Words as *creuse, jeune, veulent* can, for example, be pronounced both with a mid-high and a mid-low vowel, and considerable inter- and intraspeaker variations are attested.

Rounded front vowels are rare from a typological point of view and the acquisition of these vowels is challenging for speakers who do not posses them in their L1. As illustrated in Table 2, front rounded vowels do not exist in Sango. However, all of the Bangui speakers are able to produce them. The instabilities of realizations can still be attributed to acquisition problems; nuances of vocalic quality can be difficult to capture and consequently, difficult to produce. Another observation strengthens this claim. The word *sérieux* is systematically pronounced [søʁjø] with a rounded first vowel. This realization has in former work been analyzed as vowel harmony (Bordal 2009b). However, a closer look at the data reveals several examples of the unexpected rounding of front vowels in contexts where it cannot be analyzed as harmony, as in the word-initial syllables of [pʁøfeʁe] (*préfèrer*), [døfewa] (*des fois*) and [ʁøste] (*rester*). The opposite is also attested. For instance, there are a couple of occurrences of *besoin* realized with an unrounded vowel [bezwã]. Thus, it seems as though the vowel /ø/ is generally subject to confusion.

4.2.2 *Vowel harmony*

Regressive vowel harmony affecting the height of the mid vowels is widely documented in French phonology and is found in many varieties, including European French (Nguyen & Fagyal 2008). In the Bangui corpus, vowel harmony seems to be particularly frequent. It occurs only within the lexical domain and affects the height of vowels. In several examples, the height of mid vowels is the result of vowel harmony, for example in realizations such as [ɛtɛ] (*était*) and [ɛpɛ] (*épais*). In contrast to European French, vowel harmony does not only affect mid vowels, but also /i/, and can be triggered by both word-final and word-internal vowels, as in *indésiré,* pronounced [ɛ̃dezeʁe], or *intelligent,* realized as [ɛ̃tiliʒɑ̃].

Vowel harmony is one of the phenomena that CAF shares with the Adamawa-Ubangi languages, where this is very common (Boyd 1989). For instance, in Sango the height of the mid vowels is in most cases determined by the height of the immediately adjacent vowels. Vowel harmony can be bidirectional, but it is not clear from the existing descriptions of Sango phonology what the mechanisms are that trigger harmony in one direction or the other.

4.3 Consonants and glides

The inventories of glides and consonants do not present any particularities, which is probably related to the fact that the large majority of the French phonemes is also found in Sango, with the exception of the post-alveolar fricatives, but these do not present any problems for the speakers. However, the realizations of some of the phonemes deserve to be mentioned, such as the variable realizations of /R/, the palatalization of /t/ and /d/, and the devoicing of word-final fricatives. These appear to be the most striking characteristics of the pronunciation of consonants in CAF and will be presented in this section.

4.3.1 *The rhotic*

Among the consonants, the /R/ is of particular interest for two reasons. Firstly, it is almost systematically deleted in given contexts. Secondly, when it is not deleted its quality is highly variable.

The deletion of postvocalic rhotics is cross-linguistically common, found for instance in other varieties of French (Bordal & Ledegen 2009; Boutin & Turcsan 2009). A tendency attested in many languages is that of avoiding similar adjacent segments. The rhotic is an extremely sonorous consonant and thus shares features with the vowels, which can explain the tendency of postvocalic deletion. In the Bangui corpus, postvocalic /R/ (VRC, VR.) is almost systematically absent in all word positions. There are also examples of prevocalic deletion when the /R/ constitutes the last element of an onset consonant cluster (CRV). Deletions of /R/ in coda position can be illustrated by realizations such as [salɛː] (*salaire*) or [ɛ̃pɔːt] (*importe*) and [puːkwa] (*pourquoi*). In most cases, the vowel preceding the deleted /R/ is lengthened. In contrast, when the /R/ is deleted in complex onsets (CRV), it does not leave any trace. This type of deletion is also less frequent and seems to be restricted to the consonant cluster /fR/ as illustrated in [afɨk] (*Afrique*), [fekɑ̃te] (*fréquenter*) and [fɑ̃s] (*France*).

When the /R/ is realized, three main allophones occur: the uvular fricative [ʁ], the trill [r] and the palatal retroflex [ɽ]. There is important inter-speaker variation. Three speakers only realize the uvular fricative, two speakers systematically pronounce the alveolar trill, five speakers alternate between [ʁ] and [r], and two speakers realize all three variants. No pattern emerges when considering the speakers who realize several variants; alternations are found in all phonological contexts, in onset as well as in coda position, and independent of the quality of the vowels. These three different variants appear for example in initial position, [ʁɔk] (*roc*), [ra] (*ras*) and [ɽølje] (*relier*), realized by the same speaker (rcaat1). However, the influence of Sango can be one of the factors contributing to the

variations in /R/ realizations; the rhotic is an alveolar trill in Sango (cf. Table 2) and this can explain why some speakers keep that variant in French.

4.3.2 *Palatalization*

Another characteristic of the consonantal realizations in CAF is palatalization. The consonants /t/ and /d/ are palatalized before the high front vowels /i/ and /y/, and sometimes before the high back vowel /u/. Palatalization is generalized; it is attested in all phonological contexts, in all registers and with all the speakers. These examples illustrate the phenomenon: [pøtʲi] (petit), [abitʲyd] (*habitude*) and [tʲu] (*tout*).

Palatalization represents another similarity between Sango and French in Bangui; in Sango, /t/ and /d/ are systematically palatalized before front vowels (Diki-Kidiri 1977). It should also be mentioned that palatalization, or assibilation of /t/ and /d/ before front vowels, is not exclusive to CAF. This phenomenon also occurs in other varieties of French, more specifically in contact situations, as in Mauritius (Ledegen 2007), Reunion Island (Bordal & Ledegen 2009) and Canada (Poiré 2009). However, CAF is the only variety where not only front vowels, but also the back vowel [u], trigger palatalization.

4.3.3 *Devoicing*

A final characteristic of the consonantal realizations worth mentioning is the devoicing of alveolar and post-alveolar fricatives in word-final position. [ɛglis] (*église*), [aʃ] (*âge*) and [ʃɔs] (*chose*) are examples of words in the corpus that are almost systematically realized with a final unvoiced consonant, also when followed by a vowel-initial word. In contrast with the other particularities identified above, there is no direct correlation between devoicing and the phonology of Sango, which, like the other Adamawa-Ubangi languages, possesses voiced fricatives.

Devoicing of final consonants is, however, attested in many languages, and is also found in other African varieties of French, such as in the Ivory Coast (Boutin & Turcsan 2009) and Senegal (Boutin et al., this volume). There is some controversy about the nature of final devoicing in the phonological literature; it has been analyzed both as a strengthening and a weakening process (cf. Harris 2009). As shown in Section 4.4, there are strong arguments for claiming that the avoidance of codas, especially in word-final syllables, is a highly ranked constraint in the phonology of CAF, and that this is related to the fact the Sango does not have word-final consonants. In CAF there is evidence that devoicing is a weakening process since word-final consonants are almost systematically deleted in this variety and it can therefore be related to a general tendency to reduce the force of articulation in word-final positions. However, the devoicing process is confined to fixed final consonants and does not affect the liaison consonant [z] which is probably

not part of the representation of word-1 but inserted before word-2 (Côté 2005). In that case, it could be explained as a way of distinguishing word-final fricatives from the voiced liaison consonant /z/, whose morphological character as a plural marker seems particularly important in CAF (cf. 6).

4.4 Consonant deletions and vowel epenthesis

An important phonotactic constraint of the French in Bangui seems to be the avoidance of complex syllable structures. Different processes such as consonant deletion and vowel epenthesis operate in order to avoid complex syllable structures.

As seen in Section 4.3.1, /R/-deletion is considered as a particular case of consonant deletion since it is related to the acoustic properties of the consonant. There is also a tendency for deletion of other sonorous segments when they are adjacent to a vowel, such as the glide /j/ being frequently deleted in pre-nucleus position in complex onsets (CJV) as in [kuʁozite] (*curiosité*) and [ameloʁasjõ] (*amélioration*), and /l/ being absent in postvocalic positions, as in [kam] (*calme*). Another segment that is frequently deleted is the dorsal /k/; deletion of this consonant is attested pre-consonantally in different word positions, such as in word-internal simple codas as in [atjyɛlmã] (*actuellement*) as well as in word-final complex codas, [ɛ̃tat] (*intact*).

The other examples of consonant deletion in the corpus are more sporadic than the deletion of /R/, /j/, /l/ and /k/. In word-final syllables, simple codas are almost always deleted regardless of the nature of the segment, as /b/ in [ara] (*arabe*), /t/ in [syi] (*suite*), /d/ in [dømã] (*demande*), /s/ in [opɛʁatʁi] (*opératrice*) or /n/ in [nadi] (*Nadine*). Complex codas are simplified or fully deleted as in [pɔs] (*poste*) or [minis] (*ministre*).

There are also examples of vowel prothesis and epenthesis in the corpus, other processes that contribute to avoiding complex syllable structures. Word-initially, the consonant cluster /sp/ is avoided and realization of a prothetic [ɛ] is frequent, as in [ɛstabl] (*stable*) or [ɛslip] (*slip*). Word-internally, the insertion of /i/ avoids a coda in [difikylite] (*difficulté*).

Simplifications of complex codas at the ends of words, and particularly the deletion of liquids after plosives, are attested in all varieties of French. The avoidance of complex syllable structures seems particularly important in Bangui, since the deletions are very frequent and epenthesis is also attested, and can be related to the contact with Sango, which has almost exclusively CV syllables. Moreover, it appears that the avoidance of codas is most prominent in word-final syllables; in contrast with other word positions, all kinds of consonants might be absent in

this context. The strong tendency to avoid word-final codas can also be attributed to the influence from Sango, which only allows coda-less syllables in word-final position (Diki-Kidiri 1977).

5. Schwa

A high degree of regularity seems to be the essential characteristic of the behavior of the vowels coded as schwas. The absence or presence of schwas depends essentially on the context of the syllables within the word, as indicated in Table 5.

Table 5. Realizations of schwas

Context	Realized schwas	Total	Percentage
Initial syllable of polysyllabic words	181	182	99.5%
Internal syllables of polysyllabic words	99	217	45.6%
Final syllables of polysyllabic words	484	3772	12.8%
Monosyllabic words	1,634	1,719	95.0%

Some generalizations can be made on the basis of this table: schwas are realized in the initial syllables of polysyllabic words, are variable in internal syllables of polysyllabic words, are not realized at the ends of polysyllabic words, and are realized in monosyllabic words. There are, however, exceptions in all contexts and the scope of this section will be to identify the other factors that influence the behavior of the schwa, such as left and right context, lexicalization, register or individual variation. The reality of a schwa *per se* in the French spoken in Bangui will be discussed at the end of this section.

5.1 Initial syllables of polysyllabic words

The context with the highest rate of realization (99.5%) is the initial syllable of polysyllabic words (such as *r<u>e</u>venir*, *d<u>e</u>mander*). The presence of vowels is almost systematic and one cannot talk about a schwa, conceived as a vowel that alternates with zero, in this context. In other words, only full vowels seem to be allowed in initial syllables of polysyllabic words (Durand 2009).

5.2 Internal syllables of polysyllabic words

The behavior of schwa in word-internal syllables varies. A first look at the data indicates that schwa is mostly absent in this context, but a more detailed

examination gives indications of the opposite. In fact, more than half of the deleted schwas (54.2%) are attested in lexicalized expressions such as *parce que,* in most cases realized as [pask], and *maintenant,* pronounced [mɛ̃tnɑ̃]. With the exception of these expressions, a majority of the schwas are realized in internal syllables (61.8%). Schwas are systematically pronounced when the left context contains two consonants (CCə), as in *exactement* or *correctement*. When the schwa syllable is preceded by a vowel (VCə), the realizations are variable; for instance, words such as *bêtement, effectivement* and *tellement* can be realized both with and without schwas by the same speakers.

5.3 Final syllables of polysyllabic words

As in the varieties of French in Northern France, there is a clear tendency for absence of final schwa: only 12.8% of the 3,772 potential final schwas are realized. All the same, 12.8% is a relatively high realization rate compared to other varieties where final schwas are rare; for example, only 3% are present in Parisian French (Lyche & Østby 2009). There are no significant differences between the realization rates of the different speakers and no lexicalizations are attested, nor can any correlation between the behavior of the schwa and register be made; the realization rates in the texts and the conversations are quite similar: 13.9% and 12.1% respectively. It is therefore necessary to take a closer look at the data in order to determine other factors that may possibly influence the behavior of the schwa.

A challenge in analyzing realized schwas in word-final position is that of determining whether the observed vocalic element is a hesitation phenomenon or a schwa, since the acoustic quality of the filled pause (*euh*) and that of the schwa are close. However, the word preceding the schwa can give an indication in this matter; 21% of the realized schwas in the conversations occur after the word *donc*, frequently used by the speakers to fill gaps in the conversations. Thus, these are arguments for claiming that part of the final vocalic elements are not schwas, but rather hesitations. This claim is also supported by the fact that French is the speakers' L2 and more hesitations can be expected than would be the case for L1 users.

However, not all of the final vocalic elements seem to be hesitations. As seen in Section 4.4, a high-ranked constraint in the phonology of CAF is the avoidance of complex syllable structures and particularly codas in word-final syllables. Thus, there are reasons to hypothesize that the realization of word-final schwas is another strategy to avoid final codas. A look at the realized schwas according to their phonological environment can clarify this (Table 6).

Table 6. Distribution of realized word-final schwas according to phonological context

Context		Realized schwas	Total	Percentage
Left	VCə_	213	2,967	7.2%
	CCə_	267	426	62.6%
Right	ə_C	310	2,170	14.3%
	ə_V	96	838	11.5%
	ə_#	55	765	7.2%

The numbers in Table 6 allow some postulations: the right context does not seem to have any influence on the realization of the word-final schwa – there are no significant differences in the realization rates in terms of whether it precedes a consonant, a vowel or a pause. In contrast, the left context appears to influence the presence of the schwa. A considerable portion (62.6%) of the schwas in the context CCə# is realized (as in *être*, *Ministre*). This finding supports the hypothesis that schwa is inserted in order to avoid codas in word-final positions (cf. Section 4.4).

5.4 Monosyllabic words

A large majority of potential schwas are realized in monosyllabic words (95%). An examination of the contexts of absent schwas shows that most deletions take place in particular contexts. In fact, a considerable number of the unrealized vowels are in lexicalized expressions as in *qu'est-ce* or *est-ce*. The pronoun *je* in common expressions such as *je sais pas* and *je suis* is also realized without schwa in quite a few examples. Apart from these frequent chunks, vowels are systematically realized in personal pronouns. Other examples of absent vowels are some sporadic deletions in the negation *ne* or the preposition *de*.

5.5 Is there a schwa in CAF?

As seen above, with the exception of the internal syllables of polysyllabic words, the behavior of the schwa vowels is quite homogenous in the different word contexts. Thus, the crucial question that arises is whether there really exists a schwa, in the sense of a particular vowel that alternates with zero, in the French spoken in Bangui. A similar study of French in the Ivory Coast, where the behavior of schwa is similar to CAF, came to the conclusion that the existence of an underlying schwa in that variety was uncertain (Boutin & Turcsan 2009).

As for CAF, there is strong evidence to claim that there is no schwa in initial syllables of polysyllabic words, since the presence of a vowel is systematic.

The same postulation can be made concerning monosyllabic words. Although there are some sporadic deletions, these are rare and mainly limited to particular expressions. The case of the final schwas of polysyllabic words is, as seen, more complex. The low percentage of realizations may indicate that there is no underlying schwa in this context, but rather that an epenthetic vocalic element is inserted due to phonotactic constraints (cf. Côté 2007). The only context where real variation is attested is the internal syllables of polysyllabic words where the schwa is realized in slightly more than half of the cases. In contrast with the other contexts, the data strongly indicate the existence of an underlying schwa in internal syllables.

6. Liaison

A study of liaison consonants in four African surveys (Ouagadougou, Bamako, Abidjan and Bangui) compared to the European varieties in the PFC corpus (Durand & Lyche 2008) revealed some tendencies in liaison behavior in Africa (Bordal & Lyche 2008): The contexts of categorical liaisons were generally the same as in the other surveys in the PFC database, but the contexts of variable liaisons were fewer and the realization rates lower, particularly in the text. Furthermore, the percentage of liaison with the consonant /z/ was higher in the African varieties than in the rest of the database. Table 7 gives an overview of realizations of liaisons in the Bangui corpus according to the main contexts of the liaison consonants.

This table allows some observations on liaison behavior in CAF and confirms what is indicated above. Firstly, liaison is rare after polysyllabic words; only 31 examples were found in the whole corpus. Secondly, the consonant /z/ is the most frequent liaison consonant; 58% of all liaison consonants are /z/ compared to 46% in the European PFC surveys (Durand & Lyche 2008). This finding suggests that

Table 7. General data on liaison

		Realized liaisons	Percentage
Total amount:	1,761	846	48.0%
Liaison word	Monosyllabic	815	60.6%
	Polysyllabic	31	7.4%
Liaison consonants	/z/	490	58.0%
	/t/	222	26.2%
	/n/	134	15.8%
Register	Text	178	46.8%
	Conversations	668	48.4%

the morphological character of liaison as a plural marker is more important in CAF (and in African varieties in general) than in the other surveys. Thirdly, there is no significant difference between the realization rates in the text and the conversations, in contrast to Paris, for instance, where there are important variations according to register (Lyche & Østby 2009). The majority of the Parisian speakers (75%) produce a liaison in *circuits_habituels* whereas none of the Bangui speakers realize the liaison consonant in this context (Bordal & Lyche 2008). This may indicate that liaison is regular and not affected by register even in contexts where it has the function of a plural marker. In the following the liaison consonants attested in monosyllabic and polysyllabic words will be described for the purpose of establishing contexts of categorical and variable liaisons.

6.1 Monosyllabic words

In three contexts, liaison is realized almost without exception:

- Determiner + noun (*les_enfants*)
- Clitics + verb (*nous_allons*)
- Prepositions *dans* and *en* + noun (*dans_une concession*) (*en_Afrique, en_Europe*).

Liaisons are not categorical after prepositions other than *dans* and *en*. There are two examples of the monosyllabic preposition *chez* in the corpus, but the liaison is not realized (*chez#une dame*).

Variable liaisons are attested in two other contexts: after two forms of the verb *être* (*est* and *sont*) and after the adverb *très*. Only 50% of the potential liaisons after *est* are realized in the text and 11% in the conversations. As for *très*, 50% are realized in the text. In the conversations, there are three occurrences of the adverb in liaison context and the liaison is realized in two examples and absent in one.

6.2 Polysyllabic words

As seen above, few liaisons are attested after polysyllabic words. However, one context of categorical and two of variable liaisons do occur.

Liaisons are variable between polysyllabic determiners and nouns. Two examples of the words *certain* and *aucun* are found in the corpus and the liaison is realized in both cases: *certains_hommes* and *aucun_effort*. Since there are so few examples, it is difficult to determine whether these are contexts of categorical liaisons. A comparison with *quelques,* however, indicates that this is not a context where liaison is obligatory; both in the text and in the conversations, the

liaison is variable after *quelques;* for example, 50% of the speakers make a liaison in *quelques_articles* in the text.

In the conversations, some inter-speaker variations are revealed. One of the speakers, rcayn1, is responsible for four liaisons between a plural noun and a post-nominal adjective: *pays_africains*, *produits_agricoles* (the latter is repeated three times). Another speaker, rcamp1, realizes the liaison after a prenominal adjective: *différentes_écoles*. These are the only examples of liaisons with polysyllabic adjectives, so generally speaking this should not be considered as a context of variable liaisons.

A particularly interesting phenomenon is that of liaisons in the context auxiliary + the verb *aller*. As seen above, few liaisons are made after *est*. However, before the verb *aller*, the liaison is systematically realized after *est* by all the speakers except one (rcamp1). Liaisons are also realized between other forms of the auxiliary *être* and the verb *aller* as in: *je suis_allée, ils sont_allés, j'étais_allée*. This is a context where liaisons are rare in other varieties, especially after polysyllabic auxiliaries (such as *étais*). In fact, the liaison in the expression *j'étais_allé* presents 38.7% (12/31) of all the liaisons in polysyllabic words in the entire Bangui corpus. Since there are no other examples of liaisons between auxiliary and verb, it seems as if these particular examples are lexicalized; with the exception of the third person singular *est*, the other forms of *être* are almost never followed by liaisons in contexts other than before the verb *aller*.

6.3 Categorical and variable liaisons

Liaison is categorical in the contexts determiner + noun and clitic + verb, after the monosyllabic prepositions *dans* and *en* and between the auxiliary *être* and the verb *aller*. Variable liaisons occur after the monosyllabic words *est* and *très* as well as after polysyllabic function words. These observations confirm what was initially indicated: the behavior of liaison consonants in CAF appears to be quite regular and there are few contexts of variable liaisons.

7. Schwa, liaison and prosodic units

The smallest prosodic unit in FR, the Accentual Phrase (AP), can consist of one or more content words and dependent function words, and is the domain of primary stress, sandhi rules and resyllabification (cf. Jun & Fougeron 2002). For instance, in the sentence *cette famille a trois beaux enfants*, the phrase *trois beaux enfants,* consisting of three content words, forms only one AP (Nespor & Vogel 1986). In

CAF, there is evidence that the smallest prosodic unit is smaller than in FR, and is restricted to a single content word and one or more function words. Different factors seem to substantiate this claim.

Firstly, phonological rules in CAF apply almost exclusively between function words and content words and, with a few exceptions, never between two content words. This can be illustrated by examples from the behavior of schwa and liaison (see Sections 5 and 6). In FR, the realization rates of schwas depend on the left (or right context) within the domain of the accentual unit, independent of the borders of content words. For instance, final schwas are not realized when they are followed by a word beginning with a vowel. In contrast, in CAF, the behavior of the schwa is not influenced by adjacent words; for instance, the realization rates of word-final schwas are almost the same before consonants and vowels (cf. Section 5.3), which may indicate that resyllabification does not take place across lexical words. As for liaisons, these are almost exclusively found between function words and content words, with a few exceptions of lexicalized expressions. Liaisons between content words are rare, including in contexts where they are extremely common in FR, such as between monosyllabic adverbs and adjectives (*très#accueillante*).

Secondly, the results of perception tests and automatic detection of prominences with the aim of determining prosodic units and accentual patterns in CAF also support this hypothesis (Bordal 2009a, 2010). In the perception test, ten minutes of conversation per speaker were presented to three "naïve" subjects who had no linguistic training. One of the subjects does not speak French but Norwegian, a pitch accent language, the second is a native speaker of French from Northern France, and the third is Central African. They were asked to point out the syllables they perceived as prominent. The same data were then analyzed by ANALOR (Avanzi, Lacheret-Dujour & Victorri 2008), a computer program developed for automatic detection of syllabic prominence based on acoustic cues such as variations in F0, glissandos, length and pauses. The results of the perception test and the automatic detection were compared and the syllables perceived as prominent by at least one human annotator and ANALOR or at least two human annotators were classified as prominent. The tests gave interesting results. Prominences occurred on almost every content word and also some clitics. For instance, in the sentence *J'ai commencé à aller loin*, the final syllables of *commen<u>cé</u> all<u>er</u>* and *<u>loin</u>* were perceived as equally prominent. Likewise, in *il faut que Doyen dise un mot sur lui*, prominences were attested on the syllables *<u>il</u>*, *<u>faut</u>*, *Do<u>yen</u>*, *<u>dis</u>e*, *<u>un</u>*, *<u>mot</u>*. This indicates that all content words as well as some function words constitute independent prosodic units in contrast with FR. Furthermore, the acoustic cues of

prominences were generally high or rising pitch whereas the non-prominent syllables were pronounced with low pitch. Thus, tonal patterns seem to be constant; function words are generally realized with low tone, except some heavy syllables such as *un* and *il* which have high tone, monosyllabic content words with high tone, and polysyllabic content words with low tones on all the first syllable(s) and low tones on the second. Rhythmic constraints or the position of words within an utterance do not influence tonal realizations. The regularities in tonal patterns suggest that CAF has lexical tones and that the tonal specification of each syllable of Sango is transferred to French (Bordal 2010).

Thus, both segmental rules and prosodic observations indicate that the minimal prosodic unit in CAF may only include one content word in addition to function words.

8. Conclusion

In this study, the main characteristics of the phonology of CAF have been described. Compared to FR, CAF represents particularities in each of the investigated aspects. Firstly, there is evidence that the only context of an underlying schwa in CAF is in internal syllables of polysyllabic words. In initial syllables of polysyllabic words and monosyllables, only full vowels are allowed and the vocalic elements observed at the end of polysyllabic words are most likely epenthetic. Secondly, the essential characteristic of the behavior of liaison is regularity; compared to FR, there are few contexts of variable liaisons.

As regards the phonemic inventories, the comparison between CAF and the speakers' L1, Sango, allows the following observations: Some of the attested phenomena, such as vowel harmony, palatalization and phonemic opposition between /e/ and /ɛ/ are also found in Sango. Other phenomena, such as the instability of /R/ and /ø/, do not directly correspond to phenomena in Sango but to parts of the system where FR and Sango contrast. This is also the case for the phonotactic constraints; complex syllable structures are avoided, which can be seen in relation to the syllable structures of Sango. Finally, the prosodic structure seems to be influenced by Sango; content words form independent prosodic units and have fixed tonal patterns. The overall picture of these data therefore provides strong evidence in favor of the claim that the phonology of French spoken in Bangui is to a great extent a product of the speakers' multilingualism.

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CHAPTER 3

French in Senegal after three centuries

A phonological study of Wolof speakers' French*

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1. Introduction

French has been spoken in Senegal for three centuries. Little by little in the 17th century, it started to replace Dutch, English, and Portuguese, and it began to be heard in the trading posts of Saint-Louis, Gorée Island and the Cap-Vert peninsula.[1] Several centuries earlier, Moorish or Hassaniyya was the first foreign language in contact with the local languages, all belonging to the Niger-Congo family and to the Senegalo-Guinean (or Western Atlantic) branch.

In 1902, Dakar became the seat of the General Government of French West Africa, which was created in 1895. It then became a major seaport important for war and commerce, colonial administration, and for the colony's principle educational and professional establishments. Dakar has thus brought together, from the beginning of the 20th century, personnel from the French colonial administration, sometimes with their families, a highly diverse collection of traders and colonial operators (French, Lebanese, Syrians, etc.), and the young elite of all the future countries resulting from French colonization.

During the colonial era, French was the only official language, the local languages being highly devalued, and forbidden within the walls of scholarly

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1. France founded the Saint-Louis trading post in 1638 and occupied Gorée Island in 1677. It took possession of Dakar (the Cap-Vert peninsula) in 1857.

establishments. Following independence in 1960, the personality of Léopold Sédar Senghor, the first President and also a renowned poet, essayist, and academician, greatly influenced the new Republic of Senegal's relationship with French. Senegal has thus participated in the history of French for three centuries, and has witnessed various features in the language that are no longer present, such as vowel length and other vowel contrasts. It continues to occupy an important place in the francophone community with its participation in international activity (literary, cultural, (socio-)economic and commercial, etc.) in French.

These elements of the history of French in Senegal help to explain all at once features shared with other francophone countries of Africa, and attachment to the norm, but also the variation of individual speakers sharing the same native language and language of everyday use (see Sections 3 to 6).

The PFC project allows for an examination of spoken French by way of a protocol involving the reading of a word list and a written text, as well as formal and informal interviews. Two types of competencies are therefore required: reading and speaking in French. In Senegal, there are no speakers of French who do not read it. Because the use of French is restricted to institutional settings (see Section 2), French is rarely learned outside of school and one's level of education generally correlates with degree of approximation toward French linguistic norms.

It would be premature, without having first studied the French spoken by the Wolofs, the Seereers, the Joolas, the Pulaars, and the speakers of minority languages, to claim to account for French in Senegal. It would also be hasty to approach the French in Senegal on the basis of a dozen speakers representing a sampling of Senegal's ethnicities. Moreover, it is impossible in the important capital city of Dakar to find French speakers not "contaminated" by Wolof. Therefore, the first PFC survey in Senegal focuses on wolophone speakers in Dakar. A description of the linguistic situation of Senegal will allow us to justify our choice of the Wolofs.

2. The situation of French and Wolof in Senegal

We will touch here on three principle aspects of the linguistic situation in Senegal: the coexistence of French and the local languages, the functions of Wolof and French, and the lack of any explicit local French norm.

French, like the local languages, has diverse statuses and functions. French is the *official* language of Senegal. It is therefore, by law, the language of formal education (the object and the medium of education), of the administration, and of the (especially written) media. This status makes it the language of social promotion even though only about 25% of the Senegalese population have any real

competence in the language.[2] The indigenous languages (the great majority from the Atlantic branch) are called *national* when they have been codified. By decree number 71-566 from May 21, 1971, six languages enjoyed this status between 1971 and 1995: Wolof, Pulaar, Seereer, Mandinka, Joola and Soninke. Hassaniyya was added to the list in 1995. Under the new Constitution of January, 2001, which created the possibility for all languages in use in the country to become national languages, 12 other languages were eventually codified: Balanta-Ganja, Mankanya, Noon, Mandjak, Bedik, Oniyan, Saafi-Saafi, Gunyuño, Laalaa, Badyara, Jalunga, and Ndút, which brings the number of national languages to 19.

Among these languages, Wolof, which is a national language like the others, enjoys special situation. Historically, the Wolofs were situated in the regions of Djolof, Cayor, Baol, Waalo, Fouta, and Saloum, and did not constitute an ethnic majority in Senegal. Nevertheless, today Wolof speakers are very numerous in Dakar and in all the other cities and towns. Senegalese who use Wolof as their first language represent almost half (45%) of the population of 12 million inhabitants and a large majority of Senegalese (80%) speak or understand it. A number of Senegalese who call themselves Wolof are actually not so by origin, but feel Wolof by language and culture.

Wolofization began before colonization, in a peaceful way, and afterwards spread to all ethnicities. Colonization probably favored, by reaction to assimilation, the expansion of the muslim religion and related Wolofization. Today, Wolof is tending more and more to reinforce its role as a vehicular language, notably with the development of private media (radio and television). The rapid increase in non-governmental radio constitutes a dynamic and efficient oral basis for the exceptional diffusion of Wolof first in urban areas and then nationwide. But the written language, including notes written by journalists and news presenters, is edited in French. Even if French is in practice the only medium of writing, Wolof has today positioned itself well before French on the linguistic landscape. For oral communication, it cannot be ignored in urban settings, while French is not indispensable.

If French finds itself today confined primarily to written use, to roles reserved for administrative language, even these formal roles are threatened since the oral practices that they claim to represent do not really exist other than in the form of French/Wolof code alternation (Ndao 1986, 2002) or as the "francénégalais" of intellectuals (Cissé 2005). Senegalese francophones who have French as a first

2. The last report of High Council on Francophonie provided numbers of francophones in Senegal from 1990: 10% real francophones, and 14% occasional francophones. We invite the reader to consult the very complete analysis of the linguistic situation in Senegal in Cissé (2005).

language are rare, and French is spoken little in family settings. To summarize, using the notions of Chaudenson, without however proceeding to measures related to the associated model (Chaudenson 2000), French has an elevated *status* and a restrained *corpus*, while Wolof has an elevated *corpus* and a restrained *status*, and the other languages have a slightly elevated *corpus* and a highly restrained *status*.

Yet the attitude of the Senegalese speaker with respect to the French language presents some ambiguities. He does not defend an endogenous i.e., Senegalese norm – his model of the language is French from metropolitan France, with references like Léopold Sédar Senghor or Abdou Diouf. At the same time, he claims a variety reflective of his own identity, as well as the right to reject certain hexagonal features, be they segments like [ʁ], phonological contractions like [ʃepa] (*je sais pas*), or lexical items like *vachement*. Indeed, while the perception of differences rests on just a few linguistic facts, it is at the same time highly ideologized, as Ndao (2000) shows. The language's mode of diffusion, as well as its functions related to institutions and to esthetic values, creates a conservative representation of the language, dependent on purism and schooling. N'Diaye-Corréard (2006) demonstrates, however, the existence of local lexical creativity.

Linguistic insecurity is an intense problem in Senegal, and it is generally tied to a homogenous representation of the language and the desire to master the variety of reference, with mastery perceived as unmet. The feeling of cultural identity in Senegal cannot weaken the feeling of linguistic insecurity tied to French, because belonging to Senegalese culture is symbolized by Wolof and not by French.

3. The first PFC survey in Senegal: PFC-SNA[3]

The PFC-SNA survey took place at the Université Cheikh Anta Diop (UCAD) at the beginning of November 2008. The investigators were three in number, two instructors in the phonetics laboratory (Gabriel Marie Guèye and Mame Thierno Cissé) and one from outside the university (Béatrice Akissi Boutin).[4] Subjects were recruited from acquaintances and from the family of one of the investigators. The scientific goal of the survey was known to the subjects, who came out of friendship, with their participation considered as a part of their social life. 18

3. The abbreviation follows the convention called for in Delais-Roussarie, Durand, Lyche, Meqqori & Tarrier (2002), where SN stands for Senegal, and A for the first survey in that country.

4. The survey and its management were carried out thanks to assistance from the University of Oslo (Département de littérature, études régionales et langues européennes), and CLLE – UMR 5263, Université Toulouse 2.

Table 1. Distribution of subjects from the first PFC survey in Senegal[5]

Category/Descriptor	#
Sex	
Men	6
Women	6
Age	
21 to 35	4
36 to 50	4
51 and older	4
Education	
BFEM	3
Bac to Bac + 2	4
Bac + 3 and more	5
Professional status	
Student	2
Worker (security guard, administrator, temporary secretary, social worker)	4
Mid-level professional (reporter, manager, midwife, attendance officer)	4
High-level professional (insurance agent, professor of philosophy)	2

subjects were interviewed, recruited according to the criteria of age, sex, level of education, and profession. Age groups were chosen with the help of sociolinguistic data from Senegal: 18 to 35 is the first age group, for whom the phonemic system can be considered at the same time consolidated and yet susceptible to further creativity; those in the 51 and over group are at the end of their professional careers and learned French just after independence; the 35 to 50 group represents an intermediate category.

Levels of education were first established on the basis of diplomas marking stages along the school curriculum: the CFEE (six years of school), the BFEM (four years of secondary education) and the baccalaureate degree. Nevertheless, no potential subjects at the CFEE level could carry on a conversation in French, which required us to limit our analysis to those subjects with at least the BFEM. Furthermore, given the intrinsic correlation between level of education and use of French, it seemed appropriate to us to make a distinction between those speakers in the first two years of university and those with three or more years of university. In effect, right after the baccalaureate, students are studying in a language that is still foreign to them and have little inclination to use French outside of university.

5. We are grateful to the 12 speakers who were willing, out of friendship, to be recorded and who have thus enabled us to more precisely describe the French spoken by the wolophones of Dakar.

The final number of speakers retained for the study was 12, which represents four hours of formal interviews, conducted by the least familiar interviewer, and three hours of free interviews, more informal and conducted by the most familiar interviewer. All of the read texts and five minutes from each interview were transcribed in standard orthographic transcription and coded for analysis.

4. French phonological inventory of wolophone speakers

Existing practical work on wolophone French phonology, such as the professional experience of teachers of orthoepy, reveals a certain influence of Wolof on French. The questions that we raise here relate to the reality of transfer of constraints from the Wolof system to French, and to the integration of specific French phonemes into the phonological competence of speakers. We use the term 'native language' for Wolof, because it is a fact, but we do not wish, by implied contrast, to idealize the notion of 'native francophone speaker' in the sense of 'proper use'. In a number of linguistic communities in which French is the first language, it has characteristics that distinguish it from FR (*français de référence* – see Chapter 1), and the vernacularization of French in African countries does not necessarily entail a closer approximization to FR (see e.g., Boutin & Turcsan 2009).

4.1 French vocalic system of wolophone speakers

The French vocalic system of speakers of Wolof presents few differences from that of FR. With respect to realization, one notes a difference in quality for certain oral and nasal vowels. With respect to constraints, one notes, for the mid vowels, the dominance of ATR vowel harmony over the LdP (*loi de position* – see Chapter 1). In fact Wolof vowel harmony (see Ka 1994), has an important influence on the French phonological system of wolophones.

4.1.1 *The high vowels* [i, y, u] *and the feature ATR*

The vowel system of Wolof, the native language of our subjects, possesses the feature ATR (Advanced Tongue Root). The vowels in this language fall into two harmony classes: +ATR vowels [i, iː, e, eː, ə,[6] u, uː, o, oː] realized with the root of the tongue advanced and characterized as *tense*; and –ATR vowels [ɛ, ɛː, a, aː,

6. This vowel is typically transcribed as [ə] in work focusing on Wolof. Our slightly different transcription, as [ɘ], is still compatible with McLaughlin's (2009) description of "a central schwa-like vowel". As this chapter is not about Wolof, we make no claims regarding the precise phonetic properties of its "schwa-like vowel". Our transcription here is chosen for consistency

ɔ, ɔː] realized with the root of the tongue retracted and characterized as *lax*. One remarks right away the absence in the latter class of the –ATR, lax vowels [ɪ, ɪː, ʊ, ʊː] corresponding to the +ATR, tense vowels [i, iː, u, uː].

All of the Wolof vowels are present in the French vowel system and one predicts that, with the exception of [y] (not found in Wolof, as discussed separately below), all of the French vowels will enter into the competence of Wolof speakers. The question of vowel tension arises as well, since the vowels [i, y, u] of FR can be realized as lax [ɪ, ʏ, ʊ] in closed syllables in certain varieties of French such as those in North America (see, among others, the contributions from that continent in this volume). We therefore examined the realizations of the French vowels produced by wolophone speakers to verify this prediction. We looked at the vowels [i, y, u] in open and closed syllables, as well as in stressed and unstressed ones, in order to determine the realization of the tenseness feature. In all contexts, the vowels [i, y, u] were realized without exception as tense, conforming to FR (examples with [y]: open stressed syllable, *prévue* [pre.vy]; open unstressed syllable, *usine* [y.zin]; closed stressed syllable, *commune* [kɔ.myn]; closed unstressed syllable, *multiplier* [myl.ti.pli.je].

We specifically checked the realization of [i, y, u] in words with surrounding –ATR vowels, where they are realized as tense and are not influenced by their neighbors. It is exceptional to hear the lax (–ATR) vowels [ɪ, ʏ, ʊ] that are observed in North American varieties (examples: *extraordinaire* [ɛkstraɔrdinɛr]; *manifestations* [manifɛstasjɔ̃]; *préfecture* [prefɛktyr]; *gouvernement* [guvɛrnəmã]).

One might assume that since the vowel [y] does not exist in the vowel system of Wolof, it would be perceived and realized by Wolof speakers as [i] or [u], the only high vowels in the source vowel system. Borrowings from Wolof into French support this hypothesis – in borrowings containing the vowel [y], it is integrated most often as [i], but there are words in which it is integrated as [u] and, in these cases, in a stable fashion. It is not possible at this time to establish with certainty what factors determine the preference for one vowel over the other, but assimilation with a nearby vowel undoubtedly plays a role in some cases, as the second and third examples in Table 2 show.

As we saw earlier, all instances of [y] were realized in our corpus, but the articulatory habits of speakers slightly affect the quality of this phoneme. In effect, vowels carrying the [–back] feature in Wolof also carry the feature [–round], and those carrying the [+back] feature also carry the feature [+round]. This results in the less rounded realization of [y] that we observe, since [+round] is not associated

only, to match the wolophone French vowel, described in detail below, which is based on acoustic analysis (albeit preliminary in nature) showing an F1 lower than is typical for IPA [ə].

Table 2. Integration of [y] in Wolof

Borrowed French word	Integration in Wolof as [i]	Integration in Wolof as [u]
pur [pyʁ]	[piːr]	
minute [minyt]	[minit]	
usine [yzin]	[isin]	
sucre [sykʁ]		[suːkər]
ceinture [sɛ̃tyʁ]		[sɛntuːr]

with the feature [–back] in the native language of our speakers. This phenomenon is more pronounced when [y] and [i] are in adjacent syllables.

Since the proximity of the two vowels in a sequence [y]–[i] or [i]–[y] can give rise to particular realizations, we focused our attention on the following words from the text: *usine* [yzin] and *circuler* [siʁkyle]. Speakers did realize a vowel [y] in these contexts. Only one speaker pronounced the word *circuler* as [syrkyle], a phenomenon similar to the pronunciation [myltyplije] for [myltiplije] observed elsewhere. Both cases result from assimilation, albeit of opposite directionality. We do not reject the possibility that this phenomenon stems also from the participant's preoccupation with the foreign vowel [y], to the point that it is realized earlier than planned. This situation is also reflected in written language, where one sees spelling errors of the type *<unitile> for *inutile* and *<fugure> for *figure*.

4.1.2 *Mid vowels*

The mid vowels will be examined in light of distributional constraints operating in FR, so as to highlight the unique characteristics of the French of wolophone speakers (henceforth FW).

Concerning the vowels [e, ɛ], it is without doubt in closed syllables that the difference from FR is most visible. Speakers of FR obey a distributional constraint according to which the vowel [ɛ] and not [e] is realized in a closed syllable. Thus, *liège* is pronounced [ljɛʒ], *miette* is pronounced [mjɛt] and *extraordinaire* is pronounced [ɛkstraɔrdinɛr]. In fact these three words were always pronounced by our speakers in accordance with the FR constraint. Nevertheless, we also found the realization of the mid-high vowel [e] in closed syllables in the following words:[7] *quatrième* [katrijem] (12/12, 100% in the read text); *quatrième* [katrijem] (9/12, 75% in the word list); *cinquième* [sɛ̃ŋkjem] (9/12, 75% in the word list); *treize* [trez] (6/12, 50% in the word list); *seize* realized as [sez] (6/12, 50% in the word list).

7. Other words like *même*, *thèse*, *chaise*, not all of which appear in our corpus, can be realized with a mid-high [e], i.e., [mem], [tez], [ʃez].

At this time we cannot provide an explanation for the pronunciation preferences, and the choices therefore seem rather arbitrary. It is difficult to attribute the cause to an influence of the written form, since in the ordinal numbers the pronunciation contradicts the spelling with <è>. Furthermore, while vowel harmony could possibly explain the raising of the vowel in the ordinal numbers, this explanation would not hold for the cardinal numbers. It is possible that the first linguistic models, a very mixed assortment because of the varied origins of the colony's francophones,[8] did not allow the first learners to perceive uniform boundaries for the mid vowels, nor to pinpoint a stable target for the realization of [ɛ] in closed syllables. In all cases, the realizations show that in a closed syllable, unlike in FR, one can find either the lower, more open vowel [ɛ] or the higher, more closed vowel [e]. The competence of the wolophone speaker obviously allows for either of the mid vowels in a closed syllable, which is not the case in most current varieties of hexagonal French. This is almost certainly due to the opposition of the two vowels in closed syllables in Wolof.

In open syllables, one finds the mid-high vowel [e] as well as the mid-low vowel [ɛ], but the behavior of these vowels in FW is particularly interesting inasmuch there is vowel harmony with respect to the feature +/–ATR within words. Basically, in a word with a +ATR vowel, the mid vowel will be realized as [e] and in a word with a –ATR vowel, the mid vowel will be realized as [ɛ]. This is shown, for stressed and unstressed open syllables, in Table 3.

The examples in Table 3 show that the process of harmony can be either left-to-right or right-to-left. This is an interesting fact given that ATR vowel harmony in Wolof proceeds only in a left-to-right direction.

Examples with competing triggers on either side of a mid front unrounded vowel do not suggest a default directionality. Examples from our corpus include *libération* [libɛrasjɔ̃], with apparent right-to-left harmony alongside *j'apprécie* [ʒapresi], with apparent left-to-right harmony, and highly similar *l'apprécier* [lapresje] with the opposite outcome. This is an intriguing situation, and the unexpected right-to-left directionality (not attributable to L1) may suggest at least the possibility of an interaction between French final accentuation and directionality of harmony (as discussed later, any accentuation that there is in Wolof is initial). Other factors may also intervene, including word length and even speaker attitudes toward the norm, which does not have ATR harmony. This is a question

8. Recent research on southern French tends to show that the LdP might be, in this variety, a 20th century response to contact with the pronunciation of FR, and that some instances of [e] in closed syllables existed in varieties of Occitan (personal communication with Jacques Durand).

Table 3. ATR vowel harmony with mid front unrounded vowels

	Written form	Phonetic transcription
[e] in a +ATR environment		
Stressed open syllable	*piquet*	[pike]
	piquais	[pike]
	beauté	[bote]
Unstressed open syllable	*découvrir*	[dekuvrir]
	église	[egliz]
[ɛ] in a –ATR environment		
Stressed open syllable	*escarpée*	[ɛskarpɛ]
	botté	[bɔtɛ]
Unstressed open syllable	*étape*	[ɛtap]
	protéger	[prɔtɛʒɛ]
	fêtard	[fɛtar]

that is certainly worthy of future scrutiny, but one which we are not able to address here.

In words containing more than one mid vowel, one observes variations in pronunciation, although vowel harmony is always maintained. Thus, *épée* and *épais* are both pronounced as either [epe] or [ɛpɛ]. An opposition between these two words can be made or not, but the quality of the first and second vowels will match. When an opposition is maintained we have [epe] versus [ɛpɛ] and when it is not maintained, we have either [epe] for both, or [ɛpɛ] for both. The words *côté* and *fêter* illustrate this phenomenon well. The realization of the <ô> of *côté* as [o] or [ɔ], goes hand in hand with the pronunciation of the final vowel as [e] or [ɛ], respectively, and likewise the realization of the <ê> of *fêter* as [e] or [ɛ], and the pronunciation of the final vowel, will match each other (examples: *côté* [kote] (7/12) vs. [kɔtɛ] (5/12); *fêter* [fete] (4/12) vs. [fɛtɛ] (8/12).

If we compare these results with the pronunciation of *fêtard*, realized by all speakers as [fɛtar] (see Table 3), we can already establish that the rule of vowel harmony takes priority over faithfulness to the root. It is true that it is difficult for a wolophone, whose language does not have variable roots, to incorporate the FR system of variable roots, which gives here either [fet-] or [fɛt-]. Nevertheless, we can ascertain that a +ATR vowel in an adjacent syllable entails a pronunciation [e] no matter what the spelling is and no matter what the syllabic configuration is.

The front rounded FR vowels [ø, œ], like [y], do not exist in the vowel system of our speakers' first language. For these two vowels, speakers who have not mastered the FR targets tend to realize a single central mid to mid-high, unrounded vowel which, because of the missing feature specification for rounding, is neither

Table 4. Generalizations on the distribution of specified [ə] in FW

Syllable type	Orthography	FR	FW
Stressed open syllable	*creux*	[kʁø]	[krə]
	milieu	[miljø]	[miljə]
Unstressed open syllable	*des jeunets*	[deʒønɛ]	[deʒəne]
	déjeuner	[deʒœne]	[deʒəne]
Stressed closed syllable	*creuse*	[kʁøz]	[krəz]
	feutre	[føtʁ]	[fətr]
	jeûne	[ʒøn]	[ʒən]
	jeune	[ʒœn]	[ʒən]

[œ] nor [ø].[9] Given this situation, we have chosen to transcribe this vowel with the IPA symbol for a mid-high, central unrounded vowel: [ə]. We wish to insist, however, on the highly variable realization of this vowel, which can even be perceived in some instances as [e] and, especially for speakers with more target-like pronunciation, as the prescribed rounded mid front vowels of FR. This vowel, highly characteristic of FW speech, is opposed to the schwa, an underspecified vowel, underlyingly void of features which has, however, surface realizations that may fall in the same phonetic space as [ə]. Of course the distinguishing characteristic of the schwa is that it can be left unrealized in certain contexts. Table 4 summarizes the distribution of [ø, œ] in FR versus specified [ə] in FW in stressed and unstressed open syllables, and in stressed closed syllables.

As a result of FW having a single vowel for the FR [ø-œ] opposition, there is no quality distinction between *jeune* and *jeûne*. A speaker may however effect a differentiation by means of increased duration for the realization of the mid-high vowel: *jeune* [ʒən] versus *jeûne* [ʒəːn].

Assuming a straighforward transfer from Wolof, the FW vowel /ə/ will have a positive value for the feature ATR, and this is supported by several harmony forms. Among these are [peʃər] for both *pécheur* and *pêcheur*, and [profesər] for *professeur* (for the normally expected quality of the first vowel of this last form, see the following paragraphs).

Realization of the vowels [o, ɔ] is, to a large extent, sensitive to the written form, contrary to the situation with [e, ɛ]. Etymology (by way of orthography) seems therefore to take precedence over ATR harmony, which is not, however, entirely neutralized. As in FR, FW allows for both vowels in open as well as closed syllables.

9. Our preliminary acoustic analysis reveals a lower F1 than for FR [ø] and [œ], suggesting a higher vowel, a higher F2 indicative of the lack of rounding, and a relatively high F3, correlated to the centralized articulation.

Table 5. The vowels [o ɔ]

Syllable type	Orthography	FR	FW
Stressed open syllable	*agneau*	[aɲo]	[aɲo]
	un gros	[gʁo]	[gro]
Unstressed open syllable	*botté*	[bɔte]	[bɔtɛ]
	côté	[kote]	[kote]
	beauté	[bote]	[boːte]
Stressed closed syllable	*roc*	[ʁɔk]	[rɔk]
	pomme	[pɔm]	[pɔm]
	rauque	[ʁoːk]	[roːk]
	paume	[poːm]	[poːm]
Unstressed closed syllable	*extraordinaire*	[ɛkstʁaɔʁdinɛʁ]	[ɛkstraɔrdinɛr]
	comme	[kɔm]	[kɔm]
	*notre**	[nɔtʁ]	[nɔtr]
	Observateur	[ɔbsɛʁvatœʁ]	[ɔbsɛrvatər]
	*autre**	[otʁ]	[otr]

* This word is in unstressed position when followed by a complement.

In a stressed open syllable, as in *agneau* or *un gros*, all speakers realized the vowel [o], so ATR harmony is without doubt responsible for *radio* being pronounced [raɟɔ] in the interview corpus, conforming to current usage. In an unstressed open syllable speakers realized [ɔ] except for with the spellings <au>, <eau>, <ô>. In these instances, they produce [o]. In a closed syllable, stressed or unstressed, all speakers produce the vowel [ɔ], unless the spelling is <au>. Other than for the spelling <ô>, for which, as we will see, there is no regular pronunciation in closed syllables, pronunciations are stable. These pronunciations are summarized in Table 5.

The difference in quality of the higher vowel is sometimes accompanied by a difference in length, giving [oː]. In open syllables, all speakers produce a clear distinction between *botté* [bɔtɛ] and *beauté* [boːte]. In closed syllables, speakers distinguish the minimal pairs *roc* [rɔk] / *rauque* [roːk] and *pomme* [pɔm] / *paume* [poːm] with the length difference [ɔ]/[oː], pertinent also in their native language (although not for marking accent, as seen in Section 6), as well as in most varieties of FR. In Wolof, the long higher vowel is also much more frequent than the corresponding short one.

The regularity in pronunciation observed for the spellings <au> and <eau> does not hold for the spelling <ô>. It is true that originally the circumflex accent in French indicated nothing with respect to degree of aperture, but marked a lengthening resulting from the loss of a following syllable-final consonant. The following numbers are representative of the distribution of [o ɔ] for the spelling

<ô>: *côte* [kot] (9/12) vs. [kɔt] (3/12); *cote* [kot] (7/12) vs. [kɔt] (5/12); *gnôle* [ɲɔl] (10/12) vs. [ɲol] (2/12).

4.1.3 *The vowel* [a]

The /a-ɑ/ opposition does not really exist in FW. In stressed and unstressed syllables, and in open and closed ones, speakers produce an [a] that is neither anterior nor posterior, but rather central. Nine speakers out of 12 pronounced *mal, malle* and *mâle* in the same way, as [mal]. The same holds for the pair *patte/pâte*. This neutralization is therefore identical to the one we find today in FR, the distinction holding only for certain older speakers, as in that variety. We noted two cases in which a distinction was made by way of lengthening of the vowel [aː], with quality remaining constant, and one case in which a distinction was made using both quality and duration [ɑː], this by the oldest subject.

4.1.4 *Nasal vowels*

Despite the fact that nasal vowels do not exist in Wolof, speakers do make a distinction between the four nasal vowels of FR. We must note the difference in pronunciation for the FR [œ̃] and [ɑ̃] realized respectively as [ə̃] and [ã] in FW, by simple nasalization of the oral vowels [ə] and [a]. The opposition *brun/brin*, reported to be in on the verge of disappearing in numerous "northern" hexagonal dialects, is well maintained: *brin* [brɛ̃] ~ *brun* [brə̃].

4.1.5 *Glides* [j ɥ w]

The three glides are well established in the phonemic inventory of our speakers even though we should note on the one hand some allophonic phenomena, on the other hand reduction versus dieresis (see 5.2).

The glide [ɥ] is realized in FW: *huit* is normally pronounced [ɥit], and *juin* is pronounced [ʒɥɛ̃]. The peculiarity with [ɥ] in our corpus is that it substitutes for [w] in *Louis* (*Garret*) [lɥi] (11/12) in the reading, and in *Saint Louis* [sɛ̃lɥi] (10/10) in the interview. The explanation is certainly related to the fact that Wolof has only two phonological glides, /w/ and /j/, with [ɥ] occurring as an allophone of /w/ before front vowels. [ɥ] tends to remain an allophone of /w/ in FW.

Other instances of lexical confusion are probably due to adjacent vowels. One speaker realizes *miette* and *muette* as [mjɛt], and another realizes *muette* and *mouette* as [mwɛt].

These phenomena are related to those concerning the corresponding vowels [i, y, u] (see 4.1.1).

4.1.6 *Vowel inventory of FW*

Table 6. Oral vowels and glides

Oral	Front		Central	Back
	unrounded	rounded		
high	i / j	y / ɥ		u / w
mid-high	e		ə	o
mid-low	ɛ			ɔ
low			a	

Table 7. Nasal vowels

Nasal	Front		Central	Back
	unrounded	rounded		
high				
mid-high			ə̃	o
mid-low	ɛ̃			ɔ̃
low			ã	

To summarize, FW differs very little from FR with respect to its vowel inventory, including for those phonemes specific to French. The particularities that there are in the system stem from the distributional constraints operative in Wolof.

4.2 Consonants

Discussion of the consonants of FW will benefit from a bipartite division between stops on the one hand and continuants on the other. Stops have the peculiarity of being realized as unreleased in final position. Moreover, their inventory includes three more phonemes than that of FR.

4.2.1 *Stop consonants*

We will first examine the behavior of stops common to French and the native language of our speakers, before turning to the three additional consonants of FW.

4.2.1.1 *Stops common to FR and FW*. The voiceless, voiced, and nasal stops of French [p, b, m, t, d, n, ɲ, k, g, ŋ] appear in all positions in FW, word-initial (except for [ŋ]), word-internal and word-final. In word-final position, they are pronounced in FR with a clear release. Inside words, when an underlyingly voiced stop closes a syllable, it is often devoiced. In Wolof, syllable structure is generally

of the form CVC and the same stop consonants exist in the same positions. In absolute final position, consonants are realized as unreleased and the voicing opposition is neutralized (Cissé 2006). In FW, the release burst of voiceless consonants is absent in word-final position and this peculiarity has certain consequences for the lexicon. In effect, with the final consonant becoming less audible, the opposition between (*tu me*) *mens* and (*tu me*) *manques* for example, is less distinct, or even altogether missing.

The lack of release of final consonants presents certain peculiarities according to the type of consonant. Final oral voiceless stops are realized by speakers with or without release. For example, *slip* (FR [slip]) is pronounced [slipʰ] or [slipˀ]; *patte* (FR [pat]) is pronounced [patʰ] or [patˀ]; and *roc* (FR [ʁɔk]) is pronounced [rɔkʰ] or [rɔkˀ]. Voiced stops can be realized as unreleased and even voiceless (but released and unaspirated) in final position and this phenomenon can be linked to their pronunciation in the same position in Wolof, so that *club* (FR [klœb]) is pronounced [kləbˀ] or [kləp]; *arabe* (FR [aʁab]) is pronounced [arabˀ] or [arap]; *habitude* (FR [abityd]) is pronounced [abitydˀ] or [abityt]; and *fatigue* (FR [fatig]) is pronounced [fatigˀ] or [fatik]. Nasal stops can also be realized as unreleased by wolophone speakers: *pomme* (FR [pɔm]) is pronounced [pɔmˀ] or [pɔmᵊ]; *jeune* (FR [ʒœn]) is pronounced [ʒənˀ] or [ʒənᵊ]; and *compagne* (FR [kɔ̃paɲ]) is pronounced [kɔ̃paɲˀ] or [kɔ̃paɲᵊ].

The devoicing of voiced stops also occurs inside words when the stop closes a syllable. Thus, *subjonctif* (FR [sybʒɔ̃ktif]) is pronounced [sypʒɔ̃ktif]; *adjectif* (FR [adʒɛktif]) is pronounced [atʒɛktif]; *examen* (FR [ɛgzamɛ̃]) is pronounced [ɛkzamɛ̃].

4.2.1.2 *Stops specific to FW*. There are three additional consonants in the stop inventory of FW. These are transfers from Wolof and are included in the inventory shown in Table 8: two stops [c, ɟ] that fill out the inventory of dorso-palatals, and the glottal stop.

Speakers produce vowel-initial words with the glottal stop [ʔ], which is not simply an occasional or contextually triggered realization, but one which reflects a requirement, respected across the board, that word-initial onsets be filled. This has consequences for vowel sequences, and for the linking of liaison consonants. Only speakers with the most frequent use of French, which corresponds in Senegal to a high level of education, are likely to realize liaison consonants. For these reasons, and given its status in Wolof, we have chosen to include the glottal stop in the FW inventory of stops shown below in Table 8. The examples in (1) illustrate the high proportion of realizations with [ʔ] as well as the absence of linking phenomena that goes with it.

Table 8. Stop inventory

	Bilabial	(Apico-) alveolar	Palatal	Velar	Glottal
stops	p / b	t / d	c / ɟ	k / g	ʔ
nasals	m	n	ɲ	ŋ	

(1) The glottal stop [ʔ]

agneau	[ʔa.ɲo]	(12/12)
fou à lier	[fu.ʔa.lje]	(9/12)
une explosion	[yn.ʔɛks.plɔ.zjɔ̃]	(8/12)
une impasse	[yn.ʔɛ̃.pas]	(8/12)
une étape	[yn.ʔɛ.tap̚]	(7/12)
il appelle	[il.ʔa.pɛl]	(7/12)
très inquiet	[trɛ.ʔɛ̃kje]	(3/12)
grand émoi	[ɡrã.ʔe.mwa]	(2/12)
grand honneur	[ɡrã.ʔo.nər]	(2/12)

The two dorso-palatal stops [c, ɟ] occur in Wolof proper nouns and in certain French words. The voiced dorso-palatal stop occurs in our corpus in *radio*, pronounced [raɟɔ] (see 4.1.2), and *étudiant* [etyɟã], but not in *dialecte* [djalɛkt], and *dialogue* [djalɔɡ]. The voiceless dorso-palatal stop appears in our corpus in *entier*, *soutien*, *tien(s/t)*, *maintien*, all with [ce] or [cɛ̃], but not in *métier* or *chrétien*, with [tje] and [tjɛ̃] respectively, where the apico-alveolar [t] is nevertheless followed by the same vowels. Further study should be conducted to determine what factors impinge on the distribution of [tj/c] and [dj/ɟ], but we are inclined here to include these two stops in the inventory of FW.

4.2.2 *Continuants*

4.2.2.1 *Fricatives* [f, v, s, z, ʃ, ʒ]. The FR fricatives [f, v, s, z, ʃ, ʒ] are all mostly realized by our speakers. We should emphasize that the consonants [v, z, ʃ, ʒ] do not exist in Wolof, which possesses only the three voiceless fricatives [f, s, x]. Nevertheless, fricatives are the source of few errors: [v] can sometimes be realized as [w] or [f], and [z, ʃ, ʒ] can be realized as [s]. The glottal fricative [h] can begin certain words beginning with orthographic, so-called aspirate *h*, as in *hasard*, but one cannot consider [h] as phonologically pertinent. This pronunciation for these words is without doubt more frequent in other African countries of the subcontinent like Mali, Burkina Faso or the Ivory Coast. We do not advocate for the inclusion of [h] in the consonant inventory of FW, contrary to the case for [ʔ] (see 4.2.1.2). Examples showing the weak but variable production of [h] are *le hasard* (from the reading) realized as [ləʔazar] (6/12), [ləhazar] (3/12) and [ləazaʁ] (3/12); and *par hasard* (in spontaneous conversation) realized as [paraza:] (1).

Table 9. Continuant inventory

	Labio-dental	(Apico-) alveolar	(Pre-dorso-) alveolar	(Apico-) alveo-palatal
fricatives	f / v		s / z	ʃ / ʒ
lateral		l		
rhotic (trilled)		r		

4.2.2.2 *Liquids.* The rhotic has several variants: an apico-alveolar trill [r], a dorso-uvular trill [ʀ], and an untrilled dorso-uvular approximant. There exists, however, a default realization [r] in the sense of a most representative allophone, with the widest distribution. Gorée Island is an exception, with the uvular (called Gorean) variant [ʀ], generalized there. The presence of the uvular consonant in discourse is emblematic of linguistic imitation: those who realize it are considered assimilated.

The phoneme /l/ is attested in all positions. Here we will simply point out its devoicing, or deletion, when preceded by a voiceless consonant in a consonant group. Thus *peuple* is realized as [pəpl̥] or [pəp].

5. Phonotactics and syllabification

The French syllable can have pre- or post-nuclear margins made up of several consonants. This already poses certain acquisition problems for many monolingual speakers of French and the simplification of consonant groups is a frequent phenomenon, the full scope of which is demonstrated by the PFC corpus. Added to the markedness issues internal to French are, for wolophone speakers of French as a second language, those stemming from their native speech habits.[10] For the most part, Wolof syllables have a CVC structure, the language allowing only one onset consonant and one coda consonant, with the onset position being obligatorily filled by a consonant.

In FW, three types of sequences in particular must be weighed against the Wolof constraints. These are groups of consonants at the beginning and ending of words, or sequences of three or more consonants inside words; groups consisting of a glide plus one or two vowels; and groups resulting from the non-realization of schwa or other vowels. All of these affect prosody because of the resyllabification

10. The coding of schwa allows us to deal indirectly with all the final consonant groups and internal groups followed by schwa, in spontaneous speech and in read speech. The additional systematic observation of words in the read speech corpus allows us to effectively represent the full range of consonant groups produced by our speakers.

that results from them. Moreover, how these sequences are produced depends on the level of education and linguistic profile of the speaker: closer to FR versus closer to Wolof.

5.1 Consonant groups

In our FW corpus, consonant groups are mostly maintained, even though initial and final clusters do not occur in Wolof. Their production is relatively unaffected by the types of general reductions seen in other varieties (Boutin & Turcsan 2009; Côté 2004). We observe a certain range in the treatment of sequences depending on the type of consonants involved and according to their syllabic position, initial or final: epentheses, reductions and assimilation in voicing and nasality. In addition, certain behaviors can be attributed more to a generalization of the norm than to phonological factors.

5.1.1 *Epenthetic vowels*

In the realization of consonant groups in initial, or strong position, a vowel can be introduced before the first consonant, thus protecting the articulation of each by making of one complex margin two simple ones. This is done by one speaker in the realization of *stupide* as [ɛstypid]. Widely observed also in FW is the insertion of a vowel between two onset consonants. Thus *place* is pronounced [palas], and *pneu* is pronounced [pənə] by certain speakers. In both cases, epenthesis results in a change in syllable structure.

5.1.2 *Consonant deletion*

Certain initial consonant groups, notably [ps], undergo deletion of one of the consonants, as at the beginning of the word *psychologique*, pronounced as [sikoloʒik] (2), or as [psikoloʒik] (1).

Inside words, [k] can be lost in initial consonant groups of the shape [ɛks] + C (*expliquer*, *exprès*, *excuser*…) but no more than in numerous other varieties of French (1/15 occurrences in the interview portions of our corpus).

In final, or weak position, we see a scale of reduction according to the type of consonant involved. It is the stop + stop type that shows the most reductions, with the second stop being present or absent in similar proportions. In stop + liquid sequences, the liquid is usually realized, but may also be lost. Sibilant + stop groups are usually the most resistant to reduction and the final stop is clearly realized. This is illustrated in Table 10.

Table 10. Scale of simplifications in final consonant groups

Stop + stop	Stop + liquid	Sibilant + stop
intact [ɛ̃tak] (6/12)	peuple [pəp] (2/12)	manifestent [manifɛs] (1/12)
contact [kɔ̃tak] (6/12)	articles [artik] (1/12)	activistes [aktivis] (1/12)
infect [ɛ̃fɛk] (3/12)	membre [mãb] (6/12)	risquent [ris] (1/12)

Quite a different story is the loss of [t] inside words with <-tion> as in *question* [kɛsjɔ̃] (7/7), and *gestion* [ʒɛsjɔ̃] (2/2), present in the corpus, or *combustion* [kɔ̃mbysjɔ̃]. In these cases, we cannot dismiss the hypothesis of a possible generalization of the standard pronunciation [sjɔ̃] of the spelling <-tion>, here even after an orthographic <s>. This brings about a change in the syllable structure of these words.

All these realizations, and their relative frequencies of occurrence, diverge little from what we observe in hexagonal varieties of French. While we cannot attribute all of the observed phenomena to the influence of the first language, it is certain that wolophone speakers' reticence with respect to linking words and pronouncing final schwas is in part responsible for their treatment of initial consonant groups.

5.1.3 *Assimilations*

Consonant groups are also the locus of assimilations, notably with respect to voicing and nasality, but also palatalization.

Regressive voicing assimilation, observed inside words in FW as in FR, does not occur at word boundaries for the groups [pd, td, kb, kv, sd, ʃd, sl] in FW.

Inside words, it is worth pointing out that 10/12 speakers realize *socialisme* [sɔsjalizm], with complete voicing assimilation of [s] to the consonant [m]. If in the word *observateur* [ɔpsɛrvatər], we note a total devoicing of [b], realized with the force of a [p], the word *médecin* [mɛd̥sɛ̃] is pronounced with a [d̥] that is clearly, but not entirely, devoiced.

Nasal assimilations are, without doubt, more specific to FW. Wolof has four prenasalized stops: [mb, nd, ɲɟ, ŋg]. It is unsurprising then, that a FR voiced oral stop may be realized as prenasalized in FW when it is preceded by a nasal vowel or by one of the nasal consonants.[11] Insertion of the prenasalization can provoke a partial denasalization of the nasal vowel. Examples of prenasalized stops are given in (2).

11. We have chosen not to list prenasalized consonants in the inventory of stops in Table 8 since, besides never constituting the sole point of discrimination between two words, they always result from assimilation.

(2) Prenasalized stops in FW

en bas	[ã.mba]
tendance	[tã.ndãs]
répondons	[rɛ.pɔ̃.ndɔ̃]
indiqueraient	[ɛ̃.ndi.kə.re]
lundi	[lɔ̃.ndi]
langue	[lãŋg]

These examples are based on the auditory impressions of the two authors (first and last listed) who are accustomed to hearing prenasalized stops in Wolof. Acoustic justification for prenasalized stops (here, for their syllabification as onsets in all but the last example) is notoriously difficult, and Maddieson (1989) has argued that phonological behavior may be a more important diagnostic than phonetic profile. But in an L2 situation, these phonetically transferred segments are trapped in a phonological system in which they do not properly belong, rendering such a diagnostic rather difficult. Nevertheless, the partial denasalization of the preceding vowel referred to above, absent in nasal vowel + voiceless stop sequences, does provide one behavioral indicator for a syllabification that excludes the nasal murmur from the rhyme constituent. Consulting speakers' intuitions regarding syllabification would likely provide misleading results as they are surely aware that French does not have prenasalized stops.

Although a full phonetic justification for prenasalized stops syllabified as onsets would lead us too far afield, we did measure some perceived prenasalized stops taken from the reading of the text by snarg1: *te**nd**ance*, *répo**nd**ons*, *profo**nd**e*, and *i**nd**iqueraient*. These were compared to final nasals from the same reading: *commu**n**e* (+ pause), *usi**n**e* (+ pause), *mê**m**e villes*, and *qui mè**n**e* (+ pause). For each token, the nasal portion of the signal was measured along with the preceding vowel and then as a portion of that vowel + nasal sequence (the would-be rhyme in case of syllabification as a coda). The final (coda) nasals constituted between 47% and 61% of the vowel + nasal sequences (i.e., in these cases, rhymes), whereas the nasal portion of perceived prenasalized stops constituted only between 41% and 44% of the vowel + nasal sequences. Although these few measurements cannot be considered as definitive proof for prenasalized stops syllabified as onsets, the difference in relative length of the nasal segment with respect to the preceding vowel is certainly compatible with our claim.

A second phenomenon of denasalization affects certain nasal vowels preceded or followed by nasal consonants in very frequent words like *comment* [kɔma], *grand-mère* [gramɛr], and *quand même* [kamɛm].

Another phenomenon that is attributable to assimilation is the palatalization of [s] to [ʃ] when it is preceded by the palatal glide [j]. We see this in *vérifications*

[verifikaʃjɔ̃] (6/12); *réaction* [rɛakʃjɔ̃] (5/12); *élections* [elɛkʃjɔ̃] (3/12); and *manifestations* [manifɛstaʃjɔ̃] (3/12).

5.2 Vocalic sequences with glides

We saw in 4.2.1.2 that in FW, words have a tendency to begin with [ʔ] if no consonant is present in the corresponding lexical entry in FR. Another particularity, also tied to the onset constraint in Wolof, happens inside words with sequences formed by a glide and one or more vowels.

Phenomena concerning the loss of glides are without a doubt related to difficulties in the phonological treatment of these segments, seen in 4.1.5. Speakers sometimes fail to realize [ɥ], especially when it is followed by the vowel [i]. *Depuis* is pronounced as [dəpi], and *ensuite* as [ãsit]. Sometimes the glide [w] undergoes the same deletion and is not realized, for example, in *voyager* [vɔjaʒɛ], and *soixante* [sɔsãt].

Cases of dieresis are also relevant to the present discussion, where the glides [j] and [w] are inserted depending on whether the preceding vowel is anterior or posterior, and an additional glide-initial syllable is formed. Relevant examples are: *nier* [nije] (6/12); *reliure* [rəlijyr] (6/12); *influence* [ɛ̃flyjãs] (2/12); *vouer* [vuwe] (9/12) and *trouer* [truwe] (5/12).

Two vowels in contact in FW gives rise to the production of a supporting segment, either [w] (for back vowels) or [j] (for front vowels), or [ʔ] or [h] if an orthographic <h> is present, as we saw earlier (4.2.2.1) with *hasard*. The syllable structure of Wolof explains these phenomena, as it does not permit vowels in hiatus. Also relevant is the orthography of French, to which phonological representations are tied. These linguistic behaviors are perceived as flawed with respect to the model of French in Senegal.

5.3 Treatment of schwa and unstressed vowels

5.3.1 *Schwa*

The treatment of schwa is of sociolinguistic import in the sense that it is an indicator of mastery of FR. Indeed, the variation with respect to schwa that we observe in the corpus differs from that observed in FR, in terms of the relevance of word position and, in the case of internal schwa, word-dependent lexical specification. Our study of schwa rests on the coding of 5,518 potential occurrences of schwa, 2,312 from the reading text and 3,206 from spontaneous speech.

Final schwa is pronounced at a rate of only 5.5%, with no significant difference between reading and spontaneous speech. In monosyllables, we see a slight

decrease in spontaneous speech compared to reading, with rates of 99.5% (497/499) and 86.3% (635/736) respectively.

In initial syllables, schwa is realized at 100% in reading (50/50) and at 95.5% (101/106) in spontaneous speech. However, out of the five occurrences of unrealized schwa, four concern the word *petit* (absent from the reading text), which demonstrates the importance of lexical frequency.

In internal syllables, we see few variations for a given word, but rather a variation between words. Thus, in the reading, of the four words containing an internal schwa, it is always realized in *indiquerait* and *gouvernement* and it never is in *détachement*. Only *bêtement* is (slightly) variable: it is realized by two speakers out of 12. Analysis of the interviews confirms these regularities, apparently related to lexical representations. Out of 112 occurrences (not including the words *parce que, est-ce que*), 41% of internal schwas were realized. Out of 44 occurrences of unrealized internal schwa, 37 are followed by *-ment* (adverbs and nouns), such as *certainement*, *vêtement*, etc. Out of 31 occurrences of internal schwas that are realized, ten involved verbs such as *devenir, recevons, donnerai*, and *revenir*. Moreover, no internal schwa in a verb is omitted in our corpus, no matter the preceding or following context.

Our findings suggest that schwa may not be listed as a variable phoneme in the lexicon, except in certain cases far less numerous than in FR. It is most often the fully specified vowel [ə] that we saw in 4.1.2. Positional factors are relevant, but for internal schwas, lexical ones as well. Thus monosyllables with [ə], and initial and internal syllables with [ə] in certain polysyllabic words may consist of a syllable nucleus, while other polysyllabic words might not have an underlying vowel. We do not have sufficient data to explain the difference between these types of words. As for word-final position, we can consider that it is one that is basically consonantal.

5.3.2 *Reduction and loss of* [i] *in polysyllabic words*

In the realization of a polysyllabic word, we see a shortening in the duration of the vowel [i] when it is in the second or third syllable in the word, and when the initial stress pattern characteristic of Wolof is implemented in production. We do not have representative measurements at this time, but the phenomenon is a well known and salient aspect of Wolof: syllables following the tonic initial syllable can undergo reduction or even syncope (as one might expect, this phenomenon also affects schwa in this position, as well as, to a lesser extent, the other high vowel [u]). Examples illustrating variable reduction and deletion of [i] after a stressed syllable are: *officielles* [ɔ.fi.ˈsjɛl] (9/12) vs. [ˈɔf.sjɛl] (3/12); *politique* [pɔ.li.ˈtik] (7/12) vs. [ˈpɔ.lĭ.tik] (5/12); *manifestations* [ma.ni.fɛs.ta.ˈsjɔ̃] (5/12) vs.

[ˈma.nĭ.fɛs.ta.sjɔ̃][12] (7/12); *vérifications* [ve.ri.fi.ka.ˈsjɔ̃] (5/12) vs. [ˈve.rĭ.fi.ka.sjɔ̃] (4/12) and [ˈver.fi.ka.sjɔ̃] (3/12).

We are lacking sufficient data to determine the relevance of the consonant that follows [i]. More study on this question is called for, along the lines of research on the same phenomenon in Wolof (Cissé 2006). When [i] is deleted, this brings about a reduction in the number of syllables in the word and a process of resyllabification. Speakers' ease in pronouncing words with the resulting syllable structure is explained by the predominant CVC syllable structure of Wolof.

5.4 Liaison

With respect to liaison, other than in cases in which liaison is not realized and glottal stop appears (4.2.1.2), the French spoken in Senegal presents few peculiarities compared with the general situation in contemporary French (Durand & Lyche 2008; Bordal & Lyche 2008). We coded 417 potential liaisons in reading and 721 in spontaneous speech, for a total of 1138.

Liaison is most often realized in monosyllables: 73.75% (208/282) in reading and 63.71% (381/598) in spontaneous speech. Liaison after a verbal clitic or a determiner (*en, on, un, des, les, vous*, etc.) is always realized. Liaison with the prepositions *dans* and *chez* is realized at 100% in our corpus (22/22). With respect to verbs, the most relevant monosyllable is *est*: the liaison consonant [t] is pronounced 50% of the time (13/25) in reading, but only 10.6% of the time (8/75) in spontaneous speech. The sequence *suis allé* is used by three speakers in conversation. Two of those make a liaison (6 occurrences) and the third does not (2 occurrences). Bordal & Lyche (2008) have already observed a certain fixed behavior of this form in other African countries, although a clear pattern of liaison production in *être – aller* has yet to be discerned. We have no occurrence of other forms of *aller* in a compound tense. No liaison is produced with *sont* (6 occurrences, in other liaison contexts). Examples demonstrating variable liaison with *être* in spontaneous discourse are shown in (3)

(3) Variable liaison with *être* in spontaneous discourse

si on est en train de recruter	[siɔ̃neʔãtʁɛ̃dəʁəkʁyte]
waw[13] *mon père il est en vie*	[wawmɔ̃pɛrilɛãvi]
cette annulation est [t]*à l'origine*	[sɛtanylaʃɔ̃ɛtalɔʒin]
waw je suis [z]*allé aussi à la Mecque*	[wawʒəsɥizaleosialamɛk]

12. We are not concerned here with the type of variation shown in 5.1.3, just as we were not concerned there with the realization or not of /i/.

13. *Waw* (Wolof): 'oui'.

bon je suis allée faire une formation	[bɔ̃ʒəsɥialefɛʁʔynfɔʁmasjɔ̃]
Mes parents sont originaires de Mekhé	[meparãsɔ̃oriʒinɛrdəmeke]
C'était en soixante douze	[seteãsɔsãtduz]

In polysyllables, liaison is normally made after the determiners *quelques* ([z]*expressions,* [z]*années*), *certain* ([n]*âge,* [n]*état*), *aucun* ([n]*impact,* [n]*investissement*), which in this variety are the only words to reliably trigger liaison, in spontaneous speech as in reading. Liaison is variable between a noun and a following adjective in reading (*pâtes* [z]*italiennes* (2/10 occurrences), *circuits habituels* (8/12 occurrences) and *visites* [z]*officielles* (8/12 occurrences)).

We have seven occurrences of the environment plural noun + adjective in spontaneous production, five with liaison with [z] (*matières* ([z]*orales/écrites*) (three from the same speaker), *différentes* [z]*explosions*, *dernières* [z]*élections*, and two without liaison (*femmes enceintes* and *étudiants étrangers*).

Liaison is never made after an imperfect or conditional verbal ending *-ais* (0/10 occurrences), *-ait* (0/20 occurrences), or *-aient* (0/4 occurrences).

For most speakers, when liaison is not realized, a vowel-initial word begins with a glottal stop, as we saw in 4.2.1.2. Enchaînement is realized only by certain speakers with a higher level of education and/or immersed in an international French linguistic environment.

These results from FW confirm tendencies observed in FR. Inside the prosodic word (determiner – noun and clitic – verb), whether Word 1 is mono- or polysyllabic, liaison is categorical. Liaison is variable between two words (auxiliary – verb and adjective – noun) and depends mostly on extralinguistic factors. These aspects of liaison, characteristic of speakers of Wolof, correspond to what we would have expected given attitudes toward French in Senegal: liaison tends to be realized according to the model of standard French, which reflects the ideal of conformity to the current norm, yet a great deal of variation across speakers is observed.

6. Accentuation

The Senegalese accent in French, and particularly the Wolof one, is recognizable in Africa (Bauvois 1997; Boula & Boutin 2011). Suprasegmental features especially allow for this identification but segmental features are also responsible, notably the quality of [ə] (4.1.2) and the nasal vowels (4.1.4).

As before, we will consider the hypothesis that certain accentual phenomena can be explained by a transfer of prosodic patterns from Wolof. With respect to intonation, a range of productions in Senegal can be heard, from having all of

the "reference book" accentual features of French, as found in corrective prosody manuals, to having all of the Wolof ones carried into French. Besides level of education, profession is also a major factor. The international access that it offers (if it does), in particular, is key. Among the 12 participants in the survey, two female speakers possess a French (FR) intonation, one of them retaining a prosodic competence in FW according to the situation. One is a professor of philosophy often called to international events, and the other is a manager in an international call center, where a "perfect" French is demanded.

French, in turn, influences Wolof, which adopts French intonation contours when pronounced, for example, by certain television presenters. The fact that Wolof is not a tone language no doubt facilitates implementation of the "French" final intonation described in work like Di Cristo (1999) and Astésano (2001).

The principal distinction between FR and FW is the domain for stress assignment. While in FR the relevant domain is the accentual group, in FW it is the word. In addition, the features relevant to accentuation are not the same in FR and FW. In FR, final stress is marked principally by an increase in duration, intensity being relatively unaffected. This increase in duration, accompanied by a rising or falling glissando with a sharp slope, falls on the last syllable of the rhythmic unit, which usually corresponds to a syntagmatic unit.

In Wolof, stress is marked essentially by intensity and it is defined at the word level, with the increase in intensity affecting the first syllable of the prosodic word. While intonational contours are generally relatively flat, a peak can sometimes be found on the first or second syllable in interrogatives and certain simple declaratives, giving a HL pattern (Rialland & Robert 2001) that is basically the opposite of the FR pattern (the fewer semitones in Wolof aside). Duration has a distinctive lexical function in Wolof, as opposed to the purely prosodic function it has in FR. Given the hierarchical principal according to which a lexical function has priority over a prosodic one, the Wolof speaker has a certain reticence to use duration in the same way as the FR speaker, to mark the French final accent. In FW, duration can also vary according to other factors. Thus, vowels can be very short (like /i/ and /ə/, see 5.3), short or long depending on lengthening consonants (as in numerous languages), or depending on an overriding opposition /o-ɔ/ (see 4.1.2).

Rhythm specific to FW results, then, from these two factors: a dynamic accent that falls on the first syllable of the word, and its realization through a peak in intensity, sometimes accompanied by an intonational peak. A pattern specific to FW was brought to light by Boula & Boutin (2011) who measured the difference in fundamental frequency between initial and final syllable nuclei in the four words in the sequences "inconnue et tranquille" et "bataille politique" read by four speakers. While speakers from other African countries read these words with a rising melody, Senegalese (Wolof) speakers have a falling melody, with an

average difference in these four words of 1.7 semitones. Further study is required to verify the scope of this melodic pattern, but it is likely that it is determined by rule, and that it represents a partial transfer from Wolof.

Rhythm also depends on several phenomena already discussed: the treatment of initial vowels (4.2.1.2), final consonants (4.2.1.1) and consonant groups (5.1.3).

7. Conclusion

We have seen in this chapter that FW, the most important variety of French spoken in Senegal, is distinct from FR in several important ways, most attributable to the speakers' L1, Wolof. Salient differences include, in the vocalic system, the realization of the series of front rounded vowels, absent in Wolof; and the distribution and realization of mid vowels. In the consonant system, differences from FR concern the stop inventory (including palatal and glottal stops, present in Wolof) and the phonetic implementation of final stops; as well as the realization of the rhotic, as in so many varieties of French. Salient differences exist in terms of phonotactics and syllable structure as well, including epenthesis and deletion to avoid consonant clusters and assimilation in consonant sequences (the latter producing interesting surface structures like pre-nasalized stops); glide deletion and glide insertion to avoid surface CGV and vowel sequences, respectively; and variable deletion of [i] as well as schwa, with identity of the lexical item a seemingly overriding factor with respect to the latter. In terms of liaison, salient differences with FR include the use of glottal stop when liaison is not realized, and the existence of only a handful of prenominal adjectives that reliably trigger the process. In other respects, the general patterning of liaison is not remarkably distinct. Finally, in terms of accentuation, the principle distinctions between the two varieties are the domain and location of stress assignment, which are, in FW, the word and the initial syllable, respectively; and the predominance in this variety of intensity, rather than duration, as the marker of stress. A follow-up to our study could compare FW with the French of other, non-wolophone Senegalese speakers in order to verify those characteristics of FW attributable to Wolof as a native language, and those possibly contributing to the formation of a "Senegalese" accent.

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CHAPTER 4

The phonological characteristics of French in Bamako, Mali

A sociolinguistic approach

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1. Introduction

In this chapter we will examine the variety of French spoken in Mali's capital Bamako. Though French in Mali is no-one's first language (L1), it is the country's official language and main language of instruction. This status as second language (L2) (in the sense Cuq 1991 gives this term),[2] distinguishes it from other foreign languages (cf. the dichotomy *français langue seconde* (FLS) / *français langue étrangère* (FLE)). Bamako is, like most African capitals, an ethnic and linguistic melting pot (Calvet 1994), where the official language coexists with a number of regional and local languages. Our corpus reflects this multilingualism, with five L1s represented. An examination of the phonological characteristics of French in Bamako must therefore take into consideration the possible impact of L1 on our informants' French pronunciation. Certain extralinguistic factors, which are particularly important given the sociolinguistic context of our study (see Skattum 2012), will be taken into account as well. Special attention will be given to

1. We are grateful to Guri Bordal and Doug Walker for their comments on an earlier version of the paper.

2. "Le français langue seconde […] se distingue des autres langues étrangères éventuellement présentes sur ces aires par ses valeurs statutaires, soit juridiquement soit socialement, soit les deux et par le degré d'appropriation que la communauté qui l'utilise s'est octroyé ou revendique. Cette communauté est bi-ou plurilingue. La plupart de ses membres le sont aussi et le français joue dans leur développement psychologique, cognitif et informatif, conjointement avec une ou plusieurs autres langues, un rôle privilégié" (Cuq 1991: 139).

deviations from *le français de référence* (FR) (see Chapter 1) that correspond to regional or pan African tendencies.

We will first give a brief description of the country (Section 2), followed by an outline of the sociolinguistic situation (Section 3) and the methods of data collection (Section 4). The phonemic inventory is studied in Section 5, followed in Sections 6 and 7 by an analysis of schwa and liaison respectively. Our conclusion (Section 8) will return to some of the issues sketched above.

2. Mali

Mali is a landlocked country bordering the Ivory Coast and Guinea to the south, Senegal to the west, Mauritania and Algeria to the north, and Niger and Burkina Faso to the east. It is one of Africa's largest countries, but with only 3.76% of arable land, the Sahara desert occupying the north and the semi-desert Sahel the center. Most of the approximately 15.4 million inhabitants live in the Sudanese savannah in the south and along the two main rivers, the Niger and the Senegal. The urban population (48.2%) mainly lives in the capital Bamako, in the southern part of the country, but also in regional cities like Segu, Sikasso and Koutiala in the south, Kayes in the west, Mopti and Djenne in the center, and Timbuktu and Gao in the north.

The country was colonized by France between 1880–1895 and was proclaimed an independent republic on September 22, 1960. It changed its name from Soudan français (given by the French in 1892) to Mali (West Africa's most prestigious medieval empire). From the 1992 elections until the coup d'état in 2010, it was considered one of the most democratic states south of the Sahara.

Mali is also one of the poorest countries in the world, coming 182nd of 187 countries in the Human Development Indicator (HDI) of the United Nations Development Program (UNDP), which takes into account standard of living, life expectancy and literacy. Statistics show that the Gross Domestic Product (GDP) per capita is $258, life expectancy 56.8 years and the literacy rate 59.1% (figures drawn from *L'état de l'Afrique 2012*).

3. French, Bambara and national languages in Mali

Like most former French and Belgian colonies, Mali kept the colonial language as its official language after independence. However, because of its landlocked situation, Mali's contact with the French colonizers and their language was later (end of the 19th century) than in the coastal states (from the mid 17th century).

The French were also less numerous in the hinterland than on the coast. Mali is, in fact, the least "francophone" state south of the Sahara according to Rossillon (1995). In his *Atlas de la langue française*, he estimates that Mali has 5% of "real" and 5% of "potential" speakers, the total (10%) placing Mali as the very last of the 17 francophone African countries. Even this low figure may be too optimistic, based as it is on education statistics (the level of competence being hard to ascertain otherwise): six years of schooling or more gives a "real" speaker while a minimum of two years gives a "potential" speaker. It is clear, however, that six years is no guarantee of "real" competence (see Skattum 2004; Boutin, Gess & Gueye this vol.). It is also well known that this competence is easily lost for lack of practice (Dumestre 1994b: 3).

An important reason for the modest use of French in Mali is the existence of an indigenous *lingua franca* (Bambara), confining French to the formal sphere. This is a characteristic Mali shares with a handful of other African states (Skattum 1997: 79–80), *inter alia* the two represented in this volume, Senegal (Wolof) and the Central African Republic (Sango). In Mali, Bambara is the L1 of around 40% and an interethnic means of communication of another 40% of the population.

Mali has a multiethnic and multilingual past that further motivates the low *corpus* and high *status* of the French language (in Chaudenson's sense of the term).[3] The medieval empires Ghana, Mali and Gao, uniting different ethnic groups from the eighth to the sixteenth centuries, fostered pride in traditional culture and laid the ground for a general acceptance of multilingualism (reflected in the 1992 Constitution, giving all indigenous languages equal rights) (see Skattum 2008). This may explain the reluctance to recognize the majority language as the official language alongside French: Bambara is given no official privilege, though in real life it is steadily progressing in terms of geographical extension and usage domains, at the expense of the other indigenous languages (Dumestre 2003).

The positive attitude towards multilingualism is also expressed through the prominence given to bilingual education (Skattum 1997, 2000). Mali is a pioneer in this field among the francophone sub-Saharan countries,[4] having introduced 11 indigenous languages as means of instruction alongside French in primary

3. "'[S]tatus' (et non 'statut') désigne le 'statut' (langue officielle, unique ou non, nationale, etc.), les emplois (officiel, administratif, juridique, etc.) et les fonctions du français. Sous la rubrique 'corpus' sont regroupés quatre ensembles : les modes d'appropriation, la véhicularisation et/ou vernacularisation, les types de compétences, les productions et consommation langagières" (Chaudenson 1991, cited in Chaudenson et al. 1993: 19).

4. African language literacy is much more developed in the "anglophone" African countries, as mother tongue education in the first years of primary school was introduced already under colonial rule (see Brock-Utne & Skattum 2009).

school. However, this education seems lately to be regressing: introduced in 32.6% of primary schools in 2005–2006 and programmed to develop further, only 21.1% of the total number of primary schools were bilingual French / a national language in 2008–2009 (see Skattum 2010b). French thus continues to dominate as the language of instruction, indicating that it may hold its position as the language of prestige and social promotion despite its limited use among the population.

However, a look at some figures illustrates the problems facing Mali in efforts to raise the level of literacy and thus French language proficiency among its inhabitants. In 1990 the GER (Gross Enrollment Rate)[5] for primary school was the lowest in francophone West Africa, and it remained the lowest in 2003–2004 (Banque Mondiale 2007: 26–27). In 2008–2009 it had improved (82% according to the *Cellule de Planification et de Statistiques*)[6] but as the GER includes repeating students but does not count dropouts (both high), the real picture is better shown by the retention rates (enrollment at the superior level) from primary to higher education. In 2003–2004, these rates dropped from 69.0% (7–12 years), to 35% (13–15 years), to 10% (16–18 years, including technical and professional education plus teachers' colleges). In higher education (where age varies so that the GER is calculated relative to 100,000 inhabitants), there were only 286 students per 100,000 inhabitants (Banque Mondiale 2007: 26).

Besides Bambara, there are about 20 indigenous languages in Mali (Canut & Dumestre 1993: 220),[7] a moderate number in the African context.[8] 13 of these have been given the status of "national language", ten of them as early as 1967: Bambara (*bamanankan*),[9] Bomu (*bwamu, bobo*), Bozo, Dogon, Fulfulde (*peul*), Mamara (*minyanka*), Syenara (*sénoufo*), Songhay, Soninke and Tamachek, to which were added in 1996, nearly 30 years later, Hassaniyya (*maure*), Maninka

5. The World Bank defines GER as "Les effectifs scolarisés par rapport aux effectifs scolarisables pour chaque niveau d'enseignement, calculé sur l'âge (7–12 ans; 13–15 ans; 16–18 ans)" (Banque Mondiale 2007: 26).

6. Personal communication, 02/17/2010, from Youssouf Haïdara of the *Direction nationale de l'Education de base*.

7. The Summer Institute of Linguistics (SIL) counts 50 indigenous languages in Mali (Raymond & Grimes 2005: 141). The difference is due to diverging methods of distinguishing language from dialect.

8. The Ivory Coast, for example, is a "medium" case with around 60 languages, while Cameroon has around 185, and the Democratic Republic of Congo around 220 indigenous languages (Skattum 1997: 79; see also Brock-Utne & Skattum 2009).

9. Names and spelling vary; we use the most common English designations and give French or local names in parentheses where there may be doubt whether we are speaking of the same language.

(*malinké*) and Xassonke. This status implies their codification (officially recognized alphabet and orthography) as well as a certain role in the public sphere, particularly in the media and the educational sector.

These 13 languages belong to three language families: the Niger-Congo, the Nilo-Saharan and the Afroasiatic.[10] The Niger-Congo family is the most important in Mali as well as on the continent. In Mali, it is represented by the Mande, Atlantic and Gur groups. The Manding cluster (Bambara, Maninka, Diula and Xassonke) dominates within the Mande group, which also includes two West Mande languages: Soninke and Bozo. The Atlantic group is represented by Fulfulde, and the Gur group includes Syenara, Mamara and Bomu (dialectal variation is important in this group and internal classification varies, cf. Dombrowsky 1994: 21; see also Section 5.1, Note 14 below). Songhay (whose classification is still debated (cf. e.g., Nicolaï 1989)) is the only Nilo-Saharan language, while the Afroasiatic family is represented by the Berber language Tamachek of the Tuareg people and the Semitic language Hassaniyya of the Moores. The Dogon language is still unclassified (for details, see Skattum 2008).

The position of the local languages varies greatly according to their vehicularity and their demographic, social and political weight. While Bambara is the national *lingua franca*, there are three vehicular languages at the regional level: Fulfulde (center), Soninke (west) and Songhay (north). Tamachek was, for political reasons, one of the first four languages to be codified and to be introduced as a language of instruction, though it has fewer speakers than e.g., Soninke. Some languages, like Syenara, Mamara, Xassonke and Maninka, are "invaded" (through language mixing), and progressively supplanted by Bambara (Dumestre 1994b: 8).

4. PFC in Mali

The PFC survey in Mali was carried out in collaboration with the CFA (*Contemporary French in Africa and the Indian Ocean: usage, varieties and structures*) project.[11] CFA adapted the PFC protocol (Durand & Lyche 2003) to the multilingual context (Boutin, Lyche & Prignitz 2007) and to the wider CFA goals, including syntactic and sociolinguistic analysis (Dister et al. 2008; Lyche & Skattum 2010b). 47 informants were recorded. They were chosen according to four parameters, in the

10. For a historical overview and discussion of the classification, see e.g. Heine & Nurse (2004).

11. http://www.hf.uio.no/ikos/english/research/projects/cfa/index.html

following order of importance: (1) level of instruction; (2) age; (3) L1; (4) gender – age and gender being standard PFC parameters, but showing no impact here.

The level of instruction is the most important of these criteria, since French in "francophone" Africa is mainly – and in Mali nearly exclusively – learned at school. We have defined this level according to the diplomas delivered, which in Mali are: (1) CEP (*Certificat d'études primaires*) = six years of schooling; (2) DEF (*Diplôme d'études fondamental*) = nine years; (3) Bac / Bac+ = 12 years / + eventually higher education. Levels of education not corresponding to these categories (interrupted schooling, professional education, diplomas no longer in use…) have been standardized to fit into these three categories.

Multilingual competence is particularly relevant in Africa, where on the one hand people frequently speak three or more languages (see Table 1 below), and on the other hand claim that they can detect a person's L1 through their French. We therefore recorded informants speaking L1 from five typologically distinct groups: Bambara (Mande group), Fulfulde (Atlantic group), Syenara (Gur group), all from the Niger-Congo family, and Songhay (Nilo-Saharan family) and Tamachek (Afroasian family). This enables us to test the influence of L1 on FLS.

In addition to these parameters, two extralinguistic factors turned out to have an impact on the pronunciation and general language competence of our informants: their exposure to French (in family and at work) and their mobility (place of origin, journeys inside Mali or abroad, length of stay in Bamako). These factors were brought out through a perception test in 2008, where 6 Malian subjects listened to a one-minute extract from the semi-directed interview of 14 Malian speakers, in order to identify their L1 (Lyche & Skattum 2010a). Though not included among the original parameters, this information could be retrieved from the interviews, which *inter alia* bore on the informants' life story.

Table 1 shows the profile of the 13 informants chosen for the PFC database: age, gender (F/M), languages spoken (the order corresponding to declared mastery), level of education, exposure to French (as expressed by their profession) and mobility (place of origin, moves within Mali, stays abroad and time spent in Bamako). They are presented in alphabetical order following the individual part of their PFC code (maa**aw**1, maa**bd**1, etc.).

We shall see that the most striking phenomenon in the pronunciation of French among these informants is the great variation. This is due to the sociodemographic variables defined above. But we have also been able to identify the influence of L1 in some areas. This is doubly interesting, as very little has been

Table 1. Profile of the 13 informants

PFC code (age) gender	L1 (in bold), L2, L3…	Level of education	Profession	Mobility
maa**aw**1 (53) F	**TA**, FR, BA	CEP	Housewife	Born in Kidal region (north), nomad family, 4 moves in Mali, 26 years in Bamako, frequent visits to Kidal
maa**bd**1 (46) M	**BA**, FR	CEP (+2, no diploma)	Office boy	Born in Bamako, always lived in Bamako
maa**bh**1 (24) M	**SO**, TA, FR, BA, RU, EN	Bac+ (+1, socio-anthropology)	Student	Born in Gao region (north), 6 months in Bamako
maa**bm**1 (30) F	**TA**, FR, BA, SO	DEF (CEP+4, dressmaking)	Dressmaker	Born in Gao region (north), 4 years refugee in Burkina Faso, many years in Bamako
maa**fc**1 (50) F	**FU** / FR, BA, SO, EN	Bac+ (DEA + 2 years, French studies)	NGO senior executive	Born in Djenne city (center) of Fulani family, 2 years in Bamako age 7–9 (French spoken in family), France 10 years, 14 years in Bamako
maa**ic**1 (26) M	**FU,** BA, FR, EN, AR	Bac+ (master I, linguistics)	Student	Born in Mopti region (center), senior high school in Bamako, master (4 years) in Algeria, master I in France/ Netherlands
maa**js**1 (51) F	**SY**, BA, FR	Bac (DEF+4, accounting)	Accountant	Born in Sikasso region (south), DEF in French boarding school in Sikasso city, 8 moves in Mali, many years in Bamako
maa**nt**1 (57) F	**SY**, BA, FR	DEF (+2, kindergarten teacher diploma)	Kindergarten teacher	Born in Sikasso region (south), 5 moves in Mali, 26 years in Bamako
maa**sd**1 (68) M	**BA,** FU, FR, EN, MO, SO	Bac	Executive, retired	Born in Djenne region (center) of Fulani family, 6 moves in Mali, one year in USA, 44 years in Bamako, considers he has several L1s but mastery of Bambara is best
maa**sh**1 (22) M	**SO,** FR, BA	Bac+ (+2, French studies)	Student	Born in Gao region (north), one year in Bamako
maa**ss**1 (62) F	**BA**, FR, EN, SP	Bac+ (+2 medical secretary +3 special secretary)	Medical secretary	Born in Burkina Faso (at that time a province of the Ivory Coast), 5 years in France, 30 years in Bamako

Table 1. (*continued*)

PFC code (age) gender	L1 (in bold), L2, L3…	Level of education	Profession	Mobility
maatc1 (62) M	**BA**, FR	CEP	Bus driver, retired	Born in Kati near Bamako, always lived in Bamako
maazw1 (36) F	**TA**, SO, FR, BA	DEF (9 years, without diploma)	Musician	Born in Timbuktu region (north), nomad family, many years in Bamako, international career, extensive travelling

Languages: AR = Arabic, BA = Bambara, DO = Dogon, EN = English, FR = French, FU = Fulfulde, MO = Mossi, RU = Russian, SO = Songhay, SP = Spanish, SY = Syenara, TA = Tamachek

done on accents in FLS (Lyche & Skattum 2010a), while interference[12] is a central issue in studies of language contact. Today, the impact of extralinguistic factors is generally accepted, but there is debate as to the respective roles of intra- and interlinguistic motivations in language variation (see Skattum 2010a). While some favor intrasystemic rather than intersystemic motivations for language change in French (Chaudenson et al. 1993; Gadet & Jones 2008), others point to the influence of local languages, like A. Queffélec (2008: 73): "Les normes locales, relativement permissives, subissent l'influence des langues en contact et des véhiculaires africains dominants". Intersystemic variation in French is well documented in Africa at the lexical level, but less at the syntactic (Skattum 2010c)[13], and very little at the phonological level (Woehrling & Boula de Mareüil 2006). It is, however, well established that the phonological level is even more "permissive" to local influence than the two others (see Sankoff 2002).

We have also found common features in French pronunciation for some of the informants having different L1s, pointing to the existence of regional varieties of French – which is natural, since neighboring languages may well influence one another. And finally, some characteristics are shared by other varieties of French in Africa, thus sustaining the hypothesis of a pan African French (Chaudenson et al. 1993).

12. We use the term in the sense of a learner's unconscious transfer of features from L1 to L2, and not in the sense of a learner's strategy, which can be positive if the mother tongue structure matches that of the target language, but negative if it does not (Hamers 1997).

13. Though Ploog (2008: 251) refers to some studies that focus on different aspects of interference in syntax.

Though we look here at French in one country, Mali (more specifically the capital Bamako), we agree with Gadet & Jones (2008: 238) that "the very act of considering languages at a 'national' level could be criticized as something of an over-simplification". In Africa, the national level is particularly ill-suited as a frame, since the colonial powers did not consider ethnic or linguistic communities when tracing the borders. Whether national or regional, these languages nonetheless have an impact when coming into contact with French, which is why the description of our informants' phonemic inventories will be preceded by a presentation of the inventories of the five languages chosen for study.

5. The phonemic inventory

Taking into consideration all the different factors potentially influencing the French spoken by our speakers, we do not expect to arrive at a single phonemic inventory for all our speakers. Notwithstanding, this section will show the emergence of common features, mostly shared by other varieties of French in Africa. In a context where French is always an L2 (in the sense defined above), and therefore systematically in contact with a plurality of L1s, a brief description of the five L1s is called for.

5.1 Five local L1s

As stated in Section 4, among 20 or so possible L1s, we retained five major languages for their geographical coverage and their linguistic diversity: Bambara, Syenara, Fulfulde, Songhay and Tamachek. Bambara and Syenara, both present in the South of Mali, share the property of being tone languages, which is not the case for the three others. Fulfulde is spoken in the center of Mali while Songhay and Tamachek are northern languages. The first difficulty in attempting a general presentation lies in the large number of dialects co-existing in some of the languages, dialects which may be highly diverse typologically. As a detailed presentation of the five languages lies beyond the scope of this chapter, we will limit ourselves to some general information while focusing on the segments which the native languages lack in comparison to French, and which might therefore impede a standard acquisition of French phonemes. At this point, it might be useful to present what Clements (2004: 151) proposes as the African prototypical phonological system based on 451 phonological inventories (see Tables 2 and 3).

Bambara is a CV language with the prototypical seven oral vowel system: /i, u, e, o, ɛ, ɔ, a/, enriched by seven nasal vowels /ĩ, ũ, ẽ, õ, ɛ̃, ɔ̃, ã/ (Dumestre

Table 2. African prototypical phonological system (consonants)

	Bilabial	Labio-dental	Dental / alveolar	(Alveo-) palatal	Velar	Laryngeal
stops	p / b		t / d	c / ɟ	k / g	
fricatives		f	s / z	ʃ		h
nasals	m		n	ɲ	ŋ	

Table 3. African prototypical phonological system (vowels)

	Front		Back
high	i		u
mid-high	e		o
mid-low	ɛ		ɔ
low		a	

2003) and by phonemic length. All seven oral vowels can be long, mostly in non-final syllables, vowel length usually stemming from vowel coalescence caused by intervocalic consonant deletion. Its consonant inventory matches that of Table 2 without the fricatives */ʃ, z/ which, however, may appear as allophones of /s/. Plosives /p, t, c, k, d, ɟ/ are restricted to word-initial position unless the syllable is reduplicated. Bambara is a strict CV language, CV accounting for over 99% of the syllables, with less than 1% of V and VC syllables. The strict CV structure may be broken up by complex onsets due to interconsonantal vowel elision (Cissé 2009).

Fulfulde, which shows certain linguistic similarities with Bambara, has long been in contact with that language, resulting primarily in numerous lexical borrowings. The consonant system of Fulfulde includes the same nasal, plosive and fricative series as Bambara with additional implosives and prenasal plosives (Cissé 2009). It has a five-vowel system /i, u, e, o, a/ with phonemic vowel length, long vowels being allowed anywhere within the word. Although it is a five-vowel system, mid-low vowels appear when the following syllable contains an open vowel. In its syllabic structure, Fulfulde, a CV language, tolerates a larger number of (C)VC syllables (30%) than Bambara, but it does not allow complex onsets. The two languages differ essentially in their prosody, Bambara being a two-tone language system and Fulfulde having lexical stress.

Syenara, like Bambara and Fulfulde, belongs to the Niger-Congo language family. Its phonemic system[14] matches Table 2 with a full set of voiced fricatives

14. We refer here to the Supyire dialect spoken in Sikasso, as described by Carlson (1994). Bendor-Samuel (1971, cited in Dombrowsky 1994: 21) classifies Supyire with Mamara and considers this the main group of Syenara (85%), both belonging to the northern branch of Syenara.

and additional nasal vowels /ĩ, ũ, ɛ̃, ɔ̃, ã/ (Carlson 1994); all vowels may be short or long, length deriving nearly exclusively from the elision of an intervocalic consonant. Its syllabic structure is overwhelmingly CV, but like Fulfulde, it may allow simple codas word-finally (Roulon 1968). Prosodically, it is classified as a tone language, the number of tones varying from two to four depending on the dialect and the linguistic description (Carlson 1994; Roulon 1968).

Songhay and Tamachek share the property of being spoken in the northern part of Mali. Songhay can be subdivided into a number of varieties (Nicolaï 1981). We will concentrate here on the variety spoken in the Gao region where our two informants are from. In that variety, Songhay is a five-vowel system with phonemic length. The consonantal system matches the prototypical consonant system given in Table 2 for occlusives and nasals, with additional prenasalized stops, and includes in the Gao region the three voiceless fricatives /f, s, ʃ/ and two voiced ones /z, ʒ/ (Nicolaï 1981). The syllabic structure of the language is CVC, where the coda is usually a sonorant or the voiced bilabial. In varieties of Songhay in close contact with Tamachek, any consonant may constitute a coda. Although some varieties of Songhay may distinguish up to four distinct tones, the Gao variety has fixed stress falling usually on the last syllable or on the penult of a word. When Songhay is in close contact with Tamachek, it tends to adopt a very strong word stress (Nicolaï 1981).[15]

Tamachek, a southern Berber language, exhibits a standard five vowel pattern /i, u, e, o, ɑ/ with, in addition, two short vowels /æ, ə/. From the description provided by Heath (2005), we assume that the so-called 'full' vowels are bimoraic and the short vowels monomoraic. A lowering rule applies in certain environments, and Heath (2005: 35) gives a few examples where /e/ is lowered to [ɛ] and /o/ to [ɔ]. The full series of voiceless and voiced fricatives (excluding /v/) are present in the consonantal system, which includes uvular, pharyngeal and laryngeal consonants. Tamachek possesses a CVC syllabic structure and allows complex constituents. Stress, which is always assigned at the word-level, is either lexical or rule-determined in the case of an unaccented stem.

The five languages share a number of linguistic features: the absence of front rounded vowels and of the voiced fricative /v/; the presence of an apical trill /r/;

In official Malian documents, Syenara and Mamara are often grouped together, Syenara designating the Sikasso dialect (ibid.). Our two Syenara speakers are both from the Sikasso region.

15. "A la différence de ce qui se passe en songhay oriental les formes du songhay septentrional du groupe nomade sont affectées d'un fort accent d'intensité, qualitativement identique à celui de la (sic) tamacheq" (Nicolaï 1981: 234).

vowel lowering triggered by a rhotic in coda position.[16] The languages do differ, however, in their prosodic structures and within their vocalic systems. Songhay and Tamachek are strict five vowel systems with few mid-low vowels and we can expect their speakers to struggle with the opposition mid-low vs. mid-high in L2 acquisition. Songhay and Tamachek are both CVC languages in contradistinction with the other three and they are both characterized by lexical stress.

5.2 The vocalic system

When the native speakers of these different African languages learn French, they are faced with the difficulty that the target language possesses a larger number of vowel categories than their own. One can assume that they will easily perceive the categories of their native language, but that they will need to 'learn' to perceive the categories that they lack, and in particular /y/ and /ø, œ/. We observe that while most speakers show a reasonable mastery of /y/ in their production, very few, if any, reach a FR native-like proficiency when it comes to /ø, œ/. How can we account for this discrepancy in production? Recall that when a language uses three vowels only, these vowels are /i, u, a/, which fill up the extreme periphery of the vowel space, thus exhibiting a maximum of contrast and minimizing perceptual confusion. Boersma & Hamann (2008: 221) describe this phenomenon as a "*primary auditory dispersion effect*: categories tend to be located within the auditory space in such a way that they are perceptually maximally distinct". In all the African languages under consideration, the vocalic space is already fairly crowded in its center with aperture distinctions between [o] and [ɔ], [e] and [ɛ], even though these distinctions are not systematically categorical, but rather allophonic in all but Bambara. Therefore, introducing [ø, œ] renders the space even more crowded, hindering both perception and acquisition. In addition, a markedness factor no doubt intervenes in the deviant production of front rounded vowels (assuming that they represent the intended target). Vowel inventories including front rounded vowels are rare among the world's languages, and /ø, œ/ are the last vowels to be acquired by children, who replace them either by their unrounded mid counterparts /e, ɛ/ or choose to give precedence to the feature [+ round] and produce back rounded vowels (/o, ɔ/) (Andreassen forthc. for Swiss French children). None of our speakers chooses the latter scenario, thus confirming that L2 acquisition activates specific strategies.

16. Vowel lowering before a rhotic is part of a general vowel lowering process in at least Syenara and Tamachek (Carlson 1994; Heath 2005).

Regarding high vowels on the other hand, we observe that the upper part of the vowel space is less crowded than for mid vowels, the dispersion between /i/ and /u/ being extreme. FR includes only one series of high vowels and when /y/ is introduced into the system, it competes with /i/ and /u/ but not, for instance, with a lax vowel. We thus expect that /y/ will be easier to acquire as a category than /ø, œ/. In case of confusion, once again, the feature [round] proves to be the culprit, and the speakers opt systematically for the front unrounded vowel /i/ and never for the back round /u/.[17] Thus, both mid and high vowels confirm that the combination of features that our speakers struggle with is [+front, +round] and that they always resolve the problematic cooccurrence in favor of the former over the latter. Although L2 acquisition triggers different strategies from L1 acquisition, this particular observation comes as no surprise when we consider Jakobson's (1971) developmental hierarchy for vowel sounds: first low /a/, then high /i/, then either back /u/ or mid /e/, then mid-back /o/. The speakers give priority to [+front], not [+back, +round] in the acquisition process. Note moreover that if /y/ may be realized as [u] in certain varieties (as in *sucre* [sukr], Boutin, Gess & Gueye this vol.), /ø/ is never realized as [o], but may be realized as [e], thus conforming to what is predicted by the hierarchy.

The degree of production competence varies from one speaker to the next, but we would like to claim that /y/ and /ø/ are part of all speakers' inventory even though the distribution of these phonemes might be different from FR.[18] In our perception test (Lyche & Skattum 2010a), the subjects regularly refer to the difficulties encountered by the speakers of Songhay and Tamachek in articulating front rounded vowels. These comments only partially reflect a linguistic reality as basically all speakers at some point merge /e, ø, œ/ while only one (maabh1) shows a strong tendency for using /i/ for /y/: *dans la rue* ([ri]), *étude* and all its derived words are realized with an /i/ ([etid]). This informant is indeed a young (age 24) speaker of Songhay (a student, very recently arrived in Bamako who was raised by his grandfather, himself a speaker of Songhay and of Tamachek). Speaker maabh1 alternates between the two vowels according to lexical items: *j'ai eu* [ʒey], *nourriture* [nurityr] vs. *étudier* [etidje].

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17. We do not find any such instance in our data, which does not mean that those realizations do not occur. See Boutin, Gess & Gueye (this vol.) for Senegal, where both strategies are used. It seems, however, that there exists a strong tendency to preserve the frontness of the vowels rather than their roundness, as the deviant realizations of /ø, œ/ confirm (see below).

18. The PFC word list does not specifically test the pronunciation of /y/. The PFC text, on the other hand, allows a comparison of the different realizations among speakers with words like *commune, usine, plus, s'assure, paru* and shows that certain items are always pronounced with /y/.

The mid vowels behave differently from their FR counterparts, with all our informants exhibiting a certain degree of confusion between /ø, œ, ə/ and /e/. Let us stress that FR /ø, œ, ə/ are only exceptionally realized as open /ɛ/[19] even though the category /ɛ/ is present in the vowel inventory, as in Bambara. One informant only, maafc1, performs like a native FR speaker in this respect: maafc1 is a speaker of Fulfulde, a highly educated 50 year-old woman, leader of a non-governmental organization, who resided in France for 10 years. Close to FR too,[20] we find a bambarophone, maasd1, an educated 68 year-old male, originally fulaphone. As none of our speakers of Songhay and Tamachek but one (maabm1, a 30 year old female with 10 years of schooling) makes clear aperture distinctions between the front rounded vowels (which they readily replace by unrounded vowels), there appears to be a certain link between the L1 and the robustness of the rounded mid-vowel category in the speakers' phonemic systems. Recall that both Songhay and Tamachek are five-vowel systems with few open mid allophones. One should keep in mind, however, that Songhay and Tamachek informants either have a maximum of 10 years of schooling, or they moved recently to Bamako and have had reduced exposure to French. It thus seems possible that the higher rate of confusion observed among them can be attributed to factors other than the L1.

Tamachek includes in its inventory a schwa whose presence does not however facilitate the realization of mid front rounded vowels. It is then obvious that the speakers, when constructing a new vowel inventory, favor phonemic distinctions even though they could make use of a phonetically closer sound, thus following the category proximity principle as defined by LaCharité & Paradis (2005: 226) for loanword adaptation:

> Category proximity principle
> If a given L2 phonological category (phoneme) does not exist in L1, this L2 category will be replaced by the closest phonological category in L1, even if the L1 inventory contains acoustically closer sounds.

Even though we are here dealing with the acquisition of an L2, we see the same principle at work: the speakers choose the phoneme /e/ over the phonetically closer schwa [ə].

In the word list, all speakers but two (maafc1 and maasd1) pronounce *chemise* and *petit* with an unrounded vowel ([ʃemiz] and [peti] respectively). Similarly, when the verb *venir* in any of its possible forms occurs in the two conversations,

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19. We noted a pair of such realizations for *meurtre* (maabm1 and maabh1).

20. As in our perception test, subjects commented on vowel articulation (for ex. "Tamachek speakers have problems with /y, ø/"), we assume that they regard the pronunciation of /y/ as [i] and /ø/ as [e] as deviant from FR.

it is systematically realized [venir]. As will be developed in Section 6, we have grounds to claim that schwa is restricted to final syllables (clitics and polysyllables) as vowels are stable in all other positions. This implies that most speakers store in their lexicons *chemise, petit, venir,* etc., with an unrounded mid vowel in the initial syllable of the words. On the other hand, all speakers round the vowel in *jeune* or *jeûne.* In our data, schwa alone (and not FR /ø/ or /œ/) is realized as the front unrounded vowel [e]: *parce que* [parske], *beaucoup de* [bokude], *pas de temps* [padetɑ̃]. The lack of prosodic salience could be at play here, since a schwa syllable in French rarely carries stress. In an unstressed context, the demands for auditory contrast are reduced, favoring articulatory economy, which, in our case, implies producing an unrounded vowel. In addition, certain speakers show a strong tendency for associating a graphic <e> with /e/, while <eu> usually corresponds to a front rounded vowel. maajs1 for example (whose L1 is Syenara) rounds the vowel in *des jeunets* [deʒønɛ] and *déjeuner* [deʒøne] while she realizes *des genêts* as [deʒenɛ]. The same speaker of Songhay who experiences difficulties with the /y/-/i/ distinction, maabh1, pronounces *rauque* (FR [ʁoːk]) with a final [e]: [roke]. He singles himself out as well by producing a mid-low vowel in *meurtre* [mɛrtr], although the rest of his performance rates as average. It is therefore possible to consider that schwa is realized as [e, ø], a tendency due to a combination of prosodic and orthographic factors, while the phoneme /ø/ is appropriately acquired, barring a few individual idiosyncrasies,[21] which sets it apart from its FR equivalent.

The distribution of the unrounded mid vowels /e, ɛ/ follows the classical norm: */e/ in closed syllables where /ɛ/ is required, but a standard contrast in open syllables, *épée* in opposition with *épais* (/epe/ vs. /epɛ/) for all speakers. One item exhibits a high degree of variation: *piquet* is pronounced with a mid-low vowel by eight of the 13 speakers. We see here the influence of the orthography as *piquais* on the other hand shows a mid-high vowel in accordance with the orthoepic rule associating a mid-low vowel with the ending *-ais.*

In final closed syllables, the mid vowel /O/[22] tends to follow the pattern described for /E/, often being open in opposition to the preferred norm. From the PFC word list, we have: *rauque*, FR [ʁoːk], pronounced [rɔk] by seven speakers; *paume*, FR [poːm], pronounced [pɔm] by five speakers; and *gnôle*, FR [njoːl], pronounced [njɔl] by ten speakers. Orthography, and in particular the association in schools of the circumflex accent with an open mid vowel, probably explains

21. Among various idiosyncrasies, let us mention isolated instances of hypercorrection: *piquet* [pikɛ] pronounced [pikø] and *fêtard* [fɛtar] pronounced [føtar].

22. Capital letters are given for underspecified segments.

the large consensus in the pronunciation of *gnôle* ('brandy'), a rather rarely used word. The same phenomenon is observed for *jeûne* which is pronounced [ʒœn] by four speakers in isolation, while most speakers show a high insecurity level in the minimal pairs: either the two words *jeune* and *jeûne* are pronounced alike, preferably with a mid-high vowel, or they are inverted. This fact stresses the problems that all speakers face regarding the realization of /ø, œ/ and their distributions. From our observations, we conclude that the phonemic inventory contains the phoneme /ø/, but that the distribution between the two allophones [ø, œ] remains subject to individual variation in spite of a number of (pan) African tendencies, with *peuple, creuse* for example, always showing a mid-high vowel (Boutin & Turcsan 2009).[23] The low functional load and the low frequency rate of the vowel ensure that the phoneme /ø/ remains endangered in most speakers' inventories.

Similar to other African varieties, the French spoken by our Mali informants does not oppose a front and a back /A/, the only low vowel being [a]. The situation for the nasal vowels proves more complex: bambarophones differentiate easily /œ̃/ and /ɛ̃/, as expected, considering the rich nasal vowel inventory of their L1, while the situation varies for the other speakers. We observe here a clear link between the use of the two phonemes and extralinguistic factors like education, mobility, exposure to French, the speakers of Songhay and Tamachek tending to one phoneme only, the preferred vowel being rounded /œ̃/.

Generalizing somewhat across speakers, we propose a vowel system composed of nine oral vowels /i, y, u, e, ø, o, ɛ, ɔ, a/ and three nasal vowels /œ̃, ɔ̃, ɑ̃/.

5.3 The consonantal system

The French consonant system is well assimilated by our speakers, differing essentially from FR in the articulation of the rhotic which is either an apical trill or a tap. Apart from the rhotic, we observe minimal interference from the consonantal system of the different L1s. Such interference, when it exists, concerns individual speakers and cannot be generalized to all speakers of the same L1. We mentioned in Section 5.1 that Bambara and Fulfulde do not include in their inventories voiced fricatives and the voiceless alveo-palatal fricative /ʃ/[24]. We then expect speakers to show a certain degree of confusion in the production of these sounds. In fact, only one of our speakers, maabd1, a bambarophone, does not possess the alveo-palatal fricatives: *benjamin* [bɛ̃zamɛ̃] for [bɛ̃ʒamɛ̃], *chaussures* [sosyr] for

23. According to Boutin & Turcsan (2009: 146), in Ivory Coast French, the mid-low vowel occurs in a syllable closed by /r/ or when the graphic vowel bears a circumflex accent.

24. Although both [ʃ] and [z] are quite common as allophones of /s/.

[ʃosyr] among other examples. Another bambarophone, maasd1, shows a tendency to use the velar glide [w] instead of the fricative [v] (*pouvait* [puwɛ]). We could attribute those pronunciations to reduced schooling and lack of exposure to French, but we need more data to test this hypothesis. While the two fulaphones, who display excellent FR proficiency, have indeed completed higher university education, thereby supporting our hypothesis, the profile of these two Bambara speakers invalidates it: maabd1 completed six years of school (CEP) only, but on the other hand, his work environment (the University of Bamako) requires regular use of French; maasd1 finished his high school education (*baccalauréat*), but he is much older without current exposure to French.

We underlined in Section 5.1 that Bambara, Fulfulde and Syenara are all more or less strict CV languages in opposition to Songhay and Tamachek. The CV preference triggers for example, the insertion of a vowel to break up a cluster as in *trop* usually pronounced [toro] by basilectal[25] speakers of French with a CV language as L1. Our speakers on the other hand, do not show difficulties in the articulation of complex onsets. We searched for a CV preference word-finally among speakers of Bambara, which is a strict CV language. Our data show subtle distinctions that we will exemplify with *intact* and *infect* taken from the word list: *intact* is realized [ɛ̃tak] by two speakers of Syenara and two speakers of Bambara, and as [ɛ̃tat] by one speaker of Songhay; *infect* is realized [ɛ̃fɛk] by one speaker of Syenara, one speaker of Bambara and three speakers of Tamachek. Out of seven speakers whose L1 is a CV language, two speakers only (Bambara and Syenara) drop the final plosive in both words. Different tendencies emerge when we consider the clusters in *explosion, extraordinaire, ex-mari.* The clusters are maintained by all northern speakers except maazw1 (Tamachek, an artist who travels extensively) who simplifies the cluster in *extraordinaire* [ɛstraɔrdinɛr], while five of the CV language speakers simplify the cluster in one or several words: maajs1 (Syenara) simplifies all clusters and drops final consonants, but her behavior singles her out. We can conclude that there is a certain amount of interference from the speaker's L1 counterbalanced by extralinguistic factors. All speakers, however, tend to devoice stops and fricatives word-finally, regardless of their L1. In the text for example, all speakers maintain a voiced fricative in *chemises en soie* ([ʃəmizɑ̃swa]) when the final consonant is resyllabified as an onset of the following word within the same prosodic unit, but *village, barrage, chaudes,* all show devoiced segments. This feature appears to be common to several varieties of African French (see Boutin & Turcsan 2009; Bordal this vol.; Boutin, Gess & Gueye this vol.). Final stops tend to be unreleased (see Boutin, Gess & Gueye this vol.), but the picture here is blurred

25. In a linguistic continuum of varieties, the basilect is the furthest removed from the superior pole, called acrolect, with intermediate varieties making up the mesolect (Chaudenson 1997).

by the interference of the L1 and by the amount of exposure to French: maafc1 for example, who practices French daily and who lived in France for 10 years, clearly releases all final stops while devoicing the final fricatives (*des barrages*, where the final expected [ʒ] does not show any voicing bars in the spectrogram).

Searching for distinctions between the speakers due to interference from the different L1s leads us to consider the behavior of the rhotic. It is well known that French Creoles, all CV languages, eliminate /R/ in coda position (Nikiema 2002), and this particularity carries over to bilingual (Creole-French) speakers when they speak French. Bordal (2006) conclusively shows that in the variety of French spoken in Reunion Island, /R/ exhibits a high degree of instability especially in coda position. /R/ may drop in both unstressed and stressed syllables, which may induce a compensatory lengthening effect on the preceding vowel, or it may reduce to a vocalic appendix of a schwa-like quality. Different varieties of French in Africa behave similarly (Boutin & Turcsan 2009; Bordal this vol.) when the speakers' L1 is a CV language. Given the divergent syllabic structures of the L1s under consideration in this study, we expected distinct speaker behaviors and in particular, we hypothesized that speakers of Songhay and Tamachek would articulate /R/ in coda position in opposition to speakers of Bambara, Syenara and Fulfulde. This prediction was verified throughout the data although the /R/-less pronunciation of a few items is generalized: all speakers produce *parler, peut-être* and *parce que* without the rhotic ([pale], [pøtɛt], [paskø] respectively). The pronunciation of the last two items corresponds to a FR realization where obstruent + liquid clusters simplify readily in conversations (Laks 1977; Wachs 1997), and where [paskø] is the most common realization of the conjunction. The verb *parler* then constitutes the only exception, one that we attribute to frequency of usage. The /R/-less form is widely used in Reunion French as well as in the Central African Republic, and we suspect that it is stored as such in most speakers' lexicons.

Songhay and Tamachek speakers massively maintain the rhotic in all environments, including those where it is highly susceptible to deletion in FR. Final obstruent + liquid clusters are regularly simplified in FR. Stigmatized at first, and more advanced in North American varieties of French, this phenomenon proves remarkably active in all registers of FR. The PFC text, read by all our subjects, contains a number of candidates for final cluster simplification with words like *ministre*, *centre,* etc., which the coding system allows us to retrieve. We searched the database for cluster simplification among upper-class Parisian speakers who can be characterized as representing a conservative variety of French (Lyche & Østby 2009) and found 18 such occurrences. We performed the same search for Bamako, which gave us (for our 13 speakers) 38 instances of simplification with only two emanating from a Tamachek speaker and none from a Songhay speaker: maazw1 (an international artist much exposed to French) produces *ministre* twice

without the /R/.[26] maaaw1, another Tamachek speaker (a housewife with only CEP and not much exposure to FR), is typical in this respect. In her semi-formal conversation, she regularly used the verb *partir,* and unlike Syenara, Bambara or Fulfulde speakers, who frequently delete both /R/s, she articulates them distinctly. The word *théâtre* happens to be recurrent in the same conversation, and she never simplifies the final cluster. In comparison, maant1, a Syenara speaker, deletes most of the rhotics in coda position: *garçon* [gaːsõ], *jardinière* [ʒaːdinɛᵊ] or [ʒaːdinɛr].

The rate of /R/ presence clearly differentiates Songhay and Tamachek speakers from their Bambara, Syenara or Fulfulde compatriots. In the perception test carried out by Lyche & Skattum (2010a), the subjects performed better at identifying northern speakers, and among the discriminating factors they pointed to a different articulation of the rhotic. According to the literature at hand (Carlson 1994; Cissé 2009; Dumestre 2003; Heath 2005; Nicolaï 1981), all the languages under scrutiny realize the rhotic consonant as a dento-alveolar trill. This particular articulation seems to be the only one used in Songhay and Tamachek, while the other three languages alternate between a dento-alveolar trill, a flap and a uvular approximant. We concur with the subjects in perceiving a more distinct articulation of /r/ in Tamachek and Songhay, a distinction which could arise from a larger number of vibrations. We propose, however, a divergent explanation, partially independent of articulation. We contend that the overwhelming presence of rhotics in the discourse of Tamachek and Songhay speakers singles them out and contributes to their identification (Lyche & Skattum 2010a). In addition, but probably of less consequence, the distinct articulation of the consonant combined with its stability reinforces positive identification of the speakers' origins. Further tests and further research are required in order to fully understand the factors at play, but there is no doubt that the behavior of the rhotic constitutes a strong discriminating element among the different L1s.

6. Schwa

The stability of schwa characterizes a number of varieties of French spoken in Africa, for example in Senegal or Central African Republic (Boutin, Gess & Gueye, Bordal this vol.). In this regard, our speakers' behavior confirms previous observations: schwa is restricted to word-final position (clitics and polysyllables) and to word-internal position, but excluded from word-initial position. Let us first underline that by schwa we understand a vowel alternating between a full vowel ([ø, œ,

26. She is also the only Tamachek speaker to simplify internal clusters in the word list as already mentioned above.

ə, e][27]) and zero. A schwa usually corresponds to the letter <e>. We adopt here a narrow view of schwa in that when a vowel is stable, it can no longer be a schwa (as has been proposed for Midi French, see Durand 1995; Eychenne 2006). Based on the results of the PFC coding system (Durand & Lyche 2003), we will comment on the presence/absence of schwa in the different positions in the word.

Word-finally, schwa rarely surfaces, but its frequency in this specific context surpasses what we can find in other survey points. Considering exclusively the two conversations, very few schwas occur word-finally after a single consonant (61 schwas for 1,093 unrealized schwas), and this number shrinks further to 18 when we exclude all final schwas followed by the hesitation marker *euh*, e.g.: *là ils viennent euh* (maaaw1). We presume that in those cases, the vowel might be part of the hesitation marker or that it signals ongoing discourse planning. At the end of a word after a consonant cluster, however, schwa shows a high degree of stability: 50 absences vs. 68 presences. The absence of schwa occurs when the cluster is reduced to a single consonant (maasd1: *par exemp(le)* [ekzɑ̃p] *mon vieux*), while the vowel is retained when both consonants are pronounced even if the following word is vowel initial: *pas du tout impossible* [ɛ̃posiblə] *à relever* (maash1). Without the schwa, the word-final syllable would include a heavy coda, banned by Bambara, Syenara, Fulfulde: [ekzɑ̃pl], [ɛ̃posibl].[28] A highly undesirable structure is repaired either minimally by the simplification of a coda (but still a marked structure) or by the presence of a final schwa creating a new syllable and ensuring that the last two syllables are open. This repair strategy concerns mainly speakers whose L1 is a CV language, while Songhay and particularly Tamachek speakers (as already mentioned in Section 5.3) are much less prone to simplify the clusters, much less in fact than what is observed in FR.

Contexts other than word-final unveil, as expressed in Table 4, a confirmed tendency towards a stabilization of the vowel in the context V(#)Cə, a prime environment for variation in FR (Dell 1973).

The table shows an extremely high level of stabilization of schwa. In word-initial position schwa shows a presence rate of greater than 97%. The two occurrences where schwa is dropped word-initially are standard cases involving the prefix *re-* and the adjective *petit*: *il est r(e)venu à Bamako* (maant1); *Ils avaient une p(e)tite connaissance* (maass1). The absence of schwa in these two examples

27. As shown in Section 5, a schwa is often realized as [e].

28. Note that the illicit structure is not repaired by a possible *enchaînement* (forward linking), usually so characteristic of French prosodic structure. For all our speakers, the basic stress unit is built upon a lexical word, and cannot incorporate several such words, as is usually the case in FR where the basic stress unit may include several lexical items. We will see in Section 7 how prosodic structure impacts on liaison as well.

Table 4. Schwa distribution in conversations

	Schwa present	Schwa absent
Polysyllables initial	69	2
Clitics	359	58
Polysyllables medial	40	49

cannot be directly correlated with the education level of the speakers as maass1, a medical secretary who has studied five years in France, shows a different profile from maant1, a kindergarten teacher with 11 years of schooling who has always lived in Mali. Among the 69 occurrences of realized schwas we count several instances of *petit(e)*, a large number of the prefix *re-*, indicating a lack of correspondence between the absence of schwa and the frequency (or the internal structure) of an item. This entails that schwa syllables are absent word-initially for the large majority of speakers and that word-initial syllables only include lexically stable vowels.

In contradistinction to FR, schwa is massively present in clitics, including *je* (*je pense que*). Absence of schwa is limited to a few frequent locutions. The interrogative *qu'est-c(e) que* and the locution *n'est-ce pas* are the most likely candidates for the absence of the vowel and we presume that they are both lexicalized as such. In addition, a third (19 out of 58) of the occurrences of absent schwas involves the negation *ne*. The presence of the particle *ne* constitutes a pan African tendency[29] and requires some attention since a large number of studies (*inter alii,* Ashby 1981; Coveney 1996) have shown that the first part of the negation in conversational French is massively absent. The Vendée data, taken here as an example of FR, provide a case in point. The PFC search engine allows searching for autonomous words (or strings of characters) in the transcription and we count 307 occurrences of *pas* for 4 occurrences of *ne*.[30] In our data, on the other hand, a similar search extracts 269 occurrences of *ne* for 572 occurrences of *pas,* that is about 50% of the occurrences.[31] The coded portion of the data shows that, when the negation particle *ne* is present (37 occurrences), it may be reduced with a reduction rate close to 50% (18 with a vowel and 19 without). A closer

29. Queffélec (2008: 73) notes the "maintien très fréquent (statistiquement largement supérieur à ce qu'on observe en français oral européen) de l'adverbe **ne** comme signe de la négation verbale : même en situation informelle, cet indice négatif clitique reste présent dans le discours parlé africain, là où il a largement disparu en français hexagonal".

30. Recall that the PFC protocol specifies that any element absent from the signal is not transcribed as in *il vient pas, faut qu'il vienne*, etc.

31. In this number are included repetitions and locutions like *pas encore*.

examination of the verbs involved does not highlight any tendency; no lexicalization is taking place, for example, in *je ne sais pas, je ne peux pas* which, considering the frequency of these two expressions, would appear as good candidates for the absence of the vowel. Among clitics, *ne* maintains an underlying schwa while the vowel may have stabilized elsewhere.

Another locus of true variation, as indicated in Table 4, is word-internal position with about a 50% rate of schwa retention. Here, too, numbers alone do not present an accurate picture of the data and can, in fact, be deceptive. Out of the 49 occurrences where schwa is absent, 24 concern *parce que* and nine the adverb *maintenant,* which reduces considerably the number of items subject to variation. If *parce que* never appears with a schwa, thus indicating that it is stored as /parskø/ (or more often /paskø/) by the speakers, *maint(e)nant* freely alternates with *maint<u>e</u>nant* and has not (yet) lexicalized without the vowel. It is noteworthy, however, that this particular adverb should provide the prime locus of variation: in all varieties of French its frequency of use ranks extremely high and it is systematically pronounced without schwa except in the most conservative varieties of Midi French.

Before concluding this section, we turn briefly to the pronunciation of schwa in the text. As expected, the vowel shows even more stability in the reading task. Out of 11 schwas absent in clitics, seven involve the interrogation *qu'est-ce que,* and only six occurrences of absent schwas word-internally can be observed. As a comparison, the Paris data from the upper-class bourgeoisie, with only one more speaker, total 40 absent schwas in clitics and 35 word-internally in the text. The high level of schwa presence in the Bamako data finds a natural explanation in the way French is acquired. As underlined in Section 3, French in Mali is never an L1; it is learned at school and, in spite of the crying lack of teaching material, the relationship to the language remains highly influenced by the written word. We thus conclude that the scope of schwa is much more restricted than in FR, confined as it is to word-final syllables where it exhibits a larger degree of variation in polysyllables than in clitics. If a few speakers have internalized a word-medial schwa, the word-initial position admits full vowels only.

7. Liaison

Limited variation, particularly prevalent for schwa among our speakers, characterizes liaison as well. In an analysis of liaison in four survey points in Africa (Abidjan, Bangui, Ouagadougou and Bamako), Bordal & Lyche (2008) showed that categorical liaison was restricted to determiners + nouns, pronouns + verb, and the prepositions *en, dans* + NP, all other contexts being variable. A number

of studies have underlined that morphological information is relayed via liaison (Morin & Kaye 1982; Durand & Lyche 2008, among others), which strengthens this particular context, as stated in Rosset (1911: 283):

> Il faut remarquer que, mis à part les locutions toutes faites […], les mots qui font liaison sont tous terminés en **t**, **s** ou **n** ; **t, s, n** étant des consonnes de désinences, avaient un rôle morphologique qui leur donnait une plus forte résistance à la tendance phonétique qui les amüissait.

In other words, the reason why the word-final consonants /t, s, n/ do not delete stems from their morphological roles which have strengthened them and ensured that they are not affected by the general tendency toward final consonant weakening.[32] In our survey, the distribution of the three consonants is as follows: /z/ 212, /n/ 130, /t/ 46. Morphology alone however fails to account for the massive supremacy of /z/ as a liaison consonant. Liaison is maintained when it fulfills a morphological role but exclusively within a close prosodic unit, preferably a prosodic word defined as a potential stress-bearing domain. When we consider the 212 occurrences of realized liaisons in /z/, we observe that liaison is indeed systematic between a determiner or a clitic and its head, with only five cases falling outside these categories. Out of these five tokens, two involve the preposition *dans* (*dans un rôle de parleur*) and three adverbs: two occurrences of *très* (*très intéressant, très exactement*), one of *pas* (*c'est pas un p/*). None of the other contexts triggers categorical liaison in the different tasks. The conversations, for example, show a total of 44 instances where *(c')est* does not link to the following word, confirming that the morphological role of the liaison consonant is restricted to the indication of a plural marker.

Following polysyllabic words, liaison rarely occurs (8/119 occurrences in the conversations) and all the instances but one (*étaient élevées*) concern the plural form of an adjective followed by a noun: *autres, premières, différentes, petits.* The text further confirms the variability of liaison in contexts other than det/clitics + head and more specifically the absence of standard liaison between an adjective and a noun: if 11 speakers pronounce a liaison in *grand honneur,* only nine do so in *grand émoi.*

This highly restricted liaison usage, confining it mostly to categorical liaison, is similar to what has been observed in other African countries (Bordal & Lyche 2008; Bordal this vol.; Boutin, Gess & Gueye this vol.). It reflects the situation in another region where French interacts daily with another language, namely

32. Note, however, that while /z/ is associated with a plural marker and /t/ with a verbal marker, the role of /n/ as a morphological desinence is less clear.

Louisiana French (Klingler & Lyche this vol.).[33] When reduced to its bare minimum, liaison in its core function bears a prosodic role enhanced by a morphological one.[34] What we do not observe in those varieties is a high degree of variation between the different styles. While this absence supports the view that Louisiana French exhibits a number of characteristics of attrition (Rottet 2005), reinforced by the lack of literacy in French among speakers, such should not be the case in Mali, where French is mostly the language of formal interactions. Just like schwa can be claimed to stabilize thanks to a spelling influence, we would expect in our data a higher rate of liaison than what is observed. In fact, our speakers, even the most educated ones, do not present any of the characteristics associated with the influence of spelling on pronunciation, and in particular, we do not find a single occurrence of unlinked liaison (*liaison sans enchaînement*) as described by Encrevé (1988). The explanation for this state of affairs probably rests upon a prosodic factor common to African varieties of French and Louisiana French. In none of the different L1s of the speakers does stress carry a demarcative function as it does in FR. Recall that French does not have word stress, only phrasal stress, and that liaison has been seen to strengthen the internal cohesion of the constituents within a stress group (Selkirk 1974). The prosody of the different varieties of French in Africa differs greatly from its FR counterpart and the impact of the L1 should not be underestimated (Lyche & Skattum 2010a).

From this discussion, we infer that the prosodic word, as a stress unit in Mali French, integrates a lexical word and its clitics. Liaison is then categorical within the prosodic word. It follows from this definition that monosyllabic prepositions are not integrated within a prosodic word as posited in earlier studies (Selkirk 1974); rather, they constitute an independent prosodic unit. If such is the case, the contrastive behavior of the two monosyllabic prepositions *dans* and *chez* calls for an explanation. In our corpus,[35] a categorical liaison follows *dans* but not *chez,* although both prepositions are monosyllabic. We attribute the difference to a frequency factor: in the PFC database, we count 4860 occurrences of *dans* for 963 of *chez*, indicating that *dans* is much more present in daily interactions and therefore forms with the following lexical item a construction in the sense of Bybee (2001). An on-going study among non-literate speakers in Senegal by Boutin (p.c.)

33. The fragility of the system is also stressed by Walker (this vol.) for French in Alberta.

34. See in addition the study of Aub-Buscher (1962) of the dialect of Ranrupt in eastern France.

35. A similar situation is observed in Abidjan, Ouagadougou and Bangui (Bordal & Lyche 2008).

confirms the main taxonomy established above, thereby eliminating any impact of orthography on liaison in African varieties of French.

8. Conclusion

This chapter has examined the main characteristics of the French spoken in Bamako by 13 speakers of five different L1s. Although the phonemic inventory we posited for these speakers differs little from FR, we noted four salient characteristics: (1) a specific distribution of round mid vowels; (2) the fronting of schwa and its stabilization in word-initial and word-internal positions; (3) the specific realization of the rhotic; (4) the quasi absence of variable liaison. Taken collectively or individually, these features do not single out a particular variety of French, as identical traits prevail in other varieties of African French (Bordal this vol.; Boutin, Gess & Gueye this vol.; Bordal & Lyche 2008). This could be taken to support the idea of an "inter-African norm", often mentioned in the literature, e.g., by Manessy (1992: 62):

> Plus surprenante est l'impression de cohérence que procure l'examen d'ensemble des données[36] et qui a conduit certains auteurs à postuler l'existence d'une 'norme interafricaine' justifiant la reconnaissance d'une variété régionale de français coextensive à l'Afrique noire francophone.

Our study showed, however, that a number of differences emerged when we took into consideration the L1 of the speakers. We opposed in particular the two northern languages Songhay and Tamachek to Bambara, Fulfulde and Syenara. The fact that both Songhay and Tamachek are C(C)VC(C) languages distinguishes their speakers from the others, who tend to simplify clusters and in particular to drop the rhotic in coda position. Our speakers of northern languages maintain the rhotic in contradistinction to their compatriots, as well as to speakers of FR. The vowel inventory of the L1 was also shown to impact the distribution of vowels in French. Finally, although not explored here, the prosody of the L1 colors the French of our speakers (Lyche & Skattum 2010a), a fact deserving further attention.

When examining certain extralinguistic factors, however, we see that the impact of the L1 is leveled out, reminding us that French in Mali is an L2, always subject to development in contact with other languages. In this respect, we also acknowledge the importance of Bamako, the capital, a melting pot where Bambara

36. From seven African countries.

functions as a vehicular language, its regular use smoothing out the specific features of the other L1s. The urban influence is stressed by Manessy (1994: 15):

> il se crée […] en Afrique des variétés locales, plus exactement nationales, car ce phénomène ['la systématisation des manières de dire'] est surtout urbain et l'effet de la capitale y joue un grand rôle […] que ce soit sur le plan phonétique, sur le plan lexical ou, au niveau du discours, dans le maniement des ressources intonatives […].

Though we concur with Gadet & Jones (2008: 238) (cited above, see Section 4), that "the very act of considering languages at a 'national' level could be criticized as something of an over-simplification", we do not see a contradiction in terms in the coexistence of local and pan African features. Together with, for example, the level of education and exposure to French, diatopic differences across varieties give African French its distinctive color. The French spoken in Bamako is thus one and many, its diversity contributing to the wealth of the French language.

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PART II

Europe

Map 2. Europe

CHAPTER 5

An overview of the phonological and phonetic properties of Southern French

Data from two Marseille surveys

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This chapter focuses on one of the Southern French (also known as Midi French) accents, spoken in the area of Marseille. We do not aim to give an overall description of Midi French as a whole here, though the features surveyed are often shared by speakers living in other parts of Southern France. Traditional descriptions of Southern French include Brun (1931), Séguy (1950), Carton et al. (1983), Blanchet (1984, 1992), Durand (1976, 1988), Durand et al. (1987). Other studies rely on systematic observations based on various Southern corpora constructed and annotated within the Phonology of Contemporary French (PFC) project, see for instance in Durand, Laks & Lyche (2009) and Detey et al. (2010), to mention but the latest.

First, we briefly recall the history and status of French in Provence (Section 1), then we describe the corpora we are using (Section 2). We proceed to the phonological description of the variety on different levels: consonants and vowels (Section 3), the behavior of schwa (Section 4) and liaison consonants (Section 5). Then we present our findings for prosody (Section 6). All our descriptions are based on empirical and quantitative data from the PFC project.

1. French in Provence

From a geographical point of view, we rely on the *oïl-oc* division proposed by Bec (1963). This linguistic partition roughly corresponds to the former limits of Gallo-Romance dialect groups of France: (i) *oïl* (or Romana lingua) dialects in the north, (ii) *oc* (or Occitan) dialects in the south and (iii) Franco-Provençal in the eastern central region, a dialect group sharing features with both French in

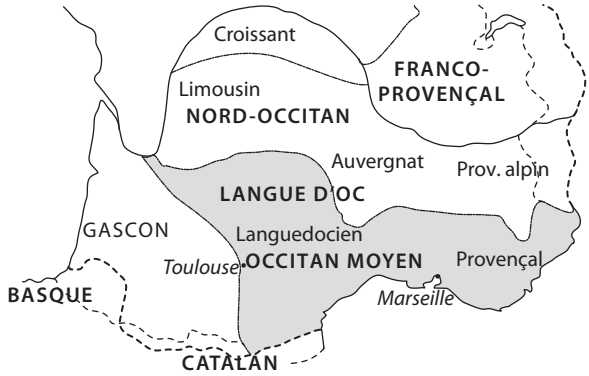

Figure 1. Occitan dialects (Bec 1963)

the north and Provençal in the south. The *oc* language or Occitan is subdivided into dialects, with more or less mutual intelligibility, as shown on the map in Figure 1.

French reached the Southern regions of France in the early or mid 15th century, but was not really spoken fluently by inhabitants until the 19th century. Occitan remained the mother tongue for many people, especially outside of cities, until the beginning of the 20th century. Compulsory schooling, where languages other than French were prohibited and their use severely punished, surely contributed along with other factors (see Antoine et al. 2002) to the near disappearance of these languages. The process of language loss was a long one, preceded by a long-lasting situation of diglossia (Kremnitz 1981), hence a significant substrate influence of Occitan on the French spoken in these regions (Lonnemann & Meisenburg 2009; Blanchet 1984).

Although syntactic dialectal variation linked to the substrate is very limited and mainly reflects general trends in spoken French (Blanchet 1992), we do notice substantial influence on the vocabulary. A closer look at the corpus of this study reveals only a few specific Southern markers. We cannot say for sure whether the lack of more Southern lexical items is due to the interview paradox or rather that the speakers of this corpus always make very limited use of such markers. We can distinguish two types of regional markers. On the one hand, we have clearly frenchified substrate loans such as *minot* 'kid', *lambin* 'slow person', *piter* 'to nibble', *peuchère* 'poor thing', *escagassé* 'messed up or bored', *esche* 'bait', to cite but a few. On the other hand, speakers also use ready-made Provençal expressions as *fan* (expresses surprise), *vé* 'look', *garri* 'rat', *lou ferun* 'smell of wildfowl', *la linga de brès* 'cradle language', among others.

The French spoken in Provence is one of the most widely known and imitated accents of the country and has indeed the reputation of being pleasant and musical. But what is it like in reality? We propose here, through a sample of 18 speakers from Marseille, to highlight the most salient features of this accent.

2. The surveys

The 18 speakers presented in this study are taken from two different PFC surveys, recorded in Marseille (Bouches-du-Rhône) or in the proximity.

The PFC survey Marseille (13a) was recorded in 2002 and presents ten members of a family native to the city of Marseille. It was led by Jacques Durand, who is a relative of this family. The ten speakers have always lived in Marseille, except for one speaker who was born in the department of Hérault (about 200 kilometers west of Marseille) and arrived in Marseille around the age of four.

The PFC survey Aix-Marseille (13b) was recorded by Annelise Coquillon in 2003–2004 and introduces a family that originates from Septèmes-les-Vallons (a small village in the district of Marseille). Some of the speakers now live in the center of Marseille or have moved to surrounding cities (Aix-en-Provence, about 30 kilometers away). They are members of the researcher's family circle.

The corpus including both surveys, comprises nine men and nine women, aged from 18 to 82 (mean age: 51), thus covering three generations that we divide into three age brackets presented in the Table 1 below: above 65 for the first generation, between 30 and 65 for the second and under 30 for the third. The speakers are from middle or working class backgrounds.

The speakers have always lived in or around Marseille and have only traveled for holidays (less than a month spent abroad). The oldest are acquainted with Provençal, mainly as passive speakers, or with Languedocian for 13aDS1 whose family comes from Hérault. As we have shown in Figure 1 above, this Occitan dialect is close to Provençal (with mutual intelligibility) and both are part of *Occitan Moyen*.

As for all PFC surveys (Durand & Lyche 2003 and Chapter 1 of this volume), the recordings involve four separate tasks for each speaker: a read word list (including minimal pairs), a read text (passage), a semi-directed (guided) conversation and an informal (free) conversation, each lasting around 30 minutes. Orthographic transcriptions are available for the list, the passage and 5 minutes of each conversation. Schwa and liaison are coded for the text and parts of the conversations: 3 minutes for schwa and 5 minutes for liaison. This study will therefore rely on these transcriptions and codings.

Table 1. Generation, code, sex and age of the speakers of both surveys

Generation	Marseille survey			Aix-Marseille survey		
	speaker	sex	age	speaker	sex	age
1st	13aAC1	female	76	13bAA1	female	82
	13aDS1	female	74	13bRP1	male	81
	13aAS1	male	73			
2nd	13aPD1	male	54	13bPA1	male	58
	13aDG1	male	49	13bJC1	female	57
	13aAG1	female	48	13bMA1	female	53
	13aID1	female	45	13bRP2	male	45
3rd	13aOG1	male	23	13bFA1	male	30
	13aLG1	female	20	13bSA1	male	27
	13aMB1	female	18			

3. Phonological inventory and phonotactics

We present here the main segmental inventories of the French spoken in the Marseille area, henceforth FM for *français de Marseille*, and we also use the abbreviation FR for *français de référence* (see Chapter 1).

3.1 Consonants

Concerning the consonant system of FM, there does not seem to be any noticeable difference with FR (see Lyche 2010), except for the palatal /ɲ/ which may be absent for some speakers of our corpus. For instance, though five speakers realize it in *baignoire* [bɛɲwaʁə], most of them pronounce [benjwaʁə] or even simplify the cluster [benwaʁə]. This simplification is also found in *compagnie*, always pronounced [kɔ^{m}pani], except for two speakers. Moreover, the word *agneau* is pronounced [anjo] by all the speakers. No realization of /ɲ/ can be found in spontaneous speech or in the text, where this segment is rather realized as a sequence of alveolar nasal plus glide /nj/ (*campagne, baignait, gnôle,* etc.). It therefore seems that the palatal nasal /ɲ/ is disappearing from FM, as it is also the case in other French varieties, in favor of the cluster /nj/.

Concerning the rhotic phoneme /R/,[1] whereas an apical /r/ can be found in other southern varieties (Durand 2009; Eychenne 2009), /R/ is always realized as the uvular variant /ʁ/ in the Southeast. It is worth noting that this is also the

1. Following Durand (2009), we use capital letters for phonemes underspecified for articulatory features.

case in Provençal, probably under the influence of French (see Durand & Tarrier 2003).

Consonants behave differently in clusters, which are often simplified (Carton et al. 1983). In the word list, one speaker (13bAA1) reduces the cluster /ks/ to /s/ by eliding the /k/ in *explosion* and in *extraordinaire*, but not in *ex-femme* or *ex-mari* (two morphemes). In the text, we can find four simplifications for *explosion* and *Express*. Nevertheless, cluster simplification is more common in the conversation tasks /ks/ → /s/ as in *expliquer, exprès* (13bAA1), *extraordinaire* (13bRP2) or /gz/ → /z/ as in *exemple* (13bRP1). Other reductions and assimilations can often be found in this variety: for instance, the cluster /ʁsk/ in *parce que* is reduced most of the time to [paskə] or [pasə] (with the deletion of the internal schwa). The appearance of the shorter form seems systematic for most speakers (15) and at least present for all of them: we have only 13 realizations of [paʁskə] out of 269 occurrences. Note that this is quite common in speech throughout France, and can also be found for other words such as *bien* pronounced [bɛ] or [bɛ̃], *il y a pas* [japa] and *je suis* [ʃɥi]. This latter place assimilation of the voiceless consonant [s] to the [ʒ] is frequent as in most varieties, although we only find a single case of [ʃɥi] here, as the other instances of *je suis* are pronounced with a schwa [ʒəsɥi], separating the two consonants thus preventing assimilation. The lack of assimilations is not an independent feature of this variety but a direct consequence of schwa maintenance. As we will see in Section 4, this feature is one of the most salient of this variety.

As for final clusters, simplification is not as common as in other varieties of the South of France (Durand 2009), and is mainly found in *Ouest Liberté* [weslibɛʁte] in the text and in *infect* [ɛ̃fɛk] (word list) for one speaker (13bPA1). The preposition *avec* displays truncated forms [ave] or [avɛ] but grammatical words behave differently and do not necessarily allow generalizations over the lexicon.

We observe many instances of regressive voicing assimilation of /s/: *socialisme* [sosjalizmə] (17 speakers), *islamique* [izlamikə] (4 speakers) or *Israël* [izʁaɛl] (13aDS1). These are also attested in other varieties, but in FM, they can also affect a word-initial sequence, as for instance in *slip* [zlip] (4 speakers). Other assimilatory processes involve palatalization of alveolar plosives /t/ and /d/ before /i/ and /y/, as in *parti* [paʁtʃi] or *dur* [dʒyʁ], observed among the younger generation (degree of presence depending on the speaker).

Interestingly enough, the phonotactic ban of FR on obstruent + liquid + yod clusters, absent from many Southern French (SF) varieties (see Durand 2009) in strings like *vous entriez* SF [ãtʁje] / FR [ɑ̃tʁije], *un sablier* SF [sablje] / FR [sablije] is well respected in this corpus except for the speaker 13aDS1 with Languedocian background. Indeed, dieresis is relatively common in the South: for instance, *marié* pronounced with three syllables [ma.ʁi.je] (five occurrences in conversations) as

opposed to two syllables expected in FR [ma.ʁje]). Similarly, *muette* [my.ɛtə] and *nier* [ni.je] (in the word list) are almost always realized with dieresis (one exception for each), or *reliure* [ʁə.li.yʁə], for 14 speakers, and many examples can be found in the conversations, such as *estropiait* [ɛs.tʁo.pi.je] (13bRP1). The ongoing change towards syneresis observed in other Southern varieties like Languedoc (Durand & Lyche 1999) seems to be absent in our corpus.

3.2 Vowels

Between FM and FR, the phonological systems differ primarily in the vowel inventory. More precisely we review here the patterns linked to mid-vowel distribution (3.2.1), nasal vowels (3.2.2) and limits on schwa deletion (4). The distribution of FM vowels follows closely the trends observed in other Southern French varieties and, together with the behavior of schwa, form the bulk of features that allow an accent to be classified as Southern.

3.2.1 *Oral vowels*

All in all, as in other Southern dialects and most French varieties (see Lyche 2010), vowel duration plays no phonological role (no distinction between long and short vowels), and the back /ɑ/ is completely absent from FM (compare *âme* [amə] vs. [ɑm] in conservative FR). The phonetic quality of /A/ generally ranges from a fronted to a central articulation.

Moreover, there is no phonemic opposition of aperture for mid vowels. Though the distribution of mid vowels seems unstable in other French varieties, we will see that it is quite steady in FM. The oral vowel system, which is thus 'reduced' compared to FR, includes seven units[2] (versus eleven in FR) that we represent in Figure 2.

Commonly, two surface realizations (allophones) are attested for mid vowels: /E/ → [e, ɛ], /O/ → [o, ɔ], /Ø/ → [ø, œ] and their distribution seems largely

	Front		Back
	unrounded	**rounded**	**rounded**
high	i	y	u
mid	E	Ø	O
low	a		

Figure 2. FM oral vowels

2. Not counting schwa.

organized according to the *loi de position* (henceforth LdP, see Chapter 1). The speakers of this corpus do realize [e, ø, o] in open syllables not followed by a schwa syllable, and [ɛ, œ, ɔ] in closed syllables or open ones followed by a schwa syllable, at least as far as spontaneous speech is concerned. Accordingly, we can hear pronunciations like [bale] for *balai*, [kʁœzə] for *creuse*, and [ʃɔdə] for *chaude*. Most of the production trends observed here confirm this tendency and show a relative resistance to evolution towards FR, even for the most innovative speakers. However, although it is widely acknowledged that the LdP plays a central role in the phonology of Southern French, close examination of corpus data show some too often neglected complexities (see Durand 2009). Note first that morphology seems to have a significant influence in offering alternative syllabification algorithms thus changing the input of the LdP. The LdP cannot apply to a prefix vowel as in *préscolaire* [pʁeskolɛʁ] while it takes a free ride on *prestataire* [pʁɛstatɛʁ] with no internal prefix boundary.

Some speakers do make oppositions between some mid vowels in the word list. This is particularly true when minimal pairs are adjacent in the list. Table 2 below presents the pronunciations of mid vowels in minimal pairs from the word list, when presented in a random order (separate) or next to one another (adjacent). Our transcriptions are the result of a thorough listening by both authors and were sometimes verified by visual analysis of a spectrogram. Table 2 is sorted by the age of the speakers and unexpected pronunciations are in bold. The FR pronunciation of the minimal pairs, *épais / épée*, *beauté / botté* and *jeune / jeûne*, are respectively: [epɛ] / [epe]; [bote] / [bɔte] and [ʒœn] / [ʒøn].

As we can see in Table 2, five of the speakers never make any distinction between the presented minimal pairs. Interestingly enough, they are evenly distributed between the generations. Indeed, one would expect that younger generations would more readily adopt standardized language practices owing to the well-known pressure of mass media. However, most speakers make only a few distinctions, which are often improper (signaled by *) in the sense of not conforming to the FR pattern (nor, obviously, to FM), whether these occur on the vowels or on adjacent phonemes.

We observe various differentiation strategies like the slight change in the raising / lowering (signaled by a diacritic) or lengthening of the vowel (not distinctive in most French varieties and certainly not in the South). Some performance errors consist in attributing low / high allophones to the wrong word in the minimal pair (13bRP1 for *beauté / botté*; 13aDS1 for *jeune / jeûne*). We can even find long distance strategies for differentiation purposes: for the distinction *épais / épée*, 13bRP2 tries to differentiate the two words by lowering the first vowel in *épais* *[ɛpe], while 13aDS1 chooses consonant gemination instead, for the word *botté* [botte] vs. *beauté* [bote] in the adjacent minimal pair list. The only two speakers

Table 2. Minimal pairs for mid vowels (wordlist)[3]

Speaker	Age	*épais / épée*		*beauté / botté*		*jeune / jeûne*	
		adjacent	separate	adjacent	separate	adjacent	separate
13aMB1	18	e / e	e / e	o / o	o / o	œ /œ	œ / **ø**
13aLG1	20	e / e	e / e	o / o	o / o	œ /œ	œ / œ
13aOG1	23	e / e	e / e	o / o	o / o	œ /œ	œ / œ
13bSA1	27	e / e	e / e	o / o	o / o	**œ̝** / **ø**	**œ̝** / **ø**
13bFA1	30	e / e	e / e	o / o	o / o	œ / **œ̝**	œ / œ
13bRP2	45	* e / e	e / e	o / o	o / o	œ / **ø**	œ / œ
13aID1	45	e / e	e / e	o / o	o / o	œ /œ	œ / œ
13aAG1	48	e / e	e / e	o / o	o / o	œ / œ	œ / œ
13aDG1	49	e / e	e / e	o / o	o / o	œ / **ø**	œ / **ø**
13bMA1	53	**e̝** / e	e / e	o / o	o / o	* **ø** / **ø**	* **ø** / **ø**
13aPD1	54	e / e	e / e	o / o	o / o	œ /œ	œ / œ
13bJC1	57	* **eː** / e	e / e	o / o	o / o	œ / **ø̝**	œ / œ
13bPA1	58	e / e	e / e	o / o	o / o	œ / **øː**	œ / œ
13aAS1	73	e / e	e / e	* o / **oː**	* **oː** / o	* œ / **œː**	*œ / **œː**
13aDS1	74	**ɛ** / e	**e̞** / e	* o / **o**	o / o	* **ø** / œ	œ / œ
13aAC1	76	e / e	e / e	o / o	o / o	* œ / **œː**	œ / œ
13bRP1	81	**ɛ** / e	**ɛ** / e	* **ɔ** / o	o / o	* œ / **œː**	* œ / **œː**
13bAA1	82	e / e	e / e	o / o	o / o	œ / œ	œ / œ

(13bRP1 and 13aDS1) who make the FR opposition in *étais / été* in the word list, never make use of a final mid-low vowel elsewhere (text or conversations). The [ø] / [œ] pair triggers most of the vowel quality distinctions in the word list (with *feutre* also pronounced once with [ø], again by 13aDS1), though it is worth noting that the word *jeûne* is pronounced with a mid-low [œ] by all speakers in the read text.

Instances of mid-vowel distinctions not conforming to the LdP pattern, together with 'erratic' productions, clearly indicate a certain awareness of the phonemic distinction between mid-low and mid-high vowels prescribed by the norm.

3.2.2 *Nasal vowels*

The opposition /œ̃-ɛ̃/, which is disappearing in other French varieties (see for instance in this volume Hambye & Simon for Belgium, Hansen for Paris, Bordal for Central African Republic…), is surprisingly well maintained in FM. The /œ̃–ɛ̃/ opposition has a very small functional load in French, with only a handful of

3. We use standard IPA diacritics [ː] for long; [˕] for lowered and [˔] for raised.

minimal pairs (as *emprunte / empreinte; un / hein*) and just a few words containing a potential /œ̃/ other than the determiner *un* (usually unstressed). Nevertheless, all the speakers of the corpus make the distinction between *brun / brin* in the wordlist, though some of the youngest tend to realize [œ̃] a little more front and / or less rounded. The data show that the 725 instances of *un(s)* are realized with [œ̃], and so are the occurrences of *emprunter* or *chacun* (1 instance of each), *aucun* (5) and *lundi* (4).

Besides the maintenance of four nasal vowel oppositions, it is the particular pronunciation of these vowels which is characteristic of Southern French (Brun 1931; Séguy 1950; Durand 1988). Some of these studies mention that nasal vowels are generally longer than in other French varieties, probably due to their articulation in several phases: They start as an oral vowel with possible regressive nasalization and end with a consonantal nasal appendix. The strength of the appendix is highly variable and its place of articulation depends on the context to its right. When followed by a consonant, the nasal appendix is homorganic: [m] before a bilabial, [ɱ] before a labiodental, [n] before an alveolar and [ŋ] before velar. Before a pause, the nasal takes on a velar articulation [ŋ] by default, which is also to be found in the rare sequences where the nasal vowel is immediately followed by another vowel in a non liaison context as in *le pain et le vin* [lə$pɛ^{ŋ}$eləv$ɛ^{ŋ}$] (in liaisons, the nasal will always be [n], as expected). In sum, /ɛ̃/ would be pronounced [$ɛ^{ŋ}$] or [$ɛ^{\tilde{ɛ}ŋ}$] (partial regressive nasalization). The homorganicity requirement of the consonantal appendix is also satisfied across word boundaries, see *comment en plus* [koma^{ŋ}a^{m}plys] (13bRP2). We will not detail here the quality of the oral part of VN complexes but will just mention that it tends to be mid-low. Note that there are no nasal vowels in Provençal, which might explain the oral qualities.

Durand (1988, 2009) proposes that, at the underlying level, Southern nasal vowels are actually sequences of a vowel + a nasal segment (VN). Among the arguments for this interpretation are the simplification of VN in consonantal clusters, where the vowel is often oral, and the systematic oral quality of the vowel before the liaison consonant [n]. Though we can find very few oral vowels in VN sequences before consonant clusters in our corpus (for example *construction* [kɔstʁyksjɔ̃] (13aDS1)), the denasalization of the vowel is quite common before the liaison consonant [n] (as in *en août* [anut] (13aID1)). In this context, 289 VN sequences are pronounced with oral vowels (partially or totally) in the coded corpus (170 for /ɔ̃/; 84 for /ɑ̃/; 35 for /œ̃/), vs. 150 with nasalized vowels. Thus, FM speakers may be less conservative in this respect than the ones Durand (2009) accounted for.

Table 3 illustrates the realizations of nasal vowels for the items *brin, brun, blanc, blond* of the word list (when randomly presented) for all the speakers. We have adopted the same methodology as in Table 2 for defining the pronunciations.

Table 3. Realizations of /ɛ̃/, /œ̃/, /ɑ̃/ and /ɔ̃/ in minimal pairs (word list)

Speaker	Age	*brin*	*brun*	*blanc*	*blond*
13aMB1	18	ɛ̃	œ̃	ɑ̃	ɔ̃
13aLG1	20	ɛ̃	œ̃	ɑ̃	õ
13aOG1	23	ɛ̃	œ̃^{m}	ɑ̃	õ
13bSA1	27	**ɛ̃^{ŋ}**	**œ̃^{ŋ}**	ɑ̃	õ
13bFA1	30	**ɛ̃^{ŋ}**	**œ^{ŋ}**	ɑ̃^{ŋ}	ɔ̃^{ŋ}
13aID1	45	ɛ̃	œ̃	ɑ̃	ɔ̃
13bRP2	45	**ɛ^{ŋ}**	**œ^{ŋ}**	**a^{ŋ}**	**ɔ^{ŋ}**
13aAG1	48	ɛ̃^{ŋ}	**œ̃^{ŋ}**	ɑ̃	ɔ̃^{ŋ}
13aDG1	49	*œ̃	**œ̃^{ŋ}**	ɑ̃^{ŋ}	ɔ̃^{ŋ}
13bMA1	53	ɛ̃	œ̃	ɑ̃	ɔ̃
13aPD1	54	ɛ̃^{ŋ}	**œ^{ŋ}**	**a^{ŋ}**	**ɔ^{ŋ}**
13bJC1	57	ɛ̃^{ŋ}	œ̃^{ŋ}	ã	ɔ̃^{ŋ}
13bPA1	58	ɛ̃^{ŋ}	œ̃	ã	ɔ̃^{ŋ}
13aAS1	73	**ɛ̃^{ŋ}**	œ̃^{ŋ}	ã^{ŋ}	ɔ̃
13aDS1	74	ɛ̃^{ŋ}	œ̃^{ŋ}	ã^{ŋ}	ɔ̃^{ŋ}
13aAC1	76	ɛ̃	œ̃^{m}	ã^{m}	ɔ̃
13bRP1	81	**ɛ^{ŋ}**	**œ̃^{ŋ}**	**a^{ŋ}**	**ɔ^{ŋ}**
13bAA1	82	**ɛ̃^{ŋ}**	**œ̃^{ŋ}**	**ã^{ŋ}**	ɔ̃^{ŋ}

What is striking in Table 3 is the important variability of nasal vowel pronunciations in FM. The variation concerns not only productions across speakers but we can also find pronunciation differences for the same speaker. The degree of nasality of the vowel (in bold) is also highly inconsistent and oral vowels can be found for all four vowel qualities in every generation. Still, back realizations for /ɑ̃/ and high for /ɔ̃/ are absent for the first generation: [ɑ̃] only for speakers under 54 and [õ] for speakers under 30. Concerning the consonantal appendix (shaded), we can first note that, surprisingly, an [m] is realized three times instead of the expected default [ŋ]. In any case, the appendix tends to occur more among the oldest, though we see that it may be present or absent in every generation. The only four speakers who do not make use of appendices in this task are 18, 20, 45 and 53 years old, showing that the age factor cannot explain consonantal appendix realizations. Only a few speakers seem to have a steady realization, whether pronouncing an oral vowel + appendix (13bRP1 and 13bRP2), a nasal vowel + appendix (13aDS1), or a realization conforming to FR (13aBG1, 13aLG1, 13aID1, 13bMA1). Nevertheless a closer look at the rest of the corpus shows that nasal vowels are somewhat unstable in the FM system.

4. Behavior of schwa

The most important distinctive feature of the French schwa is not really its phonetic quality but rather its phonological behavior as a weak vowel. The pronunciation of schwa being largely optional, its presence or absence does not affect the meaning of the word. Moreover, it cannot bear stress (unless emphatic). Phonemically, the French weak vowel is transcribed /ə/, though the actual realizations are not very stable and can have various pronunciations: [ø], [œ], [e], [ʌ], [ɐ], [o] and of course [ə] which remains the most common one, especially at word ends. We can find many examples of such variation in this corpus: the schwa in the prefix *re+* is often pronounced as an [o] (see also Boula de Mareüil et al. 2007), as in ***re**commencerai* (13bRP2) or ***re**viens* (13aOG1). It is generally acknowledged that schwa reaches its maximum of effective realizations in the Southern accents (Lucci 1983) and its presence is therefore taken as one of the most typical features of Southern French accents. The rate of schwa realization can be correlated to the degree of conservativeness.

We will identify here the occurrences of schwa in the corpus, relying on the PFC coding protocol. The overall results show that there are 9,361 coded sites for schwa in the corpus,[4] out of which 4,674 are realized (about 50%) and 96 are coded as uncertain (the coder is not sure whether a schwa has been realized). These numbers are not really informative by themselves and need a more thorough description. That is to say, the overall 50% deletion rate does not mean that schwa is deleted half of the time regardless of the context. As we shall see below, the deletion rate depends clearly on phonological and grammatical context, not to mention the inevitable bias introduced by any coding policy. Besides, the treatment of schwa in contemporary Southern French accents is a complex issue, and the reader is invited to refer to Durand (2009) for a more detailed description.

4.1 Final position

First of all, schwa is never realized word-finally immediately after a vowel (such as in *jolie*) in this corpus or in any variety of French for that matter. Also, final schwas are regularly deleted in prevocalic position within a rhythmic group, as in *cours**e** à pied* [kuʁsapje]. This is indeed the case in this corpus, and the few schwas coded as realized in this context correspond rather to a minor pause or a hesitation than to a genuine prevocalic context. Moreover, the hesitation marker *euh* in

4. We thank Julien Eychenne for providing the Plateforme PFC tool, which allows the counting, among other possibilities (see Eychenne 2007).

French is phonetically very close to schwa (lax [ø]) making it difficult to decide whether schwa is actually realized or not.

However, the word-final position is still interesting. Contrary to what has been observed in FR, word-final schwas will often be realized in Southern varieties: ***le frère de sa mère*** will regularly be pronounced [ləfʁɛʁədəsamɛʁə]. On the other hand, when a final consonant is not followed by an <e> in the spelling, the realization of epenthetic schwas (non orthographic) is rare *Il part sept jours* will give [ilpaʁsɛtʒuʁ]. It is definitely not the case that Southern speakers insert schwas everywhere as a 'phonetic lubricant'. In our corpus, 73% of final schwas (4,018 out of 5,507 potential sites) are realized, prevocalic position excluded. Inversely, only 4% of epenthetic schwas are produced (81 out of 2,057), concerning mainly a few items: *avec*, *donc*, numerals such as *vingt-deux* [vɛ̃ⁿtədø] or again words followed by the hesitation filler *euh*. The difference between the realization rate of schwas in /C#/ *vs.* /Cə#/ reveals that there is a phonological opposition in close correlation with the graphical opposition <C#> vs. <Ce#>. This is partly revealed by the word list, where 14 of the speakers distinguish between *roc – rauque* [ʁɔk] – [ʁɔkə] and *mal – malle – mâle* [mal] – [malə] – [malə] (plus one speaker for the distinction *mal – mâle,* the other three speakers adding a final schwa even in *mal*). Note that the distinction between these pairs of words does not rely on vowel quality as can be the case in FR (see Section 3.2.1), but on the presence of the final schwa. A few examples of the opposition *mer – mère* [mɛʁ] – [mɛʁə] can also be found in the conversations. Whether this distinction is morphological (as in *noir – noire*) or lexical (as in the examples above), these word-final orthographic schwas should in any case be integrated into the underlying (abstract) representation of these words (Durand 2009).

Table 4 is sorted by the average schwa realization rate. In this table, we can also notice the bigger proportion of schwa retention in monosyllabic words (CV). Only two younger speakers (13aOG1 and 13bSA1) retain less than 80% of schwas in monosyllables while the 55+ age bracket reaches a rate of 95%.

The realization of schwas at word ends strongly depends on the speaker. The overall realization rate of 73%, mentioned above, ranges from 40% to 99% and is correlated to the age of the speakers, with a Rho[5] = 0.796 ($p = 0.001$; $n = 18$), the rate being higher for the older speakers, though this correlation is not linear (see Table 4). For instance, 13bRP2, aged 45, has a higher final schwa realization rate (92%) than 13aAC1 (78%), who is 76. According to what we have seen so far, 13bRP2 seems indeed to have a rather conservative accent (mid-vowel lowering, VN realization, consonant cluster simplification, dieresis, and so forth).

5. Spearman's rank correlation coefficient.

Table 4. Realization rate of final schwas per speaker in monosyllables and polysyllables

Speaker	Sex	Age	Polysyllabic	Monosyllabic	Total
13aOG1	M	23	22%	65%	40%
13aLG1	F	20	30%	81%	51%
13aMB1	F	18	36%	80%	56%
13bSA1	M	27	51%	70%	60%
13aDG1	M	49	41%	86%	62%
13bMA1	F	53	42%	91%	64%
13bFA1	M	30	50%	82%	65%
13bJC1	F	57	49%	89%	68%
13aAG1	F	48	51%	94%	69%
13aID1	F	45	59%	94%	74%
13aAC1	F	76	71%	90%	78%
13bPA1	M	58	69%	94%	80%
13aPD1	M	54	78%	90%	83%
13aDS1	F	74	82%	96%	88%
13aAS1	M	73	86%	99%	91%
13bRP2	M	45	89%	94%	92%
13bAA1	F	82	94%	96%	95%
13bRP1	M	81	98%	100%	99%
Mean		50,72	61%	89%	73%

Table 4 clearly shows that schwa deletion in final position varies considerably according to the poly- or monosyllabic status of the items concerned, with 61% vs. 89% of schwas retained, respectively. The difference in deletion rates is striking for younger speakers who have a higher overall deletion rate (13aOG1, 13aLG1, 13aMB1, for instance), and it is still important for the middle generation. The difference disappears altogether for older speakers who retain schwa in any case (13bAA1, 13bRP1).

Incidentally, schwa-headed monosyllables are all function words in French: determiners (*le, ce*), pronouns (*je, me*), prepositions (*de*), or conjunctions (*que*), to name but a few. Phonologically, they behave as clitics in that they do not bear stress and belong to the following lexical word as far as rhythm is concerned. If this line of thinking is valid, schwa in monosyllables should not be considered final but rather initial. This move would explain the higher retention rate of younger and middle aged speakers, ready deleters elsewhere. Indeed, schwa retention in monosyllables (89%) is roughly the same as schwa retention in the first syllable of polysyllables (91%), see 4.2 below. However, a closer inspection of the data reveals that monosyllabic function words do not behave as a homogeneous set with respect to schwa retention. Table 5 below shows some figures for the most frequent items of the Marseille corpus. The figure after the items corresponds to the total

Table 5. Average schwa retention in monosyllables

After non fricatives			After fricatives		
le	(565)	96%	*je*	(361)	67%
de	(811)	94%	*se*	(132)	87%
que	(276)	91%	*ce*	(127)	77%

number of tokens while the percentage refers to the schwa retention rate. We split the items in two categories according to the place of articulation of the consonant. Studies on other Southern French corpora discovered a certain influence of the preceding consonant on schwa deletion, fricatives triggering more deletions.

The tendency is confirmed by our data. The worst deletion environment is *le* (4%), with an alveolar sonorant and the best is *je* (33%) with a post-alveolar fricative. We surmise that some kind of a post-lexical phonetic resyllabification procedure should intervene. Indeed, [l] + C initial clusters are universally highly marked while [s] + C clusters are frequent. The phonetic explanation seems to us truer to the facts than one based on frequency and usage. There is no doubt that *je* showing the highest deletion rate is a very frequent item in our corpus, but so is *le* or *de* with a low deletion rate.

We have found no real influence of register on schwa deletion. The overall figures seem to indicate a tendency to have slightly more schwas realized in the read text (63%) than in the conversations (60% and 59%). A closer look at the speakers reveals a rather chaotic picture. Half of the speakers have a higher deletion rate in the read text than in the two conversations (ranging from 51% more in the text for 13bSA1 to 21% more in the conversations for 13aID1). Similarly, only half of the 18 speakers have a higher deletion rate in the free conversation than in the guided one. This may seem somewhat surprising as high deletion rates are often linked to informal styles. We have to admit that at this point, we cannot say whether this is due to the insensitivity of schwa deletion to style in this variety. This is all the more so since our data (a mean of 306 coded sites per speaker for final schwas) does not allow for a fine-grained comparison of speech styles.

4.2 Initial position

In initial position of polysyllables (#CəCV), schwa is frequently maintained in Southern French accents. This seems to be true for Marseille speakers as well, for whom the realization rate reaches 91% (275 out of 302) in this position. Moreover, we have found that out of the 26 cases of deletion, 22 are produced by speakers under 55. The items involved are relatively common, as *petit* (7), *semaine* (5),

demi (3), *serais* (2). Again, on the other extreme, the first generation group is more conservative, with 95% of initial schwas maintained.[6]

Our data give support to the argument (Durand 2009) that for most speakers these stable initial schwas have to be considered as non-alternating mid front vowels.

4.3 Medial position

Internal schwas (in the second syllable or more) show more variation: only 50% of them are realized (190 out of 384). On closer scrutiny of the lexical items involved it turns out that the relatively higher deletion rate is linked to the high frequency of set phrases like *parce que* and *est-ce que* (both considered as single words in the codings). Incidentally, they represent 39% of all internal elision cases. For the internal position then, without these two expressions, the maintenance rate suddenly rises to 72%, and once more to 85% for the older group.

Our results confirm the deletion hierarchy found for other Southern accents (Coquillon & Durand 2010), in that final schwa is weaker (more prone to deletion) than internal schwa, which in turn is weaker than initial schwa. Also, young speakers tend to delete more schwas than the older ones. The age-dependent difference confirms that a high schwa realization rate is an important feature of conservative Southern accents. Incidentally, this is one of the features that tend to fade with the new generation (tendency to neutralization), thus being a less stable feature than vowel quality for instance.

5. Behavior of liaison consonants

This section gives a brief overview of liaison in FM. Our aim here is to show realization rates according to the major factors that are said to have a significant impact on liaison and explore the specificities of FM compared to other French varieties.

Globally, there are 3,115 codings of potential liaison in the corpus, about 41% of which are realized (1,263 against 1,846), one has been judged doubtful by the coder and only three are epenthetic: two in *mène* [t] *au village* (read text) and the other in *il* [z] *a le, le*, the latter interpreted as confusion or hesitation. All liaisons are '*enchaînées*' (linked forward to the following word). There is no liaison before

6. We can also note a slight difference between the two surveys here: 18 of the 22 unrealized schwas are to be found in the 13a survey (Marseille).

a pause, even brief, or a hesitation, and if we remove the 304 cases of pre-pausal unrealized liaisons from the potential sites, the realization rate is brought to 46%. Needless to say that the overall 46% realization rate is not really interesting in itself since it covers a set of different contexts depending on factors such as style, age or word-length.

Our data show that the rates are quite different depending on the register linked to the task: more liaisons are made in the read text (63%) than in the conversations (35%). As for the age factor, the older speakers tend to perform more liaisons: 43% for the first and the second generations and 34% for the third. Again, we are speaking about global figures here, but if we take just one highly variable item such as *est*, the age influence becomes even clearer: 64% of realizations for the first generation vs. 41% for the second and 21% for the third. Also, as expected, the length of the words in contact has an impact on liaison: 58% of monosyllabic words trigger liaison against 7% for polysyllabic words. In sum, tendencies observed in other varieties (Mallet 2008) are confirmed here.

Concerning so-called compulsory liaisons, there does not seem to be any noticeable difference between the realizations of the South as compared to other French speaking regions either (but see Durand & Lyche 2008; Coquillon et al. 2010). The speakers of 13a and 13b make almost all the liaisons in categorical contexts such as determiner + noun, personal pronoun + verb, monosyllabic preposition… One wonders then, whether the fact of being an FM speaker may have any kind of influence on liaison patterns after all. Is there any specific FM feature linked to word edges? Indeed, as we have seen in Section 3, word-final schwas are potentially realized in FM contrary to what happens in Northern varieties. We should look at liaison contexts where the liaison consonant is preceded by schwa.

A closer look into the corpus reveals that the only contexts where a potential schwa is followed by a potential liaison consonant concern morphemes represented by the spellings <-es> (plural noun and 2nd person singular verb markers) for liaisons in [z] and <-ent> (3rd person plural) for liaisons in [t]. Both contexts belong to the variable liaison category. Overall, our data indicate that when a liaison is realized in such contexts, a schwa will also appear in most cases (36 vs. 12, i.e., 75%). For instance, the string *pât**es** italiennes* from the read text is realized with a liaison consonant by three speakers, of whom two pronounced a schwa as well. Needless to say that the small number of tokens does not allow us to make generalizations about social or grammatical variables. On the other hand, when the liaison consonant is not pronounced, very few schwas will appear (12 vs. 150, i.e., 7%). This is not surprising since in this case the schwa is in a prevocalic context and systematically followed by a glottal stop.

The realizations of these two optional phenomena seem to be linked to one another, as they tend to appear simultaneously. Which of the two triggers the other is an issue that would require a more thorough analysis. Nevertheless, we tend to think that, as FM prefers to avoid consonant clusters (see 3.1), it is probably the realization of liaison that provokes the realization of schwa. Two examples of variable liaison from the read text could justify this interpretation: (i) The word *chemise**s*** (*+en soie*) already ends with a pronounced [z] thus complicating the realization of the liaison, except if one realizes a schwa (two cases in the corpus) or geminates the [z] (not here). (ii) The word *fanatiqu**es*** (*+auraient*) being a polysyllable, no liaison is made in the corpus, yet eight schwas appear. These examples show that on the one hand, schwas tend to appear to avoid consonant clusters when liaison is realized, and on the other hand, the realization of schwa does not necessarily trigger an optional liaison.

6. Prosody

When people in France are asked about their impressions of Marseille French, the following labels are recurring: pleasant, musical, and singing. There must be something in the prosody of FM that gives this impression. Dialect and accent studies are too often focused exclusively on segmental variation. Nevertheless, supra-segmental features have been shown to also play a role in identifying accents (Hambye & Simon this volume; Boula de Mareuil et al. 2008; Barkat et al. 1999; Peters et al. 2002; Van Leyden 2004). Prosodic analysis is quite costly in terms of annotation and it is quite difficult to tell which parameter is the most representative. This is the reason authors prefer to pick just one or a few contours instead of measuring duration, F0 and other supra-segmental values on a large set of data. We will focus here on one F0 parameter, pitch span, which has been shown to be one of the relevant features in accent discrimination (Ménard 2003; Todd 2002).

6.1 General prosodic trends

Investigations on prosodic regional variations in Southern French are scarce and the few studies rely mainly on melodic (tonal) aspects. Nevertheless, some prosodic specificities of Southern French have been pointed out (Carton et al. 1983; Watbled 1995). One of the most salient features is that word stress can sometimes be paroxytonic (stress on the penultimate syllable of content words), whereas FR is regularly oxytonic (stress on the last syllable). Such stress patterns are mainly due to the heavy tendency of Southerners to realize schwas at word ends, which are

always atonic. It is worth noting that penultimate stress exists in Provençal, and is still visible in substrate words such as *garri* [ˈɡaʁi], or *faudièu* 'apron' [foˈdjɛu] (13bRP1). Note that in such cases, there is a dependent (atonic) syllable on the right edge of the tonic, thus furnishing a context for the LdP to lower mid vowels (as in *aïoli* ('provençal garlic sauce') [aˈjɔli] as opposed to [ajoˈli]). At the melodic level, penultimate stress creates a trochee. This disyllabic unit is the domain of tonal and temporal distribution (Selkirk 1977), which therefore enables particular FM rhythmic and melodic patterns to occur, as shown in Coquillon (2005). The latter study also revealed global tonal configurations specific to this regional accent, as a melodic hat pattern that does not seem to occur in FR. Based on this previous study on the prosody of FM, as well as on Coquillon (2006), we present here one melodic parameter, pitch span, as a relevant distinctive feature of FM.

6.2 Pitch span

Pitch span, as part of a tonal register parameter, characterizes the tonal range of frequencies (broad or narrow) that a particular speaker uses in speech (see for instance Patterson 2000). This parameter is generally represented by the difference between the extreme melodic values (higher and lower F0 frequencies) within a particular sentence or for a given speaker.

Coquillon (2005) points out that as far as melody is concerned, FM differs from FR mainly in that Southern speakers present significantly wider tone spans, i.e., melodic variations are more important in their speech. Perception tests by the same author show that pitch span is correlated to the estimated degree of a speaker's regional accent i.e., the broader the span register, the more the speaker's Marseille accent is considered as strongly marked. We will present here measurements on tone register values of a subset of six speakers in their conversation task. Because we want to limit variation to a minimum in order to be able to concentrate on the feature under investigation, the speakers are all taken from the Aix-Marseille (13b) survey of our corpus thus belonging to the same family network. As this corpus enables us to study change in time through three generations of speakers coming from the same family, the speakers we have chosen are equally distributed between three age groups (see Table 6). Since the mid-age group is slightly overrepresented we discarded two speakers from this age group. We surmise that if there is a differential behavior linked to age, all other things being equal, the speech of younger generations should be less marked for regional features than the speech of older ones, thus closer to FR patterns.

Table 6 below displays our results for the speakers' spans, calculated from F0 targets. Target points are defined as significant pitch change loci by the MOMEL

Table 6. Pitch span with respect to the medium towards inferior (inf) and superior (sup) extremes, in semitones by speaker and generation

Gen	Age	Speaker	Average (absolute values)		Inf		Sup	
1st	82	AA1	6.751	7.479	−8.204	−8.933	5.298	6.025
	81	RP1		6.070		−7.521		4.619
2nd	58	PA1	4.242	4.779	−2.782	−3.012	5.702	6.545
	45	RP2		3.590		−2.502		4.678
3rd	30	FA1	3.311	2.891	−3.023	−3.087	3.599	2.695
	27	SA1		3.648		−2.971		4.325

algorithm operating on a stylized F0 curve (see Hirst et al. 2000). The figures correspond to frequency differentials expressed in semitones (ST) between the mid (reference) value for each speaker and the two extreme sets of targets in both directions. Following Patterson (2000), De Looze & Hirst (2008) and Coquillon (2005), we isolated F0 extreme values distributed in quantile differential, using a threshold of 15% of minimum/maximum targets calculated for each speaker. Higher figures stand for wider register variation.

Our results for tone span patterns show a clear link between age and melody. The average pitch span (absolute values) regularly narrows with each generation, in chronological order (1st > 2nd > 3rd), with a mean difference of 1.75 ST between each age group, although the difference is more marked between the first age group and the rest.

The mean values for inferior and superior targets confirm this tendency. We can see that the two oldest speakers tend to make use of a broader pitch span than the others, with a difference of 13.5 ST between "inf" and "sup", as opposed to 8.5 ST for the 2nd generation and 6.6 ST for the 3rd. Statistical analysis (mixed effect linear model) indicates a strong interaction effect between generation and mean extreme values: $F(1,1296) = 183{,}8447$; $p = < 0{,}0001$. On closer inspection of the data we discover that the tendency is not fully linear if we consider individual speakers instead of generations: SA1 from the third generation presents similar values to RP2 in the second.

Figure 3 repeats our results for minimum and maximum target points in a more visual way.

We notice that the age-dependent span difference concerns more the inferior (minima) targets than the higher pitch regions. Since low register tone is a marked regional feature (Coquillon 2005), its neutralization clearly indicates alignment to FR prosody for the younger generations.

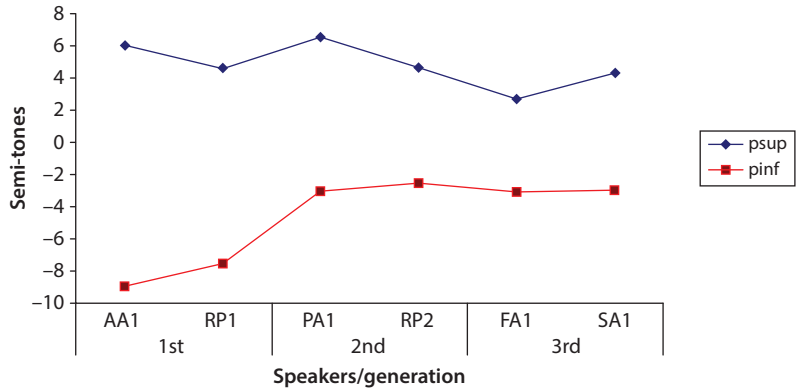

Figure 3. Superior and inferior points differential with respect to medium in semitones by speaker

These data confirm that a broad pitch register is representative of a conservative FM accent, but that this feature is also tending to be neutralized from a diachronic point of view.

7. Conclusion

We have attempted to characterize Marseille French based on two PFC corpora, relying on PFC codings and annotations. Marseille French is undoubtedly a Southern French accent sharing some major features usually attributed to non-standardized language practices south of the Loire. These features include: complementary distribution of mid-high and mid-low vowels defined by syllable structure, partly de-nasalized nasal vowels followed by a consonantal appendix and a certain propensity for pronouncing a large number of lexical schwas. We also highlighted prosodic aspects such as the existence of penultimate stress or use of a wide tone span. For each and every dialect specificity we investigated patterns by generations or by speakers if necessary. The overall picture shows that younger generations may neutralize Southern features in favor of FR patterns. Nevertheless, it is interesting and puzzling why certain regional features are maintained either totally (mid-vowel distribution) or partially (schwa maintenance) while others are more and more aligned to FR practices (nasal vowel pronunciation or pitch span). Actually, the picture looks even more complicated when we consider individual speakers rather than generations. FM characteristics are speaker dependent as well – the conservative features are not always the same for each speaker. For instance, 13bRP2 shows some resistance to most segmental

features (mid vowels, VN pronunciation…) but not to register span. This shows the importance of multi-parametrical investigations in dialect studies.

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CHAPTER 6

The variation of pronunciation in Belgian French

From segmental phonology to prosody

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1. Introduction

Several descriptions of the pronunciation of French in Belgium have attempted to identify features making the supposed 'Belgian accent' unique and recognizable as distinct from the French of Northern France – often labeled 'standard French' (see Francard 2001; Pohl 1983, 1985, 1986; Warnant 1997), or *le français de référence* (see Chapter 1), abbreviated in the remainder of this chapter as FR. The list of characteristics their authors arrive at is somewhat variable, which explains the following quote from Pohl in an article about the phonology of French in Belgium:

> Celui qui franchit la frontière franco-belge, en n'importe quel point, remarque une différence d'accent. Il s'agit d'un fait indéniable, immédiatement perceptible, mais dont il est difficile d'analyser toutes les composantes. (Pohl 1983: 30)[1]

However, these works are mostly based on unsystematic observations and on the compilation of previous writings, and not on surveys allowing for a more detailed and methodical description.[2] The PFC surveys carried out between 2004 and 2006 in a dozen localities in French-speaking Belgium help to establish a

1. "Anyone crossing the Franco-Belgian border, at any point, notices a different 'accent'. It is an undeniable fact, immediately perceptible, but one whose components are hard to identify" (our translation).

2. The situation was similar for the description of the lexicon until large surveys were carried out by Francard et al. (2002).

more valid and reliable picture of the phonological specifics of French spoken in Brussels and Wallonia. As will be shown in this chapter, they open the way for a description of the phonological features of this variety of French which relies on empirical evidence and quantitative data (even if the speaker samples of PFC surveys are always rather small).

These data confirm the fact that phonological variation is also very important *within* French-speaking Belgium: beyond the homogenizing view of a single 'Belgian accent', one can observe a large variety of language use between speakers from different regions or social groups. While this reality was often blurred by early descriptions of Belgian French,[3] it has long been emphasized by the authors cited above. Indeed, there are still strong *regiolects* in Belgium, associated with urban areas which resist the process of *standardization* towards a single norm (would it be Parisian French or a hypothetical Belgian standard). They result instead from a process of *leveling* of local varieties (see Hambye 2008). This geographic factor in variation is of course linked with a social factor: as the analysis below will show, local phonological features are in general more frequent among lower-class speakers than among upper-class speakers who tend to orient their speech to a variety closer to the standard.

In the first part of this article, we describe the phonological inventory of vowels and consonants revealed by the PFC surveys (Section 3) as well as the behavior of schwa and liaison in the speech of Belgian speakers (Sections 4 and 5). Our description aims to account for the variation mentioned above, and we thus choose to present the data from three rather different places in Wallonia (Section 2), allowing us to give a faithful representation of the diversity of French in Belgium.

Facing this heterogeneous picture of Belgian French, one can wonder whether it is possible to identify a set of phonological features characterizing this variety and making it distinct from other varieties in Northern European francophonie. It could be deemed difficult to define a Belgian accent/variety on the basis of the few phonological variants that are both specific to and widespread in Belgium. As we will see, these variants do not seem sufficient to account for a distinct Belgian pronunciation of French (compared to that of hexagonal French). Does this mean that the existence of a Belgian variety/accent is pure fantasy?

Perceptual studies have shown that Belgians were in fact able to distinguish their peers from French speakers by their pronunciation with a high level of success (Moreau et al. 1999). But many authors (Francard 2001: 256; Remacle

3. These were made within a normative approach that tended to present a very negative and homogenous vision of the Belgian francophonie (for a history of the linguists' view on Belgian French, see Hambye 2005: 71–80).

1969: 55; Warnant 1997: 165) have suggested that this capacity of identification may be based more on supra-segmental than segmental features.

This is why the last part of this chapter (Section 6) is dedicated to the study of variation in prosody. We use the PFC data to investigate the role that prosodic patterns may play in differentiating Belgian French from hexagonal French. We first address the methodological difficulties in variationist research on prosody and we then present the first results of the prosodic analyses carried out on a small subset of our speaker sample.

2. The PFC surveys in French-speaking Belgium

The data analyzed below come from three out of the fifteen PFC surveys carried out in Belgium. These three surveys were selected to illustrate the diversity of French spoken in Belgium, since they correspond to three different socio-economic and 'geolinguistic' areas. The city of the first survey, Gembloux, is situated in the centre of Wallonia. The French variety spoken in Gembloux presents numerous phonological features common to many speakers in Wallonia and even in the whole of French-speaking Belgium. On the other hand, there are few variants that are very specific to the region, since Gembloux is neither the heart of an urban regiolect nor a particularly isolated area where one can still find very local and peculiar forms of speech. Newcomers to Gembloux hail from various places around Brussels or Namur (the political capital of Wallonia, south of Gembloux) and do not have strong ties to the area. Since it is situated within very dense automobile and railway networks, Gembloux acts as a satellite of other cities and not as a real center of activities. This also means that there is no particular local identity associated with that city: given the small size of the town (about 20,000 inhabitants), people who live there work and seek entertainment in neighboring cities.

By contrast, the city of Liège is often viewed in Wallonia as a very particular region, with its own history and identity, and as the centre of a specific and recognizable accent, which counts the most differences with FR. Located in the East of Wallonia, Liège is one of the biggest cities in Belgium (about 200,000 inhabitants) and it is one of its most ancient urban and industrial areas. The French spoken in Liège may for this reason be compared to other urban vernaculars observed in industrial regions of France (Hornsby 2006; Pooley 2004) or the U.K. (Foulkes and Docherty 1999).

Finally, our third survey was conducted in Tournai, a medium-sized city (about 70,000 inhabitants) in the very West of Wallonia, close to the French border. This proximity with France and especially with the Lille conurbation, along with the former influence of Picard (instead of Walloon in the centre and east

of Wallonia), makes of Tournai a place relatively apart, whose particular accent sounds French (and not Belgian) to many people in Brussels and Wallonia.[4]

The geographic, social and economic differences between these three regions undoubtedly have consequences at the linguistic level and help to explain both the forms of speech that are more frequent in each of these areas, and the linguistic attitudes their inhabitants develop towards their vernacular and towards the (Belgian or French) standard.

However, in order to interpret the observations presented below, it is important to keep in mind that the regional variants in pronunciation may carry different social meanings and values (and not only function as a marker of local identity). Studies of French spoken in Belgium have long distinguished between features associated with the *bourgeoisie*, often widespread in French-speaking Belgium, and those felt as popular and/or incorrect and which are therefore less frequent among middle-class speakers, whatever their regional provenance (Hambye & Francard 2008). This is related to the constant ambivalence of Belgian francophones regarding their variety of French: all the sociolinguistic research about how they relate to their own language shows that French-speaking Belgians tend both to condemn and to be attached to their linguistic specificities (see Hambye 2005, 2008 for a survey). This sociolinguistic situation needs to be taken into account in order to explain the pattern of variation described below.

For each of our three PFC-surveys, the speaker sample consists of twelve people, including an equal number of men and women, three age groups (19–27, 36–50 and 54–82 years old), and three social categories defined by level of education (secondary education, post-secondary education other than university, and university education).

3. Phonological inventories

A comparison of more than fifteen works on the pronunciation of French in Belgium (published between 1956 and 2001) led to the identification of five general trends characterizing Belgian francophones' phonological inventory (see Hambye 2008, 2005: 85). Our data confirm the importance of these trends for the differentiation of Belgian French, but also reveal variation between speakers and some potential evolutions among younger speakers that former descriptions tended to ignore.

4. This association of the accent of Tournai with France was observed in many small-scale perceptual studies carried out by our students for a seminar on accent perception.

3.1 Vowels

3.1.1 *Phonological oppositions*

A first difference between the phonological system of Belgian French and the description of FR concerns the persistence of certain vocalic oppositions. This is only clear-cut, however, for the speakers from two of the three regions investigated. We can infer from the word-list task that speakers from Liège and Gembloux still make a distinction between /ɔ/ and /o/, both in word-final (*roc* vs. *rauque*; *pomme* vs. *paume*) and non-tonic positions (*botté* vs. *beauté*). The opposition between /ɛ/ and /e/ is also observed in word-final position (*épais* vs. *épée*; *piquet/piquais* vs. *piquer/piqué*). Yet, for many speakers, the opposition is not stable in non-tonic syllables and two young speakers (with a university degree) seem to confound the two vowels even at the end of an intonation phrase. This may be the sign of a tendency on the part of French-speaking Belgians to progressively adopt a more "advanced" (Eckert 2000: 88) variety like that of some of their French neighbors.

This movement is obviously at a further stage among speakers from Tournai, who tend to neutralize the former phonological oppositions. Indeed, eight out of twelve speakers in Tournai (five being under 30 years old) do not systematically make the distinction between *botté* and *beauté* (both prounounced with [o]). Regarding /ɛ/ vs. /e/, the distinction is completely lost by two speakers (two young university students) who only use [e] and unstable for six other people. Again, the fact that this process of neutralization seems more advanced among young and middle-class speakers may indicate a change in progress led by prestigious socio-cultural groups.

The situation of nasal vowels within the system is also evolving. While all speakers conserve the opposition between /ɑ̃/ and /ɔ̃/, half of them (from various categories) do not distinguish *brun* /bʁœ̃/ and *brin* /bʁɛ̃/ anymore (both pronounced [bʁɛ̃]).

Only two speakers in the sample make a distinction between the terms of the minimal pair *jeune* /ʒœn/ vs. *jeûne* /ʒøn/, and yet there is seemingly an opposition between [ø] and [œ] for all the speakers recorded since their distribution in different lexemes is stable and does not follow the *loi de position* (open vowels in closed syllables and closed vowels in open syllables). For example, they pronounce *creux* and *creuse* with [ø] but *meurtre* and *peuple* with [œ]. Finally, the opposition /a/ vs. /ɑ/ is not systematic for any of our speakers. Qualitative differences always go with quantitative (durational) differences for the low vowels (see below).

Descriptions of French spoken in Belgium, which almost always take for granted the maintenance of phonological oppositions among Belgians, should thus be qualified on this point. We can nevertheless expect that the process of neutralization is still slowed down in Belgium by speakers' attitudes. That is,

people who know that the phonological distinctions are being lost try to counter this evolution, since maintaining them seems more "correct", even if they are often conscious of diverging from the current Parisian norm.

3.1.2 *Vowel duration*

For the majority of the speakers, vowel duration plays a phonological role. First, we observe a long final vowel in some feminine words with a final open syllable, especially when they are spelled with *-ie* or *-ée* (*compagnie* [kɔ̃paniː], *épée* [epeː]). Secondly, some words are still pronounced by Belgian speakers with their historical long vowel (due to compensatory lengthening entailed by former [s] deletion before a consonant) mirrored in the presence of a circumflex accent in the spelling. This allows for a phonological distinction in pairs like *faites* [fɛt] vs. *fête* [fɛːt], *patte* [pat] vs. *pâte* [paːt] or *malle* [mal] vs. *mâle* [maːl] (sometimes combined with a differentiation for [a]/[ɑ]).[5] These quantitative oppositions are still systematic for three quarters of the speakers in Liège and Gembloux, but only for less than half of the Tournaisiens. As will be discussed below, vowel lengthening may also be due to the application of marked prosodic patterns (see Section 6). Yet, in Liège, speakers seem to integrate long vowels into the phonological representation of specific words: as a consequence, vowels in these words appear to be particularly long and salient when they are integrated in one of these marked prosodic contours. This is the case, namely, for words like *maison* [meːzɔ̃], *vraiment* [vʁeːmɑ̃], *caisse* [kɛːs] – where the spelling *-ai-* may be interpreted as marking a long vowel (see Hambye 2005: 202–205) – whose penultimate vowel is very saliently lengthened when they appear in a prosodic pattern that is characterized by an increase of penultimate vowel duration.

3.1.3 *Vowel opening and closing*

The tendency for speakers to open unstressed vowels (e.g., [i] > [ɪ], [e] > [ɛ]) – a tendency often analyzed as linked to an articulation weakening[6] – is another

5. Though we have not made any systematic measurement of lengthening in several prosodic positions, scattered observations lead us to think that long vowels are only perceived as long when they appear at the end of an intonation group. In this position, vowel lengthening (which is observed for all vowels) is significantly greater for those long vowels (about 100 ms longer or more).

6. This analysis is somewhat dubious since it is not clear at all that vowel opening is due to articulatory weakening since for vowels weakening may, on the contrary, lead to closing. In fact, this interpretation is probably influenced by the traditional association of popular speech with weakening, effortlessness, etc. (while proper pronunciation needs tension, clear distinctions, etc. see Laks 2000 for a critique). We note with interest Crosswhite's view (2004: 200–203) on the loss of tense/lax distinctions in favor of lax in unstressed position as an 'archiphonemic'

feature mentioned in many descriptions of French in Belgium. No clear occurrence of this phenomenon appeared in the reading task, but examples in both guided and free conversations are frequent: *pied*, *déception* and *ici* for instance may be pronounced [pjɛ], [dɛsɛpsjɔ̃] and [ɪsɪ].[7] Yet, examples of this kind were observed only among speakers from Gembloux and Liège and mainly among older speakers from a working-class background.

On the contrary, the processes of vowel lengthening mentioned above may produce the closing of the vowel (some speakers in Wallonia will pronounce *laide* as [leːd] at the end of an intonation group) or even the appearance of a semi-vocalic appendix at the end of the vocalic articulation. This happens in our corpus in words like *beauté* [boːʷte], *épée* [epeːʲ], *botté* [bɔteːʲ]. Again, these appear only in the speech of elderly and working-class speakers.

3.1.4 *Glides*

Sequences of two vowels in hiatus (closed vowel + vowel, e.g., *scier, niais, mouette*) are known to be pronounced in Belgium with two vowels (*scier* [sie]), sometimes linked with a semi-vocalic transition ([sije]) while they are usually realized with a glide ([sje]) in FR. Data analysis reveals that actual linguistic practices are in fact much more variable: in *nièce*, *épier* or *miette*, the hiatus is resolved with the closing of the high vowel into a glide ([njɛs], [epje], [mjɛt]), while in *nier, scier* or *étrier* we observe in general the realization [ije]. In the latter case, speakers may be trying to avoid the group [trj]. In *nier* or *scier*, the most frequent pronunciation avoids merging of the two morphemes (*ni* + *er*, *sci* + *er*) into a single syllable. In *fou à lier*, *mouette* or *niais*, no realization emerges as privileged by Belgian speakers. Age also seems to have an effect on the treatment of glides: the pronunciation with two vowels maintained is favored by older speakers, perhaps because of the attention they pay to their articulation.

We could not end this section without commenting on the case of /ɥ/. Its absence in francophone Belgians' phonological system is often cited as one distinctive feature of their speech. Our data confirm that /ɥ/ does not play a distinctive role for our speakers – they do not make a difference between *juin* and *joint*, both pronounced [ʒwɛ̃]. The sound [ɥ] is not, however, entirely replaced by [w], contrary to what some authors have claimed (see for instance Remacle 1969: 105–107). It functions as an allophone of /y/ in certain positions: *habituels* is always

neutralization (in line with Lehiste's (1961) work on Slovene), but in the absence of a tense/lax distinction in Belgian French we cannot propose neutralization as an alternative explanation.

7. Examples of this kind may in fact appear both in stressed and non stressed syllables, but they seem more frequent in the latter case than in the former, where the lengthening of the vowel tends to have a closing effect.

pronounced with [ɥ] or [y], but never with [w]. The same is true for *muette* where the standard pronunciation [ɥ] is not replaced by [w] ([*mwɛt] or [*mywɛt]): the realization [myɛt], besides [mɥɛt] for a young speaker of Tournai, is the only one we find in the corpus.

3.2 Consonants

The only consonant variant that is widespread among the speakers is the devoiced realization of word-final consonants. Word-final consonant devoicing is another much discussed feature of Belgian French (see Hambye 2009, 2005: 122–153). Yet, two different phenomena must be distinguished here: in Liège and Gembloux, speakers' phonological system seems to have integrated a constraint favoring consonant devoicing at the end of prosodic units (intonation groups, words or even syllables). The integration of such a constraint in the system of Belgian speakers of French may have been favored by the presence of a categorical devoicing rule for obstruents at the end of prosodic units (words and syllables), in Walloon (the major vernacular language in Wallonia before French became the main language for all communicative functions, see Francard 1984; Francard & Morin 1986) and in the neighboring Dutch language and Flemish dialects (see Baetens-Beardsmore 1971). The constraint favoring devoicing at the end of prosodic units explains why word-final consonant devoicing may appear before a vowel (*passage à* [pasaʃa] *niveau*) or before a pause (*regarde Claude##* [klot]), i.e., where the phonetic environment may not explain devoicing. In Tournai on the contrary, devoicing almost only appears as the result of regressive assimilation (before a voiceless consonant, like in *les choses qu'il* [ʃoskil] *a faites*). In the former case, word-final consonant devoicing is perceptually salient and socially marked. As a sociolinguistic stereotype, it is unsurprisingly less frequent among young and highly educated speakers.

Other variations regarding consonants are more specific to small sub-groups of our sample. Older speakers tend to palatalize dental stops before [j] in words like *soutien* [sutʲɛ̃]). Some speakers of Liège, again the older ones, pronounce with an initial glottal fricative [h] some words beginning with a graphic <h> (e.g., *hêtre* [hɛtʁ]).

4. The behavior of schwa

Though it has been said to be particular in Belgium (several authors claiming schwa deletion to be more frequent in Belgium than in France; see Pohl 1986: 134,

1985: 14–15; Remacle 1969: 115–116; Warnant 1997: 169), the pattern of schwa behavior in our data does not seem to differ from what is claimed for FR and can be analyzed with the model proposed by Dell (1973). In agreement with Dell's description, in the environments where schwa presence is variable, it may be analyzed either as an unstable vowel or as an epenthetic schwa whose realization is conditioned by phonotactic constraints.

The first case is illustrated by schwas in word-initial syllables (*tu s(e)ras*) or in monosyllables (*mais j(e) suis*). Phonotactic constraints play an important role in the behavior of schwa in these types of sequence, since it is deleted more often when the schwa syllable's left context is a vowel than when it is a consonant (in conversation tasks we find a 79% schwa deletion rate (1220/1544) in the context V#Cə#C (*mais je suis*) compared to an 11% schwa deletion rate (79/741) in the context C#Cə#C (*car je suis*), and a 79% schwa deletion rate (391/483) in the context V#CəC (*tu seras*) versus a 13% schwa deletion rate (17/133) in the context C#CəC (*car depuis*)). Nevertheless, phonotactic constraints do not explain all occurrences of schwa realization. In word-initial syllables for instance, morphological factors play a role in the frequency of schwa deletion (e.g., schwa deletion is more frequent in the initial morpheme *re-* or in flexional endings of future and conditional tenses like *-erai*, *-erais*, etc.).

Schwas appearing at the end of polysyllables (*la chos(e) qui*; *perdr(e) du temps*) are to be analyzed as epenthetic vowels the presence/absence of which is almost entirely conditioned by phonotactic constraints and to a less extent by articulatory and prosodic constraints (see Hambye 2005: 291 for details).

In other cases, a graphic <e> may signal a stable vowel or be the trace of a former vowel that has now disappeared from speakers' phonological representation and is therefore never pronounced. Schwas in word-medial syllables illustrate these cases: in words like *débordement* (CCəC), the <e> corresponds to a stable vowel that is never deleted, while it is never present in a word like *lanc(e)ment* (VCəC), where we have therefore no reason to postulate a latent schwa.[8]

Finally, results from the text-reading tasks confirm that schwa-realization is a marker of formal or more careful speech: variable schwas tend indeed to be pronounced more often when reading a text than in the conversations. The analysis of external factors supports this interpretation: speakers from intermediate social groups, who are known to more readily adopt a hypercorrect style, are those who produce variable schwa more frequently.

8. There are however a few words with the VCəC structure where <e> signals a stable vowel (*atelier*). Moreover, the <e> of future and conditional morphemes *-erai*, *-eras*, etc. do not correspond to a stable vowel in words like *restera*.

5. The behavior of liaison consonants

Results regarding liaisons confirm the description offered by Durand and Lyche (2008) on the basis of several PFC-surveys in France. Following their suggestion, we distinguish here between those cases where linguistic constraints render the presence of a liaison consonant (almost) systematic, and those where the liaison phenomenon is variable and rather unpredictable, i.e., with the same structure being pronounced sometimes with and sometimes without a liaison by the same speaker (see Hambye & Simon (2009) for a detailed analysis).

Sequences always pronounced with a liaison are of different types, and include those with a determiner (*les_endroits*, *trois_ans*, *un_arbre*, etc.) or a clitic pronoun (*il en_avait*, *on_avait*, *ils_ont,* etc.), some fossilized phrases (*de temps_en temps*, *plus_ou moins*, *de plus_en plus*, etc.), and structures with *plus*/*très* + adjective (*plus_ouvert*, *très_intéressant*).

In other types of structure, the production of a liaison is by far the more frequent case, but some unexpected forms are found in the corpus, in sequences with *bien* + adjective (*j'ai bien_aimé* [bjɛ̃eme]), with the preposition *dans* (*j'ai été viré dans_un* [dɑ̃œ̃]), with *tout* + verb (*tout_a* [tua] *été enregistré*), with some adjectives + noun (*des autres_activités* [otʁaktivite], *les cinq dernières_années* [dɛʁnjɛʁane]).

Liaison is highly variable (i.e., its frequency of realization is around 50%) in structures such as *rien_à découvrir*, *dont_on est très contents*, *quand_on veut*, *il est_arrivé*. Finally, there is seldom or even never a liaison in sequences with other verbal forms (such as *doit_être*, *suis_heureux*, *sont_amis*, *faut_avoir*, etc.), with an adverb/preposition (such as *pas_arrivé*, *trop_envie*, *après_elle*, etc.), or with a noun + adjective (such as *mots_usuels*, *luttes_amicales*, *choses_extraordinaires*, etc.).

Regarding external factors, we observe that women and older speakers realize more liaisons than men or younger speakers.[9] Variable liaison is also more frequent in the reading task than in the conversations.

9. Quantitative results can be skewed by sequences including *est*. In these cases, women make a liaison in 56% of occurrences (84/151) while it appears in only 38% of occurrences among men (63/164; $p < 0.005$; chi-square = 9.36; df = 1). The difference of liaison rate between speakers above and under 30 years (71% (68/96) vs 16% (21/134); $p < 0.001$; chi-square = 71.74; df = 1) is even more salient.

6. Prosodic variation: The case of continuative contours

6.1 Methodological issues

Assessing the role of prosody in the distinctiveness of Belgian French is not an easy task, for research on prosodic variation cannot rely on well-defined principles like those guiding the study of segmental variation (Woehrling et al. 2008). A first problem is that we do not know *a priori* what to look for, since salient prosodic variants have not been clearly identified. Duration is often mentioned as a decisive parameter in former descriptions of Belgian French, which point out a tendency for excessive sound lengthening (Remacle 1969: 70). Yet, lengthening is not *per se* a (regionally) marked phenomenon and one may therefore observe many variations in duration which are not at all typical of a particular variety or 'accent'. Thus, we need to know in what conditions long syllables may appear in FR, in order to identify *marked* long syllables. But again, this is a particularly difficult operation: there are many inter-related factors relevant to syllable duration, and any salient lengthening might be due to a final intonation group boundary, emphasis, emotional speech or regional variation.[10]

Knowing where to look is a second methodological hurdle. What is the domain where we can expect to observe marked prosodic variants? Since prosodic analysis is often very demanding, it is all the more necessary to focus the analysis on sequences where phenomena under scrutiny may potentially occur (see Lacheret & Lyche 2006; Coquillon 2005: 129). But as long as marked variants are not precisely described, we do not know exactly in what conditions they may or may not appear.

6.2 Inductive and deductive approaches to prosodic variation

Facing these difficulties, researchers have adopted two strategies. The first is inductive and consists in measuring prosodic parameters for a rather large set of data and to compare results between sub-groups of the speaker sample. While this method has produced interesting results (see Coquillon 2005), there is a high risk that means do not reflect actual and relevant differences between speakers: Goldman & Simon (2007) have shown that regionally marked contours produced by speakers from Liège are not singled out by automatic analysis whereas they are

10. In this view, models predicting the "standard" prosodic form (pitch, duration, and intensity of each segment) are not of great help, since they represent neutral speech in a "read aloud" style, and not conversational speech.

perceived as extremely salient *clichés* by expert phoneticians. One reason is that such *clichés* are quite infrequent; despite their scarcity they function very well as social markers.[11]

Another solution is to adopt a more deductive approach and to focus only on contours that are perceived as marked for their particular duration. It is then possible to compare the (relative) frequency of these contours across different speakers. While this method offers the advantage of restricting the analysis to predetermined occurrences, it also has two important limitations: it depends heavily on the analyst's perception, and it takes for granted that prosodic variation is only categorical (a variant is marked or not), and not gradual (it is the average increase of syllable duration of certain contours that creates the whole perception of a regionally marked accent).

In our study of Belgian French, we tried to find a mid-way between these two options. Considering that the first step was to learn a little bit more about the characteristics of marked variants, we started by researching perceptually salient marked variants among a sample of six Belgian and French speakers from the PFC database.

6.3 Data and annotation

The six speakers are all male, and between 30 and 55 years old. Three of them come from Belgium (blaPS1 and blaTM1 from Liège; bgaLD2 from Gembloux, and is representative of standard Belgian French) and the other three from France (44aJN1 from Nantes, 75aAC1 from the Parisian upper-class, and 54aFL1 from Ogéviller in Lorraine).[12]

A first-step annotation, conducted by two experts, led to the categorization of continuative and conclusive contours as neutral vs. marked. We restricted ourselves to the annotation of contours on the last syllable of Intonation Groups (IG, see Mertens 1993), the highest prosodic constituent defined by intonation models. Final contours at an intonation group boundary correspond to salient prosodic units as they are frequently followed by a silent pause.[13] Intonation contours in French are realized together with the primary, final stress, which is always on the last full syllable of the intonation group (Mertens 1993). This syncretism of

11. Only a few terms or syntactic turns may suffice to color a typical way of speaking (Bally 1951, cited by Léon 1993: 231). The same holds for prosodic contours.

12. Recordings consist of more or less informal interviews ranging from 10 to 30 minutes. The total duration of the data used in this study amounts to 138 minutes.

13. See also the notion of *clausule* (Carton 1985); see Note 14 below.

accentuation and intonation (Di Cristo 1999) results in a significant prominence of that last syllable, combining lengthening with a modification in F0 (rise for continuation and fall for finality; Lacheret-Dujour & Beaugendre 1999: 41; Rossi 1999; Jun & Fougeron 2002: 153).

More than a third of the annotated contours had to be discarded for one of the following reasons:

- contours followed by a hesitation particle (like *euh*) or within a context of hesitation, since it may directly affect the duration of the contour;
- contours with a specific pragmatic function (like contextualizing reported speech) since their specific duration or pitch can be attributed to interactive or pragmatic functions;
- contours uttered with overlap or at a very fast speech rate, impeding any acoustic measurement;
- contours in which the final stressed syllable of the intonation group is followed by a schwa (Hansen 1997) or a vocalic appendix (like *hein*), since it modifies the structural prosodic pattern typical for French.

In sum, the remaining contours are supposed to be highly comparable since many variables responsible for prosodic variation have been dismissed. Those contours have been grouped into two main categories: continuative contours (cont) realized with a rising or higher pitch contour on the last syllable and conclusive contours (fin) with a falling pitch movement (see Delattre 1966; Mertens 1987; Rossi 1999). Contours were further categorized as neutral or regionally marked. Neutral contours are those which, in our view, could not index for any regional affiliation, while marked contours are those that could be associated with either a Belgian or a hexagonal variety of French. We then identified sub-categories within marked contours, on the basis of the prosodic feature supposedly responsible for their markedness. For Belgian speakers, we distinguished two types of marked contours[14]: those with an extra lengthening of the *final* stressed syllable of the intonation group (CONT-L and FIN-L) and those with an extra lengthening of the *penultimate* syllable of the intonation group, sometimes accompanied by an

14. Studying regional varieties of French, Carton (1984, 1986, 1991) observed particular prosodic patterns (called *clausules*) characterized by duration and melodic variation in the last three syllables of intonation groups, that were not expected in more standardized varieties of French. Such prosodic patterns were also observed in Belgian varieties of French, where vowel lengthening has long been considered a distinctive feature (see Francard 2001; Warnant 1997; Remacle 1969). More specifically, the lengthening of penultimate syllable has been described as a typical variant of the region of Liège (Hambye & Simon 2004).

extra-long final syllable (CONT-P and FIN-P).[15] On the other hand, contours which had been categorized as typical of French-speakers were perceived as having an extra-short final syllable (CONT-S and FIN-S).

6.4 Perceptual validation test

In order to validate our categorization of neutral and marked contours, we conducted a perceptual study among a group of Belgian students. We extracted 15 speech samples from the recordings of the six speakers. These samples contained either a marked contour, a marked segmental variant (such as a word-final devoiced consonant or a posteriorised /a/) or were considered as unmarked and neutral in the sense defined above. Samples were rather short (four seconds) and contained no clue for identification at the content level. Samples were submitted to 62 judges, who were asked to identify the speaker (is he/she Belgian or French?) and to assess the correctness of his/her speech (do you think he/she would be a good newscaster?). Results of the test indicate notably that:

- samples with marked contours led judges to identify speakers' origin far better (82% of correct identifications) than unmarked samples (55%);
- these prosodically marked samples led to almost the same rate of identification as samples with a marked segmental variant (80%).

The results of the test allowed us to consider our categorization as a relatively good basis to examine the distribution of prosodic variants across speakers on the one hand, and on the other hand, to investigate the specificity of marked vs. neutral contours. In this way, we could hope to find the prosodic features that help people identify a Belgian or French accent. In what follows, we focus exclusively on two specifically 'Belgian' contours: CONT-P and CONT-L, that is, continuative contours with an IG-final or penultimate extra-long syllable.

6.5 Analysis

6.5.1 *Distribution of continuative variants among speakers*

Our database comprises 115 continuative contours from three Belgian and three French speakers.

As Table 1 shows, the number of contours per speaker is highly variable, due to the difference in length of recordings and the fact that some speakers produce

15. Finality contours with a sharp fall HL pattern (see Hambye & Simon 2006), contextualizing emphasis, have not been analyzed.

Table 1. Contours types and count, for each speaker

	44aJN1 (Nantes)	54bFL1 (Ogéviller)	75cAC1 (Paris)	bgaLD2 (Gembloux)	blaTM1 (Liège)	blaPS1 (Liège)	Total
CONT	7	16	11	30	19	4	87
CONT-L	0	0	0	5	7	3	15
CONT-P	0	1	0	0	6	0	7
CONT-S	4	1	0	0	1	0	6
Total	11	18	11	35	33	7	115

a large amount of hesitations (like Liège speaker blaPS1) or have a fast speech rate (Nantes speaker 44aJN1) resulting in the rejection of many contours.

Data show that speakers from Liège (blaTM1, blaPS1) have a high proportion of continuation contours with a perceived extra-lengthened IG-penultimate or final syllable. As this table also shows, an analysis of prosodic variation based on the distribution of categorical variants has the advantage of offering very clear-cut results. We see an emergent difference between Belgian and French speakers regarding the relative frequency of different types of marked contours. The results are also suggestive of the social value of some of these contours: it might be no accident that the contour with a long penultimate syllable (CONT-P) – which is known to be socially and regionally marked (Hambye & Simon 2004; Hambye 2005; Woehrling et al. 2008) – is more frequent in the speech of the Belgian speaker who is from a working-class background (Liège speaker blaTM1).

On the other hand, results of this kind have several shortcomings. Clearly marked variants seem to be rather rare, but more critically, their identification relies too heavily on the analyst's own perception: the perceptual test *did* confirm that contours categorized as marked were indeed marked for other judges, but it *did not* ensure that all the contours potentially perceived as marked were effectively counted as such. It may be the case that only very salient non-standard contours have been categorized as marked, leaving aside intermediate variants and thus exaggerating differences between speakers. This is why it is also interesting to compare duration means between speakers and, moreover, to measure duration means for the different contours categorized, so as to define quantitative thresholds associated with each type of contour/variant. It is then possible to use these thresholds, instead of analysts' perception, to categorize and count variants, and to study their distribution among speakers. It is for this reason that we carried out an acoustic analysis of our data.

6.5.2 *Acoustic analysis of marked and neutral contours*

The acoustic analysis aims to discover the prosodic parameters best suited for describing and discriminating marked contours from neutral ones. The analysis

Table 2. For continuation contours: Mean duration (in ms) of final (FS) and penultimate (PS) syllables, and relative duration of final syllables (FS/PS)

	44aJN1 (Nantes)	**54bFL1 (Ogéviller)**	**75cAC1 (Paris)**	**bgaLD2 (Gembloux)**	**blaTM1 (Liège)**	**blaPS1 (Liège)**
final syll. dur. (ms)	266	305	352	348	363	390
penult. syll. dur. (ms)	169	183	175	144	191	151
final syll. relative dur.	1,71	1,75	2,13	2,55	2,09	3,41

is built upon duration and F0 measurements for the last four syllables of each contour.[16]

What can we draw from the acoustic measurement of duration means, without taking the perceptual categorization into account? As Table 2 shows, the duration of final and penultimate syllables (measured in ms) does not vary significantly between Liège speakers and speakers from France, although Table 1 showed that the former present a high proportion of long contours (CONT-P or CONT-L) while the latter do not.

We conclude that the mean duration of syllables is not a relevant cue for describing perceived lengthening, since it varies little. We could then think the relative duration of the final and the penultimate syllables (FS dur. / PS dur.) would give its specificity and perceived markedness to the speech of speakers from Liege. But this measure is not very informative: we see, for example, almost no difference at this level between the Parisian speaker 75cAC1 and the Liège speaker blaTM1, even while the former had no contours with long IG-penultimate syllables, which on the contrary characterize the speech of the latter.

We then try to find a more fine-grained categorization by using threshold values to define the different prosodic variants. *Final* syllables longer than 400 ms are considered as long, and final syllables under 300 ms as short. To determine these thresholds, we relied on the mean duration of each contour type. For example, CONT-L duration varies from 400 ms (blaTM1) to 500 ms (blaPS1); CONT-S has a mean duration of 280 ms (44aJN1); unmarked continuations are 260 ms long (44aJN1), 330 ms (bgaLD2), 360 ms (blaTM1) and 310 ms (blaPS1). In Table 3,

16. Recordings have been segmented into words and syllables using the EasyAlign software (Goldman 2011). Acoustic measurements were automatically retrieved, giving for each syllable mean F0 (in semitones, ST), F0 movement (in ST) and duration (in ms). Relative duration and relative pitch (of the syllable within its context) have been calculated.

Table 3. Acoustically defined marked contours (number and percentage for each speaker)

	44aJN1 (Nantes)	54bFL1 (Ogéviller)	75cAC1 (Paris)	bgaLD2 (Gembloux)	blaTM1 (Liège)	blaPS1 (Liège)
Contours with a long IG-final syllable (> 400 ms)						
N	0	4	3	11	12	4
Tot	11	18	11	35	33	7
%	0	22	27	31	36	57
Contours with a short IG-final syllable (< 300 ms)						
N	7	10	4	14	6	2
Tot	11	18	11	35	33	7
%	64	56	36	40	18	29

we see the distribution across speakers of these acoustically defined marked contours (not perceptually defined as in Table 1).

This procedure yields far better results for discriminating speakers, since they are in line with those in Table 1, while also qualifying them a bit. Indeed, what emerges here is a clear opposition between two French speakers (Nantes speaker 44aJN1, Ogéviller speaker 54bFL1) who present more short syllables and very few long syllables, and two Liège Belgian speakers (blaPS1, blaTM1) whose speech has far fewer short syllables and more long ones (especially blaPS1). Note that the two remaining speakers, situated in between the others, were those that the student judges had considered as the more neutral (non-identifiable) in the perceptual study described in Section 6.4.

We now specifically turn to contours with a long IG-*penultimate* syllable, which have been described as typical for the variety of Liège (Hambye & Simon 2004). As we have seen in Table 2, the mean duration of IG-penultimate syllables does not allow to discriminate between our speakers. The IG-final syllable (FS) relative duration seems more predictive even though it leaves us with two contradictory results: Liège speaker blaPS1 has the highest score for FS relative duration but does not have any perceived instances of CONT-P, and the FS relative duration of Liège speaker blaTM1, who has the most instances of CONT-P, is not the lowest – as would be expected if his IG-penultimate syllables were generally longer than those of other speakers. This shows clearly that measuring only the (relative) duration of the penultimate syllable is not an adequate way to account for the differences of 'accent' perceived by our judges.

By looking at the contours labeled as 'CONT-P', we noticed that they were in general characterized by two features: (i) the perception of a long penultimate syllable could be linked to the fact that the duration difference between the last two syllables was relatively small – the duration of the final syllable being in general

Table 4. Acoustically defined contours with long penultimate (number and percentage for each speaker)

	44aJN1 (Nantes)	54bFL1 (Ogéviller)	75cAC1 (Paris)	bgaLD2 (Gembloux)	blaTM1 (Liège)	blaPS1 (Liège)
FS relative duration (FS/PS) < 2 and FS ≥ 350 ms	0	1	1	0	8	1
Total	11	18	11	35	33	7
Percentage	0	6	9	0	24	14

lower than twice the duration of the penultimate syllable (FS/PS < 2) ; (ii) at the same time, this last syllable was relatively long, with a minimum duration of 350 ms (FS > 350 ms) (see Table 4).

Again, this new way of categorizing our variants leads to results that interestingly complement those from Table 1, with the speakers from Liège standing out with a higher frequency of contours with a long IG-penultimate syllable (with lengthening of the penultimate syllable now defined with the two criteria mentioned above).

Our data set is of course far too small to allow us to draw firm conclusions, but the method used has led to more contrastive and convincing results. The thresholds defined could be used to count marked variants within a larger set of data, without having to take into account only the most salient variants.

7. Conclusion

In this contribution, we have aimed to provide a broad picture of French as it is currently spoken in Belgium. Former descriptions of this variety are sometimes confirmed by our analysis, but they are also sometimes qualified or contradicted. More precisely, our data show that even though the main features associated with Belgian French are still observed among speakers (maintenance of vocalic oppositions, vowel lengthening, vowel opening, particular behavior of glides, word-final consonant devoicing), there are indications of internal diversity and of current evolutions that add complexity to the traditional picture of a single and archaic Belgian French. Besides, the phonological inventory of Belgian speakers does not diverge significantly from FR. The same is true for the way French-speaking Belgians treat schwa and liaison.

This lack of a very clear differentiation at the segmental level led us to look at prosody in search of the variants that seem to make Belgian and hexagonal French so easy to distinguish for the average speaker. The last part of the paper turned to prosodic variation in order to figure out which prosodic parameters

characterize the contours that might be responsible for regional identification in a perceptual test. Methodological efforts were made to reconcile perceptual and acoustic approaches to the data and to combine data-driven and theory-driven (or here model-driven) approaches. This allowed us to propose hypotheses regarding the acoustic features leading to the perception of contours as marked (with a long final or penultimate syllable). We conclude for instance that the perception of penultimate extra-lengthening may rely on a combination of: (i) a minimum duration for the last syllable (above 350 ms); and (ii) a relatively small duration difference between the penultimate and final syllables (the latter being at most twice as long as the former). These acoustic definitions of marked prosodic variants in Belgian French may now be tested on larger corpora in order to measure more precisely the role they play in the differentiation of this variety.

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CHAPTER 7

A study of young Parisian speech

Some trends in pronunciation

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1. Presentation of the survey

1.1 Paris

The French spoken in Paris and its surroundings has been the object of an abundant literature that is too overwhelming to summarize here. The recent volume by Lodge (2004) – *A sociolinguistic history of Parisian French* – is rich in references to earlier work. Linguists' interest in Paris seems to be explainable in mainly two related ways. On the one hand, the capital of a country is in many ways dominant, demographically, economically and culturally, and in the case of Paris perhaps even more so, in the light of the important historical events that have taken place here and its truly gigantic size compared to other French cities, from very early on. These facts have been commented on by several observers (Lodge 2004; Morin 2000; Carton et al. 1983; Walter 1977 just to mention a few). On the other hand, and this is of course connected to the first point, grammarians and orthophonists have in fact taken the speech of well-educated Parisians as a starting-point for their descriptions of French, be it to foreigners or to the French themselves, which has contributed to the spread of an Ile-de-France based linguistic norm. Walter (1977: 17) speaks specifically of the "prestige de la capitale en matière de modèle linguistique". Lyche (2010) and Morin (2000) go through the varying ways of describing those that were presented as holders of the *bon français* (from *les gens de la cour du roi*, to *les Parisiens cultivés*), but Martinet & Walter (1973) have argued that the contributions from the numerous provincials who came to live in Paris are very important for the language's development. They speak of a "brassage incessant" and of a "unification", and as such of an emergent "français moyen" in Paris (Walter 1977: 17; see also Walter 1998: 16 for the concept of *creuset* or

"melting-pot"), which in itself does not reflect all of the original characteristics of the city's vernacular, but is "dynamique, puisque c'est l'usage qui tend à s'imposer" (ibid.). In the same vein, more recent works describe the prestigious pronunciation in France as less attached to Paris itself, and more to a general, non-southern variety, the terms being 'le français de référence' (Morin 2000; Lyche 2010), or a 'supra-local French' (Coveney 2001: 3–4). This is, however, without denying the historical role of Parisian speech (of certain social classes and of certain registers) as a basis for this development.

In a city of more than 10 million inhabitants, it seems inappropriate of course to do a PFC investigation of the same nature as that of a village in the provinces of France. It was therefore decided that Paris should be the object of several PFC surveys, each concentrating on a specific local place or type of speakers. As such, the studies of Lyche & Østby (2009) and of Mallet (2008) focus on the Parisian aristocracy and on speech in a working class suburb, respectively. The present study, however, was undertaken to include a broader social group, not specifically located geographically, and to focus on young speech, as described in the following section.

1.2 The speakers

Nine young Parisian speakers were recorded by means of the PFC-protocol in 2001 and 2004 respectively, six women (PP, SA, AD, AM, ME, LA) and three men (JJ, NI, ET). Born between 1974 and 1986 they were between 18 and 26 years old at the time of the recordings.

All of the nine speakers worked, lived or studied in Paris then, and had close ties to the Parisian region. They were all born and raised in Paris and/or in the close suburbs (*la petite couronne*), with the exception of AM who came to Paris from the city of Vannes (on the Atlantic coast, in southern Brittany) as a child. More specifically, only five of the speakers were born and raised *intra muros*, that is within the inner city limits (AD, NI, PP, ET, SA), while two speakers have lived mainly in Paris, but also in the suburbs (LA, who has spent a couple of years in department 93, Seine-Saint-Denis, in Pantin, and JJ who lived the first three years of his life in department 92, Hauts-de-Seine, in Neuilly-sur-Seine), and two others have lived mainly in the suburbs (ME spent 14 years in department 93, Seine-Saint-Denis, in Epinay-sur-Seine, before returning to Paris, and AM has lived in department 94, Val-de-Marne, since she left Vannes). The speakers do not represent a single neighborhood within the capital, then, and neither were they chosen to represent specific ones, and as such, the following analysis does not intend to explore possible internal micro-geographic effects, but concentrates

Table 1. Summary of speaker information

Speaker	Age at recording in 2001 (year of birth)	Ties to Paris	Sociocultural profile
PP, female	25 (1975)	*Intra muros*	University studies, thesis (history/political science)
SA, female	25 (1975)	*Intra muros*	University studies, BA (law)
AD, female	22 (1978)	*Intra muros*	University studies, DEA (linguistics)
AM, female	22 (1978)	Suburbs only (arrived age 11 from southern Brittany)	Short, technical training (secretarial diploma, BEP, Bac professionnel)
ME, female	19 (1985)*	Mainly suburbs, but also *intra muros*	Short, technical training (lycée professionnel)
LA, female	18 (1986)*	Mainly *intra muros*, but also suburbs	Short, technical training (lycée professionnel)
JJ, male	25 (1975)	Mainly *intra muros*, but also suburbs	University studies, DEA (linguistics)
NI, male	26 (1974)	*Intra muros*	University studies, DEA (linguistics)
ET, male	20 (1984)*	*Intra muros*	Short technical training (lycée professionnel)

* Recorded in 2004.

on the common factor for these speakers, that is, their close bonds to the Parisian region on a general level.

On the other hand, they have been selected deliberately to roughly represent two different socio-cultural profiles in terms of education. Thus PP, SA, JJ, NI and AD do or have done university studies at fairly advanced levels (in law, history or linguistics), four of them beyond the master's level (JJ, NI, AD are pursuing a *DEA* (*diplôme d'études approfondies* – a diploma of advanced studies), and PP has finished political science studies (*Sciences Po*) and is doing a thesis), whereas among the remaining speakers, AM has a secretarial diploma, a BEP (*brevet d'études professionnelles*), and a *bac professionnel*, and works as a secretary, and ET, ME and LA are in a *lycée professionnel sanitaire et social*, that is in a technical upper secondary school, in the domain of health care, preparing the final exam (*bac sciences médico-sociales*). This polarization of the speakers should allow for some conclusions as to the socio-cultural embedding of certain recent pronunciation features in Paris. See Table 1 for a summary of the sociodemographic information concerning the speakers.

2. Description of the phonological inventory

Living in the heart of the linguistic center of prestige guarantees neither homogeneity nor conservatism among speakers. Within the last couple of decades, several studies of the phonology of Parisian French have pointed to domains of variation, instability and possible change. In the following, we shall first concentrate essentially on the information we can extract about the nine speakers' phonological system from the PFC word list; in Sections 3 and 4, free speech and – to some extent – the reading of the PFC text will be included for a fuller picture of the speakers' pronunciation.

2.1 Vowels

2.1.1 *High vowels and gliding*

The high oral vowels (/i/, /y/, /u/) are not mentioned in the literature on Parisian French as an area of either change or of any remarkable new types of variation. The general allophonic rules predict that these phonemes are realized as semi-vowels [j], [ɥ], [w] when placed after a consonant and before a full vowel (as in *mi̲ette* [mjɛt], *mu̲ette* [mɥɛt], *mou̲ette* [mwɛt]), except in cases where the preceding consonant forms an obstruent-liquid cluster, as in *tri̲omphe* [triõf], *cru̲el* [kryɛl], and *ébloui* [eblui], in which cases they are realized as syllabic segments ([i], [y], [u]). These rules were to an overwhelming degree respected by the Parisian informants of the Martinet & Walter (1973) survey,[1] and this also seems to be the case among the present nine young Parisian speakers.

First of all, they all clearly distinguish three different high oral vowel phonemes (/i/, /y/, /u/), since *miette, muette and mouette* are kept systematically apart in the expected way.[2] However, the words are not always pronounced with a semi-vowel. Five speakers produce a full vowel in the word *muette* ([myɛt]), and two have a full vowel in *mouette* ([muɛt]). This could of course be a fact of reading isolated words aloud. The general rule of pronouncing semi-vowels whenever /i/, /y/, /u/ are placed after a single consonant and before a full vowel, seems respected elsewhere: thus all speakers have semi-vowels in the words *nièce, niais, cinquième*

1. Except by their speaker *m* who was born in Savoie (south-eastern France) and came to Paris at the age of 11 (see Walter 1977: 82). This speaker, in accordance with the Southern French phonological system, has full vocalic realizations in words like *lier, buée, bouée*.

2. When speaker AM realizes *mouette* as [mɥɛt] we interpret this as a reading error rather than as an aberrant phonological fact, albeit this speaker is the only one who could have geographic reasons for showing a different system, since she came to Paris from *le Morbihan* (southern Brittany) at the age of 11.

and (with one exception) *fou à lier*. In words where a morphological boundary is present between the high oral vowel and the following full vowel, standard French is normally described as showing some variation between full and semi-vowel (*lier*: [lie], [lje]) according to speech tempo. This is reflected in the data, where notably the words *scier* and *nier* are produced with a full vowel by more than half of the speakers ([sie], [nie]). No similar behavior can be seen, however, in the words *relier* and *reliure*, or in *millionnaire, million*, which are all pronounced systematically with a non-syllabic high vowel ([j]). In the absence of more abundant data, we cannot conclude that the morphological boundary only plays a role in (basic) infinitives. The matter ought to be investigated more thoroughly.

After an obstruent-liquid cluster (the words *prendrions, prendriez, influence, quatrième, trouer*), however, the allophonic rule predicting a full vowel seems very categorical. All speakers show syllabic high vowels in these words. In the two first-mentioned words, a transitional [j] is heard in the speech of approximately half of the speakers, yielding [prãdrijõ], [prãdrije], but this is somehow a phonetic supplement to the full vowel, not a replacement of it.

On the whole, these vowels seem to maintain the original internal distinctions as well as the distributional rules already described in the literature, although some syllabic pronunciations do occur where semi-vowels are expected.

2.1.2 *Mid and low oral vowels*

One part of the phonological system that has been described as undergoing change relates to the so-called *voyelles à double timbre.* There are four pairs of these: the mid vowels /e/–/ɛ/, as in *parlé – parlait*, /ø/–/œ/, as in *jeûne – jeune* and /o/–/ɔ/, as in *saute – sotte*, and the low vowel pair /ɑ/–/a/ as in *mâle – mal*. These pairs are commonly referred to as /E/, /Œ/, /O/, and /A/, with the capital letter indicating underspecification of degree of height or backness respectively. All seem to be engaged in a process of losing their oppositions to a greater or lesser degree. Thus, in Martinet's (1969) overview of the successive studies of Martinet (1945), Reichstein (1960) and Deyhime (1967a, 1967b), it is clearly stated that the distinction between /ɑ/ and /a/ is gradually disappearing for Parisian speakers, and in later studies (Léon 1973; Peretz 1977; Lefebvre 1988; Landick 1995; Hansen & Juillard 2011) the distinctions between /e/–/ɛ/ and /ø/–/œ/ are included in the list of affected pairs, leaving the /o/–/ɔ/ opposition as the best conserved of the four, though not untouched by the general tendency.[3]

The analysis of the PFC word-list shows, not surprisingly in the light of the above mentioned studies, that the pairs of words displaying /A/ are distinguished

3. See Lyche (2010), and Carton (2000) for summaries of some of these results.

in a very limited number of cases. In the pair *ras – rat*, no /ɑ/–/a/ distinction is made by any of the speakers (all pronounce a slightly posterior [a]-sound[4]). In the pair *mâle – mal*, a tentatively traditional distinction is made by only one of the nine speakers (SA), whereas the other speakers either make no distinction, or make a phonetic distinction that is opposite of the one required by the norm. The last pair, *patte – pâte*, which is tested both in random places in the course of the word-list and in immediately consecutive positions for greater linguistic awareness at the end of the list, scores no better than the other pairs in the first exercise (one speaker-distinction only (SA), the rest of the occurrences being either identical, as [a], or distinguished the wrong way around (NI and AM)). It does remarkably better in the second exercise though. In fact, the immediate juxtaposition of the words *pâte* and *patte* (as numbers 85 and 86 in the list) provokes four distinctions (SA, PP, JJ, ET) that are, if not really traditional since the true posterior timbre of [ɑ] never appears, at least intended in the traditional direction, with /A/ being realized as more posterior and/or longer in *pâte* than in *patte*. The remaining five speakers show no distinction. The enhancement of the phonetic distinction through conscious recognition seems to indicate that the knowledge of the opposition is still there and can be triggered through normative pressure in some of the speakers. Overall, however, the accumulated results for these three word-pairs presented in the course of the list are very poor with respect to the stability of the /A/-opposition: only three out of 27 possible distinctions (11%) are made.

As for the /e/–/ɛ/ opposition, represented in the word-list by six different pairs (*piqué – piquais, piquer – piquet, nier – niais, déjeuner – des jeunets, épée – épais* and *pécheur – pêcheur*), it confirms the idea of a weakened opposition, though it is far from the level of /ɑ/-/a/ just mentioned. If *pécheur – pêcheur* is left out for a moment, the word pairs show 33 out of 44 possible distinctions[5] (73%). Each of these word pairs is in fact distinguished by six or seven of the nine speakers.

The pair *pécheur – pêcheur* represents a different pattern displaying only one distinction (by ET), while the other speakers either produce the opposite distribution (three speakers), i.e., a more open quality in the first than in the second word, or none at all (five speakers). It should be noted that the vowel is placed in an unstressed position here. A link between stress patterns and merging tendency has been reported by Landick (2004) for /E/ and /O/, and by Hansen & Juillard (2011) for /Ø/ and /A/ as well (representative pairs being *péché – pêcher, beauté – botté, jeûner – déjeuner, passions – passion*). It should be added that the difference made

4. Except for speaker SA, who produces [ɑ] twice.

5. The total should have been 9 speakers x 5 pairs = 45, but one occurrence is unfortunately missing due to change of tape during the recording.

in the other word pairs, where /E/ is in a word-final syllable, is not always a full traditional one of the type [e]–[ɛ]. In the majority of the distinctions (20 of 33) it is only a slight phonetic distinction.

Curiously enough, the recurring of the pair *épée – épais* as direct neighbors (numbers 88 and 87) at the end of the list provokes no change whatsoever in the pronunciation by the speakers, as compared to their occurrence in the course of the list (numbers 14 and 40). Thus there is apparently no normative pressure forcing speakers to pay special attention to their /E/-quality, as was the case for /A/.

Since the number of distinguished pairs overall seems to be very similar across the word pairs, it is interesting to see if certain speakers are systematically the conservative ones, or, on the contrary, are systematically the ones who do not make any distinction at all. This does seem to be the case to a certain degree, since speaker SA represents five cases of total merging, while AM and JJ have four cases each. As SA had a rather conservative profile for her /A/s, it seems difficult to interpret this result.

The distinction /ø/–/œ/ is only represented by one word pair in the list, *jeûne – jeune* (numbers 61 and 3), but this pair is repeated in immediate vicinity at the end of the list (numbers 91 and 90). In its non-sequential occurrence, seven out of nine speakers distinguish the pair (this gives a percentage of 78% that can be approximately compared with the 73% for /E/ and the 11% for /A/, but of course, the very limited amount of data here gives this comparison little weight). Those who make a distinction rarely go for a full traditional opposition in quality and length ([øː]–[œ]; one speaker only, PP). They either produce a clear quality distinction without involving length ([ø]–[œ]; SA, JJ), or a slighter phonetic distinction (four speakers). Those who do not distinguish at all pronounce [œ] twice. In the sequential position, a somewhat different picture emerges, in that among the six speakers who make a distinction between the words, five make a full traditional vowel quality distinction (two of them accompanying this with a length difference; PP, SA), only one producing a slighter physical difference. It would seem that the visual impression of the words as neighbors enhances the efforts to keep them apart, but the effect is not overwhelming, given that three speakers still do not distinguish them at all (producing [œ] twice, exactly as for two speakers in the course of the list). One speaker, AD, merges the two sounds in both occurrences of the word pair.[6]

6. It is noteworthy that in the reading of the PFC text, the words *jeune* and *jeûne* in context (*Un jeune membre…*; *…un jeûne prolongé*) are phonetically distinguished in the traditional direction by only three of the nine speakers (and only one speaker makes a clear distinction). The rest of the speakers either pronounce the words identically or make a reverse differencia-

The inclusion in the list of other /Ø/ words which do not form minimal pairs allows for a view into the allophonic constraints on the distribution of [ø] and [œ] realizations. Though not systematic, it seems that many of the traditional allophonic rules for standard French are respected by these Parisian speakers: in word-final open syllable (*creux*), [ø] is heard in the majority of the cases as expected (only three speakers producing slightly more open qualities). Before word-final -/z/ (*creuse*), again the [ø] sound is most frequent, and likewise before a word-final cluster with -/t/ (*feutre*), where there are no exceptions. Where [œ] is expected according to traditional rules, this also seems in place: All speakers have [œ] before word-final -/r/ cluster (*meurtre*) and before other word-final clusters, tested in the word *peuple*. A final examination of an open internal syllable, in the word *déjeuner*, shows that eight out of nine speakers agree on producing [ø] here, in accordance with "la loi de position" (closed quality in open syllable – see Chapter 1).

/o/–/ɔ/ that was reported in other Parisian surveys to be the strongest of the four oppositions treated here, confirms this position among the examined speakers. In *paume – pomme* as well as in *rauque – roc*, eight out of nine speakers make a phonetic distinction between the words. The total positive score for these two word pairs thus comes out as 16 out of 18 (89%). But when *beauté – botté* is included, odds seem less favorable: None of the speakers distinguish in the traditional way here (repeating [o], or a vowel sound between [o] and [ɔ], for both words, or producing a more open quality for *beauté* than for *botté*). This recalls the difference noted for /E/ above, between a word-final stressed and a word-internal unstressed syllable. The repetition of *beauté – botté* at the end of the word list (as numbers 91 and 92) gives slightly more conservative results, in that two speakers (JJ, AM) now make a fine phonetic distinction in the original direction, the rest repeating as before [o], or in one case an intermediate sound between [o] and [ɔ], for both words. Though the overall picture of the /O/-opposition seems more stable in word-final position than that of /A/, /E/ and /Ø/, it should be added that the distinctions made in *paume – pomme* and in *rauque – roc* are not always of the traditional kind [oː]–[ɔ]. In fact, only three speakers in the first pair and two speakers in the second pair make a combined length and quality distinction. The other speakers either make the full quality distinction without involving length (two plus two speakers) or a more subtle phonetic difference between the words (some of these, however, still prefer making the vowel in *rauque* somewhat longer than the one in *roc*). The few speakers that do not differentiate these word

tion. This might indicate that the freer or less observed the speech production, the closer we get to data that point to a merger of the two vowels /ø/ and /œ/ in this word pair.

pairs at all, choose either [o] for both (ME in *paume – pomme*) or [ɔ] for both (AM in *rauque – roc*).[7]

Even within a single point of investigation, we are confronted with a great deal of individual variation for /A/, /E/, /Ø/ and /O/ but also with clear signs of ongoing merger processes within the former phonological oppositions /ɑ/–/a/, /e/–/ɛ/, /ø/–/œ/ and /o/–/ɔ/, notably in word-internal syllables.

2.1.3 *Nasal vowels*

Another subsystem of the Parisian French vowels for which instability and ongoing change has been reported is the system of nasal vowels (Coveney 2001; Hansen 2001a; Hansen 2001b; Walter 1994; Léon 1993a, 1993b; Carton et al. 1983; Malécot & Lindsay 1976; Léon 1979; Mettas 1979; Mettas 1973 just to mention a few). One long-term observation has been the confusion of /œ̃/ and /ɛ̃/ (like in *brun* and *brin*), more or less completed over the last century, with merger as [ɛ̃] (some observers maintain, however, that whereas /œ̃/ has indeed lost its clear lip protrusion, it is still not identical to /ɛ̃/, which has spread lips; cf. Hansen 2001a; Malécot & Lindsay 1976). Another, more recent, observation is a reorganization of the remaining nasal vowels, with no precise outcome as yet. The progression of a rounded variant of /ɑ̃/ that theoretically compromises the distinction between /ɑ̃/ and /ɔ̃/ leads to two rough scenarios that have been sketched out on the basis of empirical results from the last decades (overview in Hansen 2001a): either a completion of this latter movement, giving a real confusion, so that the traditional four nasal vowels are reduced to a two vowel system (/ɛ̃/ and /ɔ̃/), or a chain shift by which /ɑ̃/ approaches /ɔ̃/, while /ɔ̃/ in return gets more closed and rounded than before ([õ]), and /ɛ̃/ slips into the vacant position deserted by /ɑ̃/, i.e., is pronounced more open and back than before. The reaction of /œ̃/ to these new movements is not described in equal terms. Some note that it follows the new tendency of aperture and backness of /ɛ̃/,[8] others that it remains a front vowel with its original vowel height (Hansen 2001a: 47). Probably, important lexical and prosodic constraints are involved, such that full lexical items have other tendencies than the grammatical and often unstressed word *un*.

In the data from the PFC word list, the effects of these tendencies are all reflected. In the first occurrences of /œ̃/ and /ɛ̃/ in the words *brun* and *brin* (numbers 27 and 57), four out of the nine informants make no distinction, pronouncing

7. The word *rhinocéros* that was included in the PFC word list to test the *LdP* for /O/ displayed for six of the nine speakers the realization [ʁinoseʁɔs], that is the expected closed quality in the open internal syllable, and open quality in the closed final syllable.

8. E.g., Fónagy (1989: 232): "[L]es 'nouveaux venus' n'ont aucun privilège: ils vont vers /ɑ̃/ comme les 'anciens'."

either both words with an intermediate lip rounding quality or with a very open quality. The speakers that do have different realizations of the two words in question make very slight distinctions, but these all seem logical in the light of the above-mentioned displacements. One of the distinguishing speakers confuses the properties and distinguishes *brun* and *brin* in the unexpected direction, which might indicate a merger in the speech of this person. In the sequential repetition of the word pair (numbers 93 and 94 in the list) no normative pressure seems to enhance the distinction. On the contrary, now seven out of nine speakers give exactly the same pronunciation to *brun* and *brin*. The two speakers that keep the words apart do it the wrong way around as compared to traditional pronunciation. To summarize, speakers seem unable to produce a distinction of the traditional kind when focusing on the exercise, but curiously enough, four of them keep the vowels phonetically apart when reading the words individually at some distance, more unconsciously. This phenomenon could indicate a 'near-merger' (complete in perception, but incomplete in production) something that has been observed in (late stages of) other sound changes (Labov 1994; see also Hansen 1998 and 2001a: 41). In any case, the /œ̃/–/ɛ̃/ distinction is either very subtle, or non-existent, according to speaker, but it is not without traces in current young Parisian speech.

The other word pair including nasal vowels is *blanc – blond* (words 59 and 42). Whereas only one speaker produces a traditional difference [ɑ̃] vs. [ɔ̃], five use the slightly raised and closed variants for both (which speaks in favor of a chain shift), and three oppose a traditional [ɑ̃] to shifted [õ]. Thus, not a single speaker proposes an identical pronunciation for the two words, though the exact realizations vary. Again this seems to go against the scenario of a merging process of the two back nasal vowels /ɑ̃/ and /ɔ̃/.

2.2 Consonants

2.2.1 *The palatal nasal*

The gradual disappearance of a palatal consonantal nasal phoneme (/ɲ/) in favor of a combination of [n] and [j] (in words like *compagnie*) has been reported by several observers of Parisian French and indeed more generally of *le français de référence* (summarized in Lyche (2010), and in Chapter 1, and henceforth referred to as FR) since Martinet (1945).

The PFC word-list allows for a view into the speakers' realization of the words *compagne, compagnie, agneau, baignoire* and *gnôle*. In word-final position, *compagne*, the pronunciation is conservative [kõpaɲ] in the reading of eight out of nine speakers, the last one using [nj]. The picture changes radically, however, for

word-medial position (*compagnie, agneau, baignoire*) in which only about half of the speakers use the palatal nasal consonant, whereas the rest use either [nj] or, remarkably more often, [n] alone, yielding pronunciations like [bɛnwaːr] for *baignoire* that, theoretically at least, compromises the distinction with *baie noire*. The word-initial instance in *gnôle* is treated as the word-medial ones, i.e., either with [ɲ] (five of the speakers), or with [nj] or [n]. A single speaker (ME) hesitates between [ɲol] and the more orthographically inspired pronunciation [ɡnol] which might be explained by the infrequency of the word and the existence of other *gn*-initial words that are pronounced this way (*gneiss, gnome, gnosticisme*). On a more speaker-oriented level, it can be stated that only speaker PP (who is university educated) has the traditional nasal palatal sound in all of the five test words, and only speaker ET (who is in a *lycée professionnel* (vocational high school)) never uses the traditional sound, but [n] and [nj] only, whereas the rest of the speakers use the traditional sound plus one or two alternating sounds in variation.

Two conclusions can be drawn from this experience. First, as a sound change, the replacement of [ɲ] by [nj] does not seem to be complete, as reflected in the reading style, for these young Parisian speakers. Second, the replacement is perhaps not so much by [nj] (which actually occurred only five times in total through all the occurrences) but rather by [n] (11 occurrences). This result invites further investigation, and a continued attention to the status of this nasal phoneme, which seems stronger in word-final position than elsewhere.

2.2.2 *Consonantal groups*

One domain in the word list, that of consonantal groups, has not revealed any variation whatsoever among the nine speakers, though it probably would have in a geographically more diverse speaker sample and in more informal speech styles. This holds for final /-kt/ as well as for internal groups of /ks/+C(C).

Thus the words *intact* and *infect* are pronounced with a final [kt] by all the speakers, and the word *aspect* invariably as [aspɛ], that is without final consonants by all speakers. This last fact shows that none of the speakers have joined the apparent recent tendency of giving in to pressure from orthography in words where the final consonant is traditionally silent (Lyche 2010).

With a similar amount of agreement, the complex groups [kspl], [kstr], [ksf] and [ksm] in the words *explosion, extraordinaire, ex-femme* and *ex-mari* are never reduced by these nine speakers in the reading of the word list. One speaker, AM, inserts a schwa in *ex-femme*, producing [ɛksəfam], revealing here what Martinet (1969: 216) has called *la fonction lubrifiante* of the French schwa, that is, its capacity of facilitating the pronunciation of complex consonant clusters, also seen in *arc de triomphe* [arkə̱dətriõf] or in *film tchèque* [filmətʃɛk].

2.2.3 *Velar palatalization*

A striking feature that has not been mentioned thus far is the palatalization of the consonant /k/, giving a [kj]-like sound. This phenomenon has been called typical of a working class Parisian accent (Léon 1993b: 203–204), but a recent study of the *banlieue* speech of Paris, Marseille and Grenoble claims that the connotation is more generally one of young people with poor social conditions, living in areas of heavy immigrant concentrations (Jamin et al. 2006).

Among our nine young Parisian speakers, only two had spent more time in the *banlieues* of Paris than in Paris itself (the young women ME and AM, cf. Section 1.2), but curiously enough these speakers are not the ones that show palatalized /k/s. Instead, this feature is massively present with two of the young men, ET and JJ. Examples include both word-initial occurrences in the word *que* and word-final occurrences (in words like *bac, fac, donc, public*), whether these are before a vowel ("donc euh") or before a pause ("tel que le bac."). Of course this data set is too small to lend credit to any serious conclusion about a gender-based pattern of variation, but Jamin et al.'s (2006) findings might suggest that a certain toughness or masculine style could be associated with the palatalization.

3. Schwa

Two sorts of data will be analyzed here to clarify the use of schwa in young Parisian speech, the free speech used in the guided interviews, and the reading of the PFC text "Le premier ministre ira-t-il à Beaulieu?". We shall concentrate on comparing the use of the Parisian speakers with the traditional norm for standard French in order to detect variation or new tendencies within this population.

3.1 Schwa in consonantal environments

For standard French, the long-established *loi des trois consonnes* (Grammont [1914] 1963) claims that schwa is maintained after two consonants and before a third (CC_C: *gouvernement*) but can be dropped in a consonantal environment after a single consonant (VC_C(C): *samedi, pas de ski*). The latter phenomenon constitutes a notable difference in relation to Southern French.[9]

9. Recent studies, however, point to a gradual dedialectalization of Southern French in this respect (Armstrong & Unsworth 1999 among others), a process by which the treatment of schwa gets more identical to that of Northern French, and thus, of FR.

That this first constraint has to be refined in a number of ways in order to account adequately for Parisian French has been shown in a series of studies. The behavior of schwa also depends on the position of the syllable in the word and of formality and speech tempo (Hansen 1994; Léon 1987; Malécot 1976; Léon 1966). But as a rough guideline, Grammont's old rule still seems to apply for young Parisian speakers in free speech. That is, if non-word-final cases are looked upon as a whole (word-internal medial syllables and schwa in word sequences involving monosyllables and initial syllables), the nine speakers maintain schwa in 68% (84/123) of the CC_C positions (as in *just<u>e</u>ment* (NI), *jours d<u>e</u> vacances* (AD), *donc s<u>e</u>conde* (ET)) but in only 27% (90/328) of the VC_C positions. We thus see schwa drop in VC_C in about three quarters of the examples, as in *c'est vrai qu(e) j'ai* (SA), *elle est r(e)tournée* (JJ), *dév(e)lopp(e)ment* (ME). One factor that makes the retention rate in CC_C seem relatively low for monosyllables, initial and medial syllables here (68%) is the fact that the subordinate conjunction *parce que* is regarded as one word according to PFC coding conventions (Durand, Laks & Lyche 2002: 48), and accordingly the first schwa – which is always dropped by these speakers – has been coded as a medial one. If *parc<u>e</u> que* occurrences are excluded from the count of medial CC_C occurrences, it turns out that these are categorically retained (as in *march<u>e</u>ra, just<u>e</u>ment*), and the total maintenance percentage for the group of non-word-final CC_C occurrences reaches 76% (84/111). We recall here that instances of obstruent + liquid + schwa + consonant in medial or initial syllables (as in *entr<u>e</u>prise*, *br<u>e</u>ton*) are not included in the PFC counts, given that these are maintained in all known varieties of French (ibid.).

Having said that the inter-consonantal context after a single consonant (VC_C) highly favors schwa drop for the analyzed speakers as compared to the CC_C context, in the types of syllables treated here, an important modification should be added. Word-initial syllables show more important retention rates in VC_C than monosyllables (47% (28/60) vs. 30% (61/204)), whereas word-medial syllables almost systematically show no retention of schwa at all in this context (one occurrence out of 64, i.e., 1.6%, in the word *rec<u>e</u>voir*). Other studies, based on data from Parisian French, confirm that word-initial syllables have the strongest tendency of maintaining their schwa (Hansen 1994; Walter 1990; Fónagy 1989), and claim in some cases that a process of stabilization of schwa in this position is taking place (see also Walker 1996). In the present study, retention in this context covers examples like *on d<u>e</u>vait euh* (AM), *qui vont les r<u>e</u>porter* (ME), *étaient peu r<u>e</u>connus* (ET), *sans t<u>e</u>nir compte* (NI), *une écriture très m<u>e</u>surée* (PP), *un certain d<u>e</u>voir* (LA). Lexical studies of this tendency (Hansen 1994; Walker 1996) state that the prefix *re-* is often involved in these cases of retention, but does not account for all examples, as can also be seen from the cases cited here.

The PFC reading exercise confirms the internal differences stated above for free speech. Firstly, the context CC_C again yields more maintained schwas in monosyllables, initial or medial syllables than does the context VC_C, but the level of retention here is dramatically higher for both contexts: 100% vs. 71% (as exemplified in the reading of six of the speakers). The reason for this increased level can probably be found in a combination of the effect of the written form of the words, and the school-based normative pressure of reading carefully. Secondly, the VC_C examples divide clearly into the same sub-types as was the case in free speech. In initial syllables schwa is retained in all examples (100%), in monosyllables in 80% of the examples, and in medial syllables in no examples (0%). The only consistent schwa-drop context across speech styles thus seems to be VC_C in medial syllables. It should be noted here, though, that the lexical basis for these conclusions is limited due to the specific task in question. Thus, the results for initial syllables are based on four words per speaker only (*ses chemises, en revanche, baisser depuis, par la télévision seraient témoins*[10]) and similarly for medial syllables (*trente-six, bêtement, détachement, indiqueraient*).

Word-final syllables have not yet been included in the analysis here. In this position, schwa maintenance also heavily depends on the phonological context, as predicted by Grammont ([1914] 1963). In the free speech of the nine speakers, word-final schwa categorically drops out in the VC_C context (0/462), as in *je stresse beaucoup* (SA) or *deux stages d'un mois* (AM), whereas it is retained in 67% of the cases in the CC_C context, as in *les portes scientifiques* (ET) or *quelques jours* (AD). This pattern is echoed in the reading exercise (six speakers) where there is a very small rate of retention word-finally in VC_C (1.6%, 5/320) as opposed to 84% (73/87) word-finally in CC_C. The higher rates of retention in reading as compared to spontaneous speech almost solely affects the CC_C context (from 67% to 84% of retention). The word-final VC_C context seems to be one of nearly categorical schwa-drop, regardless of speech style, in Parisian French. The rare cases of pronounced schwa in this context (*campagne profonde* (PP), *chaque fois* (PP), *Mont Saint Pierre qui* (NI), *un jeune membre* (AM), *La cote du* (AM)) do not seem explainable in any principled way.

Summing up the results for schwa in consonantal environments for these Parisian speakers, the only new or interesting tendency seems to be the rather high retention rates in VC_C word-initial syllables. This fact, that confirms earlier observations already cited (and to which could be added Morin 1978 and Tranel 1987), invites us to follow this context more closely in the years to come.

10. This example was pronounced without a pause between the words "par la télévision" and "seraient" by some speakers.

3.2 Schwa accompanying word-final consonants before a pause

Another context where these speakers deliver interesting data is the post-consonantal context before a pause. This context traditionally calls for a drop of schwa, no matter how many preceding consonants are present: *Elle est bell(e). Il va au théatr(e).* Léon (1966) and Carton (1999) among others have commented on this categorical schwa-drop before a pause in FR specifying that in an oratorical, energetic speech style only, where final consonants are pronounced very distinctly, a weak vocalic echo with a schwa-like quality can be heard. For the last twenty years or so, however, a full schwa can be heard in this same context in the speech of Parisians (Léon 1987; Walter 1988; Fónagy 1989; Léon 1993a, 1993b; Hansen 1997; Carton 1999; Hansen & Hansen 2003). The exact conditions that favor the emergence of this [ə] (be it etymologically based or not[11]) have been described in different terms by observers, but they seem to agree that it is always accompanied by a certain intonation contour, consisting of a high tone on the preceding syllable and a low tone on the schwa itself. Curiously enough, it does not always have the phonetic quality of a schwa, but can be more open or back (almost [a]) or even slightly nasalized. It is thus in more than one respect not identical to Southern French prepausal schwa-occurrences. Phonetic constraints on its emergence have been attested by Hansen (1997) and Hansen & Hansen (2003) who report its particularly frequent occurrence after voiced consonants. But interactional or emotional constraints have also been put forward (Hansen & Hansen 2003; Fónagy 1989; Carton 1999) and seem to be more essential. Thus, the phenomenon is described as a means of drawing attention to an important element of speech, of requesting the comprehension or approval of the interlocutor, or of signaling informality and sympathy (Hansen & Hansen 2003). Some have compared this function to that of the French discourse markers *hein* or *n'est-ce pas*, proposing the term "schwa-tagging" (Armstrong & Unsworth 1999). Sociolinguists and phonostylists have used labels like "jeune", "nonchalant", "populaire" etc. (Léon 1993b; Hansen 1997; Carton 1999) in referring to its usage.[12]

Given the pragmatic and sociolinguistic parameters involved in this phenomenon, we expected to find very variable use among the individual speakers. The analysis first focuses on free speech, where prepausal schwas in fact occur in a number of cases. Prepausal contexts with and without accompanying schwa were counted in order to allow for a quantitative measure (following Hansen 1997).

11. It can be heard also in for instance *Bonjour*[ə].

12. Candea (2000) has a thorough discussion of different ways of hesitating in oral French, but given the intonational contours and the pragmatic functions of prepausal schwa, we do not interpret it as a means of hesitation.

Before a strong intonation border ("pause marquée", Durand et al. 2002: 48), schwas occurred in 26% of the possible cases (22/84) after a single consonant, whether there was an etymological final *-e* or not in the word (VC(_)). Before a weaker intonation boundary (shorter pause), the percentage of "parasitic" schwas after a single consonant was somewhat lower (18%, 12/66 in VC(_)). But in both types of context there is a clear tendency that the large majority of cases of prepausal schwa come from the speakers with a long university education. Thus, 19 of the 22 examples of the first kind are found with speakers AD, PP, NI, JJ and SA, and for the second kind, 10 out of 12 examples are found with these speakers (PP and JJ making them most often). This could point to a confirmation of Léon's claim that these prepausal schwas might have been *populaire* in the beginning, but are no longer so, signaling on the contrary a certain ease of communication, "une parlure chic, moderne, jeune" (Léon 1987: 112) and "légèrement affectée" (1993b: 256).

Examples in the recordings include the following:

> *D'abord moi c'est linguistique avant toute chose, c'est euh (…)* (NI)
>
> *J'ai fait mon mémoire de maîtrise, sur euh le système (…) (*NI)
>
> *Mais c'était un mixte entre des maths et (…) la Cagne normale, et puis (…)* (PP*)*
>
> *Moi je suis quelqu'un (…) qui aime mettre mes tripes, dans ce que j'écris.* (PP)
>
> *dans certaines matières on a le droit au Code, à certains codes (…)* (SA)
>
> *une fois qu'on a la logique, et que euh (…)* (SA)
>
> *donc j'ai passé mon primaire avec euh avec tout le monde, et euh donc (…)* (JJ)[13]

Prepausal contexts after two consonants (CC(_)) were rare in the data, but in some cases these were also accompanied by schwa, as in:

> *c'est le milieu social qui est revenu à la charge, et j'ai passé des concours (…)* (JJ)

In reading style it was not expected that the prepausal schwa phenomenon would be very salient, given its informal connotations, and earlier studies (Hansen 1997; Hansen & Hansen 2003) have also shown that if prepausal schwas do occur in reading, it is in a slightly less distinctive way and very rarely with the extreme phonetic realizations that can be heard in free speech ([a]-like or nasalized, as

13. The prepausal schwas used by this speaker have been treated in detail in Hansen (2007) and Hansen (2010).

noted above). Nevertheless, each of the six speakers analyzed for the reading passage (the five university students and one young secretary, AM) present a couple of cases, SA going to the extreme amount of 11 out of 25 possible occurrences after a single consonant, the secretary staying at a modest four out of 25. As has been shown in an earlier treatment of four of these speakers, the sonority of the preceding consonant plays an important role (Hansen 2003). Thus, of all the 27 examples of prepausal schwa in the reading of the text, 26 occur after a voiced word-final consonant, most often a sonorant (/n/, /l/) or plosive (/d/), more rarely a fricative (/z/, /ʒ/). (The extreme user of these schwas, SA, also puts one after a voiceless consonant in "vin blanc sec_".) In other words, when interactional explanations seem absent, a very strong phonetic constraint seems to account for the occurrence of this feature.

The existence of prepausal schwas in reading may suggest that young Parisian speakers have come to combine the oratory tendency of vocalic echo from earlier times with the new often-heard schwa-tagging in free speech to arrive at rather surprising schwa-rates in a variety of French that was traditionally known for its categorical schwa drop before a pause.

4. Liaison

For FR, some change in the domain of *liaison* has been observed recently in a couple of studies (Armstrong 2001; Smith 1996; Durand & Lyche 2008). Whereas certain types of optional *liaison* were traditionally expected in careful speech styles, it seems that this expectation is now partially weakened, so that in relatively formal styles, speakers use fewer optional *liaisons* than before. This has been seen as a sign of a 'democratization process' in the French language. In the present study we therefore aimed to find out whether our young Parisian speakers, in a guided interview with a non-native francophone they had never met before, would follow this trend. Delattre's (1966) model for obligatory and optional *liaisons* with some adaptation from Jensen & Thorsen (2004) provides the basis for the analytical categories below.

The speakers of course pronounced *liaison* consonants in all of the obligatory contexts. This included:

– Noun phrases, from determiner to noun (*les_accents, ces_endroits-là*, *un_hôpital*) as well as from determiner to adjective (*les_autres facs*) and from adjective to noun (*d'assez bons_élèves*, *un petit_accent*). Even if the adjective had two full syllables, this took place (*un mauvais_enseignant*).

- Prepositional phrases with *en* and *dans* (*en_ethnolinguistique*, *dans_une entreprise*).
- Verbal phrases from personal pronoun to verb (*ils_ont grandi*, *on_a déménagé, qui nous_entourent*), from other clitic pronoun to verb (*il y en_a*) or from personal pronoun to *y* (*ils_y tiennent, on_y va*).
- Fixed expressions (*de temps_en temps*, *tout_à fait, tout_à l'heure*).
- From the temporal conjunction *quand* (*quand_elle a vu, quand_on a fait*).

But from the category of traditionally frequent optional *liaisons* very few cases were realized, in spite of the supposedly formal atmosphere. According to Jensen & Thorsen (2004), finite forms of *être* that end in latent consonants, should be included in this category, but not a single case after *suis, sont* or *était* was noted. Only after *c'est*, a few *liaisons* were pronounced (*C'est_en Franche-Comté* (ME), *C'est_un peu plus, un petit peu plus dur* (LA), *C'est_à Porte de Pantin* (LA), *tout ce qui est_admission* (AM), *C'est_une grave erreur* (NI)), but these represent a very small number of the potential cases after *c'est*. The overwhelming majority of these occurrences were pronounced without *liaison*.

A few other types of frequent optional *liaisons* occurred after *plus* (*plus_âgé*, ME), *très* (*très_assidue*, SA), *rien* (*ça a rien_à voir*, AM), and *bien* (*j'ai bien_apprécié*, AM),[14] but these were too rare to state any reliable percentage of presence. Note however, that from among the scarce examples of *liaisons* in the optional category all but two of them came from the speaker group with a short technical education (LA, ME, AM). This could indicate a certain linguistic insecurity for these speakers.

Even if it was logical that none of the rare optional *liaisons* occurred (like from plural noun to adjective: *origines espagnoles*, or from *mais*: *mais en fait*), it is still surprising that so few of the traditionally frequent optional *liaisons* showed up. This might confirm Armstrong's (2001) and Smith's (1996) general hypothesis of a change in the usage norm of standard French *liaison* in the specific case of Parisian French, cf. also Durand & Lyche (2008). But this should ideally be checked by a comparison of the free, relatively formal speech from the guided interview with an even more formal register, the reading passage.

14. Unfortunately the size of the speaker sample and the amount of data from each speaker does not allow for a systematic check of all possible frequent optional liaison contexts. Hence, we cannot make a comparison with Durand & Lyche (2008) as regards, for instance, prepositional contexts such as *chez, sous,* and *dès.*

5. Conclusion

Though the nine speakers analyzed here should – historically speaking – be representative of FR, since they live in the capital that has been associated with the pronunciation norm in France, they show in many respects dynamic tendencies that go against the traditional normative system. This holds true both for the university students and the speakers with short technical training.[15] The dynamic tendencies are evident both for the mid and low oral vowels, and for the nasal vowels, where clear merger processes or shifts in place of articulation seem to be ongoing. The high vowels, on the contrary, apparently still follow traditional descriptions (with a few exceptions of full vowels where semi-vowels were expected), and the palatal nasal phoneme /ɲ/ does not seem as threatened as some linguists have stated. The study of schwa partly confirmed the existing descriptions of standard French, partly pulled out new tendencies, i.e., the high retention rates of schwa in word-initial syllables in the VC_C context, and the importance of a prepausal schwa-like segment (schwa-tagging). Parts of the analysis have lent credit to particular hypotheses of sociolinguistic patterning that would be very interesting to test on a larger corpus: on the one hand, the fact that the minimal use of *liaison* in a guarded style is characteristic of prestige speakers while more badly off speakers – in terms of education – seem to be linguistically insecure and add optional *liaisons* sporadically; on the other hand, the fact that palatalized /k/ phonemes might be a masculine Parisian feature more than a *banlieue* or a *français populaire* feature as such.

Though based on a very small proportion of the Parisian population, it is nevertheless our hope that this study has given a glimpse into young people's pronunciation in the French capital today, and that it has perhaps sketched out tendencies that could well be those of tomorrow's *français de référence*.

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CHAPTER 8

A phonological study of a Swiss French variety

Data from the canton of Neuchâtel*

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1. Introduction

Despite its small population and territory – 7,870,134 inhabitants at the end of 2010 for 41,284 km^2 – Switzerland (also named the Swiss Confederation) has four national languages: German, French, Italian and Romansh.[1] All are official languages, except for the last one, which is "an official language of the Confederation when communicating with persons who speak Romansh".[2] German is declared as the 'main language' by 63.7% of the population, and it is thus by far the most widely spoken language in Switzerland. It constitutes the sole official language of 17 cantons and it is one of the official languages of four others. French is spoken by 20.4% of the population and constitutes the unique official language in the cantons of Geneva, Jura, Neuchâtel and Vaud. Three other cantons, i.e., Bern, Fribourg and Valais, are officially French-German bilingual. Italian, spoken by 6.5% of the population, is the sole official language in the canton of Ticino, in addition to being

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1. All the data in this chapter without explicit references are drawn from the Swiss Federal Statistical Office, cf. http://www.bfs.admin.ch/bfs/portal/en/index.html, accessed on February 15th, 2012.

2. Art. 70, al. 1 of the Federal Constitution of the Swiss Confederation of 1999. The English version is quoted from page 19 in http://www.admin.ch/ch/e/rs/1/101.en.pdf, downloaded on February 1st, 2011.

one of the three official languages of the canton of Graubünden. Finally, Romansh is spoken by a scarce 0.5% of the population and constitutes the official language of Graubünden only.[3]

The large majority of French-speaking Switzerland, named Romandy (*Suisse Romande*), is part of the Franco-Provençal area (Kristol 1999). As for the rest of Romandy, the canton of Jura is linguistically identified as part of the *Oïl* family, while the French-speaking part of the canton of Bern (*Jura Bernois*) forms a transition zone between the two dialect areas (Burger 1971). The traditional Franco-Provençal dialects started to decline in use in the 16th century, and gradually, the diglossic situation disappeared in favor of French. Today, the Franco-Provençal dialects are on the verge of disappearing: There are no monolingual speakers (Maître 2003), and as regards bilinguals, the census of 2000 revealed that they amounted to a scarce 0.9% of the population (Lüdi & Werlen 2005).

Because of their shared past, the Swiss varieties cannot be linguistically separated from the neighboring hexagonal French varieties (Knecht 1979). Nevertheless, Swiss French is traditionally distinguished from *le français de référence* (FR – see Chapter 1) by the presence of four types of variation: archaisms (from Old Central French), dialecticisms (from the Franco-Provençal dialects), Germanisms (from German or Swiss German) and proper innovations (Kristol 1996; Matthey 2003; Andreassen et al. 2010). Swiss French, however, does not constitute a homogeneous variety: According to Knecht (1979), the distinctive features of Swiss French – which can be found at all levels of linguistic analysis – are either restricted to a defined area within Romandy, or they are observed over all of Romandy in addition to crossing the border to the adjacent French region(s). Also, Swiss French features can be found in Belgium, in North American varieties and in African countries.

In this paper, we will concentrate on the phonology of the variety spoken in the canton of Neuchâtel, situated in the northern part of Romandy at the center of the sweep of the Jura Mountains. Our corpus was constructed in 2009 in the area around the town of Neuchâtel, which is an agglomeration of 33,282 inhabitants. The gender-balanced corpus comprises 12 informants who have lived more or less their entire life in the region, cf. Table 1 for a presentation.

In the sections to follow, we will also make use of PFC data from Nyon (canton of Vaud), cf. Table 2 for a presentation of the corpus.[4]

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3. Note that this linguistic overview would not be exhaustive without mentioning that 8.9% of the resident population claims a non-national language to be their 'main language'.

4. Nyon was the very first PFC investigation point in Switzerland, collected in 2002 by Helene N. Andreassen (for a complete analysis of these data, see Andreassen 2004 and Andreassen & Lyche 2009). Neuchâtel, the third Swiss investigation point in the PFC database (the second

Table 1. The 12 speakers of the Neuchâtel corpus

PFC code	Gender	Age	Place of residence	Level of studies
scajb1	F	78	Neuchâtel	*apprentissage*
scamm1	F	67	Neuchâtel	high school
scahd1	F	54	Neuchâtel	obligatory school*
scacm1	F	39	Neuchâtel	high school
scajd1	F	27	Corcelles	high school
scajc1	F	27	Neuchâtel	University
scaaf1	M	78	Neuchâtel	*apprentissage*
scarp1	M	75	Colombier	University
scapy1	M	44	Colombier	*apprentissage*
scapm1	M	42	Neuchâtel	high school
scaog1	M	35	Neuchâtel	high school
scajb2	M	31	Neuchâtel	high school

* The term 'obligatory school' refers to the nine years of compulsory school in Switzerland. Afterwards, teenagers can continue in high school (which leads to university), or they can do an *apprentissage*, which is a work-based learning program of 2–4 years.

Table 2. The 12 speakers of the Nyon corpus

PFC code	Gender	Age	Place of residence	Level of studies
svaab1	F	65	Gland	obligatory school
svarb2	F	52	Nyon	*apprentissage*
svanp1	F	46	Begnins	obligatory school
svamr1	F	31	Prangins	*apprentissage*
svacb1	F	30	Prangins	*apprentissage*
svarv1	M	70	Gland	University
svajb1	M	59	Nyon	*apprentissage*
svapb1	M	56	Nyon	high school
svaje1	M	45	Gland	*apprentissage*
svarb1	M	32	Nyon	*apprentissage*
svayb1	M	32	Prangins	*apprentissage*
svalr1	M	31	Prangins	*apprentissage*

The remainder of the paper is organized as follows: In Section 2, we focus on the vowel system; Section 3 is devoted to the study of schwa; and in Section 4, we present the phenomenon of liaison as it manifests itself in our corpus.[5]

being Geneva), was collected by Isabelle Racine with the help of Nathalie Bühler and Jean-Paul Philippe.

5. Note that Sections 3 and 4 on schwa and liaison comprise data from a thirteenth Neuchâtel informant scacy1, a woman aged 43 years with a university degree living in Colombier. The

2. The vowel system of the Neuchâtel variety

In this section, we focus on some of the quantitative and qualitative vowel contrasts in the Neuchâtel variety that can be expected on the basis of the previous literature. An acoustic vowel analysis will be presented, with a twofold objective. First, whereas previous research has already provided information regarding Neuchâtel speakers' intuitions about the vowel system, our recent data – collected in the PFC framework – come from production, which adds another source of linguistic evidence to the global analysis. Second, we will make use of the PFC data from Nyon and perform a comparative acoustic analysis of a selected number of vowel contrasts.

The section is organized as follows: In 2.1, we present a global survey of the consonantal and vocalic particularities of the Swiss French varieties (Sections 2.1.1 and 2.1.2, respectively), before we devote Section 2.2 to the abovementioned acoustic vowel analysis.

2.1 Segmental particularities of the Swiss French varieties: Previous research

Whereas the lexical dimension of the Swiss French varieties is well documented, their phonetic and phonological particularities have hitherto been little studied.[6] As we will see, regionalisms are scarce in the phonological inventory, but differences have nevertheless been identified between Swiss French and FR, both at the phonotactic and the phonetic level of analysis.

2.1.1 *Consonants*

All consonants in FR are also part of the Swiss French segmental system, but two consonants from the Germanic adstratum complete the latter inventory. First, /h/ in the syllable onset, e.g., *hochdeutsch* [hoχdɔjtʃ],[7] competes with the glottal

reason for excluding her from the vowel analysis in Section 2 is that we wanted to balance the two corpora to be compared (Neuchâtel and Nyon). The reason for including her in the remainder of the paper is to maximize the number of occurrences of schwa and liaison.

6. The most comprehensive lexicographic works include *le Glossaire des patois de la Suisse romande* (Gauchat et al. 1924, cf. www.glossaire-romand.ch), *le Dictionnaire historique du parler neuchâtelois et suisse romand* (Pierrehumbert 1926) and *le Dictionnaire Suisse romand* (Thibault 2004, henceforth *DSR*).

7. The term *hochdeutsch* is commonly used to refer to Standard German, which is not to be confounded with the Alemannic dialects spoken across the German-speaking part of Switzerland (cf. Thibault 2004, *DSR*).

stop ([ʔoχdɔjtʃ]) and the absence of liaison (*en//hochdeutsch* [ãoχdɔjtʃ]). The second consonant with an adstratic origin is /χ/, e.g., *Bach* [baχ].[8] In the area where the 'native' rhotic is subject to devoicing, i.e., in Neuchâtel, Jura and in the Jura Bernois, it is susceptible of being confounded with /χ/. In this case, the final consonants in *bar* (with the rhotic) and *Bach* (with /χ/) are almost identical in quality, differing however in length. Although both are voiceless and produced with a high degree of friction, the consonant in *Bach* is longer.[9] This particular realization of the rhotic – an '*R qui racle*' transcribed as [ʀ̥] (Andreassen et al. 2010) – is one of the most salient features of the varieties of Neuchâtel and of the Jura Bernois. In fact, speakers from this area can easily be identified by other Swiss French solely on the basis of this particular realization of the rhotic.

The affricates /ts/, /dz/, /tʃ/, /dʒ/ and /kχ/ appear in the syllable onset or coda of dialecticisms and Germanisms and are in some cases subject to variation. First, /ts/, orthographically represented with <z> and frequently occurring in proper nouns like for instance *Zurich*, competes with /dz/ and /z/: [tsyʁik] vs. [dzyʁik] vs. [zyʁik].[10] Second, /kχ/ only appears in Germanisms, e.g., *schlouc* [ʃlukχ] 'a small quantity of liquid that is swallowed' (cf. Thibault 2004, *DSR* s.v. *schlouc*), and is here in free variation with [k] and [kʀ̥] in the area of the '*R qui racle*'.[11] For the consonants, we finally mention two phonetic particularities that are more locally restricted, e.g., the affrication of /tj/ in Valais, e.g., *tient* [tɕɛ̃] 'hold$_{\text{3-SG-PRE}}$', and the palatalization of /k/ before front vowels or a pause, observed in Geneva, e.g., *quatre* [kʲat] 'four' (Andreassen et al. 2010).

2.1.2 *Vowels*

The Swiss French varieties are assumed to diverge from FR by having a series of long vowels. First, in word-final closed syllables, this archaic quantitative distinction persists to some degree (Métral 1977), e.g., *belle* /bɛl/ 'pretty$_{\text{FEM}}$' vs. *bêle* /bɛːl/ 'bleat$_{\text{3-SG-PRE}}$'. The instability of the length distinction in a pre-consonantal context

8. All the examples provided in this section without explicit references, are drawn from Andreassen et al. (2010).

9. The analysis of read speech data in our Neuchâtel corpus reveals that the two items *bar* and *Bach* differ on word duration and on repartition of phonemes. First, *bar* is longer (average: 627 ms) than *Bach* (513 ms). Second, the word-final consonant is shorter in *bar* (relative duration: 28%) than in *Bach* (44%), and /a/ is longer in *bar* (45%) than in *Bach* (36%). Note that *Bach* is produced four times as [bak], which means that our numbers are based on eight informants only.

10. Our read speech data contain, for *Zurich*, one instance of /ts/, two instances of /dz/ and nine instances of /z/.

11. *Schlouc* is especially used in the cantons of Neuchâtel, Bern and Jura.

stands however in contrast to the stronger stability of contrastive vowel length in word-final open syllables, e.g., *bout* /bu/ 'end' vs. *boue* /buː/ 'clay'. This opposition is commonly used in Swiss French, but some speakers enhance the contrast by adding a [j] or by slightly diphthongizing the long vowel, e.g., *chantée* [ʃɑ̃teːj] 'sing$_{\text{PAST-PART-FEM}}$' (Voillat 1971), *bue* [byᵊ] 'drink$_{\text{PAST-PART-FEM}}$' and *boue* [buᵊ] 'clay' (Walter 1982). Finally, as illustrated by the minimal pair *bleu* /blø/ vs. *bleue* /bløː/ 'blue$_{\text{MASC VS. FEM}}$,' vowel length can be interpreted as morphologically driven by the fact that it allows for the creation of contrast between, for instance, masculine and feminine nouns and adjectives.

The opposition /o/–/ɔ/ in word-final open syllables, e.g., *peau* /po/ 'skin' vs. *pot* /pɔ/ 'pot', which has been neutralized in FR, is maintained in Romandy except for in Geneva (Métral 1977; Schoch 1980). The recent data in Schouwey (2008) by and large confirm this pattern. For the majority of the speakers of the Geneva and Valais varieties, the vowels in *peau* and *pot* were judged as similar (80 to 100% of 'same' answers).[12] This result contrasts with those of the speakers of the Neuchâtel, Fribourg and Jura varieties, for whom the 'same' percentage was close to zero.

Turning to the opposition /e/–/ɛ/ in word-final open syllables, it allows – in Romandy as well as in other French-speaking regions – to distinguish for instance the infinitive and the past participle from the imperfect (e.g., *trouver/trouvé* vs. *trouvait* 'find$_{\text{INF/PAST-PART VS. 3-SG-IMPERF}}$'), or the first-person singular future from the present conditional (e.g., *trouverai* vs. *trouverais* 'find$_{\text{1-SG-FUT VS. 1-SG-COND}}$'), this latter contrast neutralized to [e] in many French varieties (Knecht 1985). For instance, for *couché* vs. *couchait* 'lay down$_{\text{PAST-PART VS. 3-SG-IMPERF}}$,' the word-final vowels were considered as different by 99.5% of the informants in Métral (1977). The data in Schouwey (2008), on the other hand, revealed that, although the contrast was still present in most of Romandy, it seemed weaker in Valais but very strong in Neuchâtel and Geneva.

Finally, concerning the last oral vowel series, /a/–/ɑ/, Métral (1977) observed inter-cantonal variation in word-final open syllables. For *rat* 'rat' vs. *ras* 'bare$_{\text{MASC}}$,' the qualitative distinction was stable only in Vaud and Geneva, with 87 and 81% 'different' answers, respectively, and near stable in Fribourg, with 65% 'different' answers. Thirty years later, the pattern seems to be somewhat different. For the same word pair *rat – ras*, Schouwey's data (2008) revealed that only 50% of the informants from Vaud and 45% from Fribourg indicated a vowel difference, and for

12. Andreassen et al. (2010) did not observe the opposition /o/–/ɔ/ for the speaker from Veyras in Valais, which is in conformity with the finding in Schouwey (2008). In fact, the tendency towards neutralization was already observed by Métral (1977), who, for the pair *peau/pot*, received 12.5% of 'same' answers from the Valais informants (Métral 1977: 171).

Geneva, the vowels were identical for 90% of the informants. For Neuchâtel, less than 10% indicated a difference, and finally, for the Jura and Valais informants, no vowel difference was reported. Taking these recent judgment data into account, the /a/–/ɑ/ contrast seems presently less stable than described by Métral (1977). If we turn to word-final closed syllables, Métral (1977) observed a contrast in all cantons, however differently implemented across the speakers. Although the Jura, Neuchâtel and Valais informants reported a distinction in length only, e.g., *patte* [pat] 'paw' vs. *pâte* [paːt] 'dough' (87%, 81% and 67%, respectively), half the Vaudois perceived a distinction in length and quality, e.g., *patte* [pat] vs. *pate* [pɑːt]. The Fribourg and Geneva informants were divided between [paːt] and [pɑːt] for *pâte*. Schouwey's data (2008) reconfirmed the presence of the contrast across all of Romandy, with an almost 100% distinction in Neuchâtel and Jura and around 95% in Vaud. A lower percentage of less than 60% was observed in Valais. Unfortunately, Schouwey (2008) did not examine at which level the two vowels differed in the various cantons, i.e., whether the contrast was of a qualitative or a quantitative nature.

Turning finally to the opposition /ɛ̃/–/œ̃/, the metalinguistic data in Métral (1977) confirmed its strength. Among the 400 Romand teachers figuring in his study, he obtained 98% 'different' answers, and the Neuchâtel speakers all indicated a vowel contrast. Thirty years later, Schouwey (2008) revealed a quite different pattern than Métral. For *brin* 'spear (of grass)' vs. *brun* 'brown$_{\text{MASC}}$', the vowels were considered different by only half the informants from Fribourg (46.67%), Valais (50%) and Geneva (53.33%).[13] The percentage of 'different' answers was slightly higher for Vaud (57.14%), Jura (62.5%) and Neuchâtel (80%).

2.2 An acoustic approach to the analysis of the Neuchâtel vowel system

The analyses to follow are based on read speech data from the PFC word lists, and methodologically, the same procedure has been applied for all vowel contrasts examined.[14] The words were first orthographically transcribed in Praat (Boersma & Weenink 2009). Second, they were automatically transcribed into IPA and aligned with Easyalign (Goldman 2010). All segment boundaries were checked

13. Concerning Geneva, a decline in use of the nasal opposition had already been reported by Schoch (1980).

14. Note that we have added two word lists to the general PFC protocol in order to obtain information regarding the current status of phenomena traditionally considered to be present in the Swiss French varieties (e.g., contrastive vowel length). The two lists, with the members of the expected minimal pairs being put one into each list, contain 75 words each and are presented in the Appendix.

on a visual and an acoustic basis. We then followed a standard procedure for measuring vowel duration and vowel quality (Nguyen & Espesser 2004). The values of the first three formants (F1, F2 and F3) were measured at three different points of the vowel segment (1/3, 1/2 and 2/3) and then averaged to obtain a single formant value. Formant values were subsequently filtered in order to reject erratic items, with respect to the acoustics of the vocal tract (cf. Gendrot & Adda-Decker 2004), and a Nearey normalization was applied to the data (cf. Adank et al. 2004).[15] Statistical analyses were conducted using mixed effects regression models (e.g., Goldstein 1987; Baayen et al. 2008) with the statistical software R (R Development Core Team 2007) and the package lme4 (Bates & Sarkar 2007).

2.2.1 *Contrastive vowel length in word-final open syllables*

According to the literature (cf. Section 2.1.2), contrastive vowel length is commonly used by a large number of Swiss speakers. For instance, the data in the comparative production study by Grosjean et al. (2007) showed that, contrary to the Parisian subjects, the speakers of the Neuchâtel variety made a clear duration difference between the final vowels in word pairs like *ami* 'friend$_{\text{MASC}}$' vs. *amie* 'friend$_{\text{FEM}}$'. Differences have been reported, however, between the various vowels and also as a function of the speakers' age. In conformity with these results, we first put forth the hypothesis that our data contain differences in vowel length, which can be interpreted as contrastive. Second, we aim to check whether potential duration differences vary as a function of the vowel and/or as a function of the speaker's age.[16]

For each of our 12 speakers, the quality and the duration of the seven different word-final vowels in the following 12 word pairs were measured, in addition to word duration: /i/ in *ami* 'friend$_{\text{MASC}}$' vs. *amie* 'friend$_{\text{FEM}}$', *ski* 'ski' vs. *skie* 'ski$_{\text{3-SG-PRE}}$' and *vit* 'live$_{\text{3-SG-PRE}}$' vs. *vie* 'life', /y/ in *nu* 'naked$_{\text{MASC}}$' vs. *nue* 'naked$_{\text{FEM}}$', /u/ in *bout* 'end' vs. *boue* 'clay' and *roux* 'russet$_{\text{MASC}}$' vs. *roue* 'wheel', /e/ in *carré* 'square$_{\text{MASC}}$' vs. *carrée* 'square$_{\text{FEM}}$', *penser* 'think$_{\text{INF}}$' vs. *pensée* 'thought' and the Germanisms *poutzer* 'clean$_{\text{INF}}$' vs. *poutzée* 'clean$_{\text{PAST-PART-FEM}}$', /ɛ/ in *vrai* 'true$_{\text{MASC}}$' vs. *vraie* 'true$_{\text{FEM}}$', /ø/ in *bleu* 'blue$_{\text{MASC}}$' vs. *bleue* 'blue$_{\text{FEM}}$', and /a/ in *voix* 'voice' vs. *voie* 'track'. The vowel quality and the relative vowel duration (vowel duration / word duration x 100) were calculated for each of the 265 vowel tokens, resulting in 136 values for what

15. The formant values were filtered in order to eliminate potential errors due to the automatic processing performed by Praat. As regards the normalization procedure, available at http://ncslaap.lib.ncsu.edu/tools/norm, it allows a minimization of variation due to the anatomic differences between speakers.

16. Note that only young students were tested in Grosjean et al. (2007).

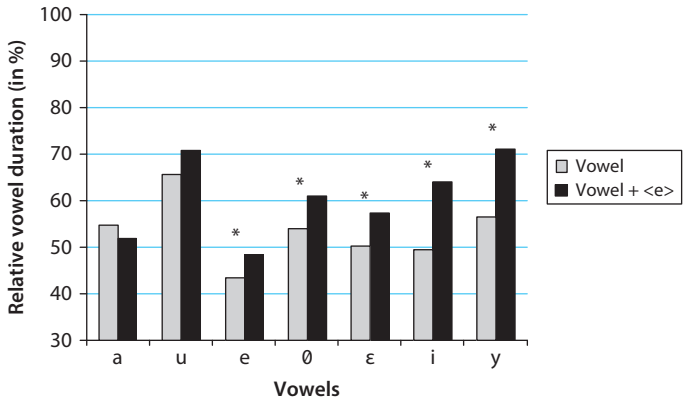

Figure 1. Mean relative vowel duration for words in the 'vowel' (grey) and the 'vowel + <e>' (black) condition as a function of the vowel

we have called the 'vowel' condition (e.g., *bout*) and 129 values for what we have called the 'vowel + <e>' condition (e.g., *boue*).[17]

The results show an effect of the condition ('vowel' vs. 'vowel + <e>') on the relative vowel duration. In the 'vowel' condition, the final vowel represents 52% of the word duration vs. 60% in the 'vowel + <e>' condition, the 8% difference being significant ($F(1,245) = 116.79$, $p < 0.0001$). There is no effect of age on relative vowel duration, which means that lengthening is a stable phenomenon. In addition, there is an interaction between the condition and the vowel ($F(6,245) = 8.39$, $p < 0.0001$), which means that lengthening varies as a function of the vowel. Figure 1 presents the mean relative vowel duration for the words in the two conditions as a function of the vowel. The star indicates that the difference between the conditions is significant.

The duration difference is present for the five vowels /e/, /ø/, /ɛ/, /i/ and /y/, but not for /a/ and /u/. The lack of duration difference for the latter two vowels goes against the data in Métral (1977), which showed a durational contrast in Neuchâtel also for *voix – voie* and *bout – boue*. In our data, the strongest contrast is observed for /y/, with a 21.2% difference in vowel length between the 'vowel' (*nu*) and the 'vowel + <e>' condition (*nue*). The smallest contrast is observed for /e/ with only a 4.2% difference in vowel length between the 'vowel' and the 'vowel + <e>' condition (e.g., *carré* vs. *carrée*). Finally, note that no difference in vowel quality is detected between the two conditions 'vowel' and 'vowel + <e>'.

17. From the original 288 values, 16 values were excluded during the filtering procedure (cf. Note 15). In addition, seven occurrences of /i/ in the 'vowel + <e>' condition have been removed because the vowel was produced with a post-vocalic [j], e.g., *amie* [ami:j] 'friend$_{\text{FEM}}$'.

To sum up, contrastive vowel length in word-final open syllables is still present in the Neuchâtel variety, but it varies as a function of the vowel. In addition, as it is also present among our younger informants, distinctive length in this position seems to be a stable phenomenon. Interestingly, significant length difference is absent only in the pairs where the words are not from the same lexical base. As mentioned in Section 2.1.2, phonological vowel length can serve to create morphological minimal pairs (e.g., masculine vs. feminine), a phenomenon reported as early as in 1618 by Maupas. Our results seem to indicate that phonology and morphology still interact in Swiss French, but this cannot be confirmed without data from a larger and more varied number of morphological minimal pairs.

2.2.2 *Contrastive vowel length in word-final closed syllables*

For the word-final closed syllables, recall that Métral (1977) observed that contrastive length persisted at least to some degree in Swiss French (cf. Section 2.1.2). For the word pair *faites* – *fête* ('make$_{\text{2-PL-PRE}}$' vs. 'party'), the word-final vowels were considered different for the large majority of the informants, with variation as a function of the canton. The highest difference was found for Jura (79%), followed by Neuchâtel (76%), Geneva (74%), Fribourg (73%), Vaud (68%) and Valais (53%). In conformity with these results, we hypothesize that a durational difference is present in our Neuchâtel data.

For all 12 speakers, the quality and the duration of /ɛ/ in the following word pairs were measured, in addition to word duration: *belle* 'pretty$_{\text{FEM}}$' vs. *bêle* 'bleat$_{\text{3-SG-PRE}}$', *faites* 'make$_{\text{2-PL-PRE}}$' vs. *fête* 'party' and *tète* 'suck$_{\text{3-SG-PRE}}$' vs. *tête* 'head'. The quality and the relative vowel duration (vowel duration / word duration x 100) of the 72 vowel tokens were calculated and we obtained 36 values for the '<e/ai>' condition (e.g., *belle*) and 36 values for the '<ê>' condition (e.g., *bêle*).

The results show an effect of the condition ('<e/ai>' vs. '<ê>') on the relative vowel duration. In the '<e/ai>' condition, the vowel represents 35% of the word duration, vs. 47% in the '<ê>' condition, the 12% difference being significant ($F(1,67) = 7.64$, $p < 0.05$). In addition, there is a significant interaction between age and condition, which means that the duration difference is more important for the older speakers than for the younger ($F(1,67) = 4.03$, $p < 0.05$). Finally, no difference in vowel quality is detected between the two conditions.

To summarize, contrastive vowel duration in word-final closed syllables is still present in the Neuchâtel variety. However, the fact that it is less present among the younger speakers seems to indicate that the durational difference in this position is declining in use.

2.2.3 /o/–/ɔ/ *in word-final open syllables*

In light of the results in Métral (1977) and Schouwey (2008), mentioned in Section 2.1.2, we put forth the hypothesis that the opposition /o/–/ɔ/ is maintained in the Neuchâtel variety. For each of our 12 speakers, we measured the quality and relative duration of the final vowel in the following 13 words: words where the final vowel corresponds to orthographic <o>, i.e., *sot* 'stupid$_{\text{MASC}}$', *mot* 'word', *lot* 'prize', *vélo* 'bike', *bistrot* 'bistro', *boulot* 'work', *stylo* 'pen' and *rigolo* 'funny$_{\text{MASC}}$', and words where the final vowel corresponds to orthographic <au> or <eau>, i.e., *agneau* 'lamb', *seau* 'bucket', *réseau* 'network', *maux* 'pain$_{\text{PL}}$' and *eau* 'water'.[18] 133 values were obtained, 86 for the '<o>' condition and 47 for the '<au/eau>' condition.

For the F1 values, the results show an effect of the condition ('<o>' vs. '<au/eau>') in that the mean normalized F1 value is higher for the '<o>' condition (1.02) than for the '<au/eau>' condition (0.94). This 0.08 difference is significant ($F(1,128) = 8.18$, $p < 0.05$) and suggests that the vowel is significantly more open in the '<o>' condition than in the '<au/eau>' condition.[19] Moreover, no interaction between condition and age is found, indicating that the effect of the condition does not vary as a function of age. For the F2 values, the results show an effect of the condition in that the mean normalized F2 value is higher for the '<o>' condition (0.71) than for the '<au/eau>' condition (0.60), the 0.11 difference being significant ($F(1,126) = 6.58$, $p < 0.05$). Similar to the results obtained for the F1 values, no interaction between condition and age is found for the F2 values. At this point, it is necessary to mention that F2 is greatly influenced by the consonantal context (cf. Fougeron et al. 2007), a variable that has not been controlled for in our data. Because of this fact, our interpretation of the difference in F2 remains uncertain. It could be due either to contextual coarticulation, as anticipated by Fougeron et al. (2007), or alternatively, to fronting, suggesting that the vowel is more fronted in the '<o>' condition, or rounding, suggesting that the vowel is less rounded in the '<o>' condition. For the F3 values, there is no effect of the condition. Finally, before summing up this section, note that no difference in relative vowel duration is detected between the two conditions.

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18. For the analyses of spectral characteristics on F1, F2 and F3, the relative vowel duration was entered in the statistical model in order to take into account the potential effect of coarticulation on the formants (cf. Gendrot & Adda-Decker 2004).

19. Concerning vowel quality, the relation between the acoustic and articulatory properties of the vowels can be described as follows: F1 values are determined by the position of the jaws (open or closed), F2 values vary as a function of the tongue's position (front or back) but also as a function of the lips' position (rounded or not). F3 values also depend on the lips' position (rounded or not) (cf. Meunier 2007).

Thus, to sum up, our Neuchâtel data contain differences between the '<o>' and the '<au/eau>' condition that confirm the current presence of contrastive /o/–/ɔ/ in word-final open syllables, phonetically implemented with a more open (and possibly more fronted and/or less rounded) vowel in the '<o>' condition, e.g., *mot* (vs. *maux*). In future research, the hypothesis of a more fronted / less rounded vowel in the '<o>' condition needs to be verified in an analysis of vowels produced in similar consonantal contexts. Finally, we conclude that the /o/–/ɔ/ opposition seems to be a stable phenomenon, also present among our younger speakers.

2.2.4 /e/–/ɛ/ *in word-final open syllables*

Concerning the mid front unrounded vowels, let us recall that Métral (1977) and Schouwey (2008) stated that this opposition seemed particularly strong in the canton of Neuchâtel (cf. Section 2.1.2). Surprisingly, however, neither of these included in their questionnaire word pairs of the type *trouverai* 'find$_{\text{1-SG-FUT}}$' vs. *trouverais* 'find$_{\text{1-SG-COND}}$', a contrast reported as neutralized in many French varieties (Knecht 1985). Based on their other results, however, we put forth the hypothesis that our Neuchâtel speakers make use of the /e/–/ɛ/ contrast in word-final open syllables to oppose the two tenses.

For each of our 12 speakers, the final vowel in two word pairs opposing the first-person singular future and the present conditional tense was measured in terms of relative duration and vowel quality: *mettrai* 'put$_{\text{1-SG-FUT}}$' vs. *mettrais* 'put$_{\text{1-SG-COND}}$' and *pourrai* 'can$_{\text{1-SG-FUT}}$' vs. *pourrais* 'can$_{\text{1-SG-COND}}$'. 48 values were obtained, 24 for the 'future' condition and 24 for the 'conditional' condition.

For the F1 values, the results show an effect of the condition ('future' vs. 'conditional') in that the mean normalized F1 value is lower for the 'future' condition (0.92) than for the 'conditional' condition (1.14). This 0.22 difference is significant ($F(1,41) = 24.52$, $p < 0.001$) and suggests that the vowel is significantly more closed in the 'future' condition than in the 'conditional' condition. For the F2 values, the results show an effect of the condition in that the mean normalized F2 value is higher for the 'future' condition (1.30) than for the 'conditional' condition (1.18). This 0.12 difference is significant ($F(1,44) = 16.53$, $p < 0.001$). Concerning F2, we mentioned in the previous section that it is influenced by the segmental context. In the items studied here, the consonantal context to the word-final vowels is identical, and we can therefore interpret the difference in F2, which suggests that the vowel is significantly more fronted in the 'future' condition than in the 'conditional' condition. Finally, it is important to underline that no interaction between condition and age is found for the F1 and F2 values, indicating that age does not have an impact on the differences in vowel quality. For the F3 values, no difference between the two conditions is observed. Finally, let us mention that,

concerning relative vowel duration, our data do not reveal any difference between the conditions.

To summarize, our Neuchâtel data show a difference between the vowels in the two conditions, which confirms the presence of the /e/–/ɛ/ opposition in word-final open syllables. Further, the qualitative difference is used to distinguish the first-person singular future and present conditional, with a more closed and more fronted vowel in the future tense. In addition, this opposition seems to be a stable phenomenon, as it does not vary as a function of the speakers' age.

2.2.5 /a/–/ɑ/

Concerning the low vowel series, the literature mentioned in Section 2.1.2 states that in word-final open syllables (e.g., *rat* 'rat' vs. *ras* 'bare$_{\text{MASC}}$'), there is no qualitative distinction in Neuchâtel. In word-final closed syllables (e.g., *patte* 'paw' vs. *pâte* 'dough'), on the other hand, the contrast is reported to be present in terms of duration but not in terms of quality. The region that seems to differ the most from Neuchâtel is Vaud: 87% of the Vaud informants in Métral (1977) reported a distinction in terms of quality for the word pair *rat* – *ras*, and half the informants reported a distinction in terms of both quality and duration for the word pair *patte* – *pâte*. In light of these previously observed inter-cantonal differences, we make use of the recent production data from the Nyon corpus, and compare these with our Neuchâtel data.

For each of the 24 informants (12 from Nyon and 12 from Neuchâtel), the vowels in the word pair *rat* – *ras* were measured in terms of vowel quality and relative duration. 46 values were obtained, 22 for the '*rat*' condition and 24 for the '*ras*' condition. We additionally measured the quality and relative duration of the vowels in the word pair *patte* – *pâte*.[20] 96 values were obtained, 48 for the '*patte*' condition and 48 for the '*pâte*' condition.

First, for the F1, F2 and F3 values of the vowels in *rat* – *ras*, the results show no principal effect of condition ('*rat*' vs. '*ras*'), age or region. For F1 and F2, there is however a significant interaction between the region and the condition (for F1: $F(1,38) = 7.57$, $p < 0.01$; for F2: $F(1,41) = 20.40$, $p < 0.0001$), which means that for F1 and F2, the difference between the two vowels varies as a function of the region, with a significant difference for Nyon only. In the Nyon data, the F1 and F2 values are significantly higher for *rat* (1.66 and 1.01) than for *ras* (1.46 and 0.87), which means that the vowel in *ras* is more closed and more back than the vowel in *rat*. In Neuchâtel, there is no difference between the vowels as they have near-identical F1 (1.53 for *rat* vs. 1.51 for *ras*) and F2 values (0.93 for *rat* vs. 0.96 for

20. The PFC word list contains two occurrences of each word (*patte* and *pâte*), once arbitrarily distributed in the list, and once placed one immediately after the other.

ras). In addition, there is no interaction between age and condition, which means that age has no impact on the effect of the condition, whatever the region may be. As regards relative duration, there is no difference between the vowels in *rat* and *ras*. Thus, as expected, and in conformity with the findings in Métral (1977), our results show a difference in the vowel quality for the Nyon variety, but not for the one in Neuchâtel.

Second, for the F1, F2 and F3 values of the vowels in *patte* – *pâte*, the results show no principal effect of condition ('*patte*' vs. '*pâte*'), age or region. For F1 and F2, our data show once again a significant interaction between the region and the condition (for F1: $F(1,88) = 21.69$, $p < 0.0001$; for F2: $F(1,88) = 13.05$, $p < 0.01$). This means that for F1 and F2, the difference between the two vowels varies as a function of the region, with a significant difference for Nyon only. In Nyon, the F1 and F2 values are significantly higher for *patte* (1.71 and 1.24) than for *pâte* (1.37 and 1.01), which means that the vowel in *pâte* is more closed and more back than the vowel in *patte*. In Neuchâtel, there is no significant difference between the vowels as they have close values on F1 (1.26 for *patte* vs. 1.47 for *pâte*) and F2 (1.04 for *patte* vs. 0.96 for *pâte*).

Concerning relative vowel duration, our data reveal two principal effects. First, the vowel in *patte* is in a global fashion shorter than the vowel in *pâte*, and second, the two vowels are longer in the productions of the Nyon speakers compared to the Neuchâtel speakers. More interestingly, however, there is a significant interaction between the region and the condition ($F(1,88) = 21.69$, $p < 0.0001$), which means that the relative vowel duration varies as a function of the region, with a significant difference in duration for Neuchâtel (0.44 for *patte* vs. 0.59 for *pâte*) but not for Nyon (0.91 for *patte* vs. 0.93 for *pâte*). In addition, there is no interaction between age and condition for neither of the criteria we have examined, which means that age has no impact on vowel quality or on relative vowel duration.

To summarize, the vowels in *rat* – *ras* are qualitatively similar in the Neuchâtel variety, but not in the Nyon variety, where the vowel in *ras* is more closed and more back. For *patte* – *pâte*, the opposition is present in both varieties, but the nature of the contrast differs across the regions. Whereas in Neuchâtel, the difference lies in duration only, it is of a qualitative nature in Nyon, with a more closed and more back vowel for *pâte*. Finally note that, because they do not vary as a function of the speakers' age, the qualitative opposition in Nyon and the durational opposition in Neuchâtel seem to be stable phenomena.

2.2.6 /ɛ̃/–/œ̃/

Over the last 30 years, the nasal opposition has, according to the literature (cf. Section 2.1.2), declined in use across the whole of Romandy, but the /ɛ̃/–/œ̃/

contrast nevertheless still seems to be stronger in Neuchâtel compared to the other regions. In light of these results, we put forth the following two hypotheses. First, if the opposition is declining in use, as suggested by Andreassen et al. (2010), it should be less strong in our younger speakers compared to our older speakers. Second, we hypothesize that our Neuchâtel data reflect the /ɛ̃/–/œ̃/ contrast and this in a stronger fashion than the Nyon data.

For each of the 24 speakers (Nyon and Neuchâtel), the vowels in the word pair *brin* 'spear (of grass)' vs. *brun* 'brown$_{\text{MASC}}$' were measured in terms of relative duration and vowel quality.[21] 95 values were obtained, 48 for the '*brin*' condition and 47 for the '*brun*' condition.

As regards vowel quality, for F1, F2 and F3, our data reveal no principal effects of condition ('*brin*' vs. '*brun*'), age or region. For the F2 values, there is however a significant interaction between the region and the condition ($F(1,88) = 11.78$, $p < 0.001$), which means that the F2 values for *brin* and *brun* vary as a function of the region, with a significant difference in the Neuchâtel variety only. In this variety, the vowel in *brun* has a lower F2 value (0.85) than in *brin* (1.07). Our results partially agree with those of Delvaux et al. (2002), who, on the basis of Belgian French production data, show that the difference between the two vowels is restricted to lip position only, /œ̃/ being more rounded than /ɛ̃/.[22] In their study, this difference is reflected by lower F2 and F3 values for /œ̃/. Our data show a similar difference for F2 but, surprisingly, not for F3.

Thus, the Neuchâtel and Nyon data confirm our second hypothesis, which stated that the opposition is maintained in Neuchâtel but not in Nyon. Our data also show a significant interaction between age and condition ($F(1,88) = 19.64$, $p < 0.0001$), which confirms our first hypothesis. The difference in F2 values between *brin* and *brun* increases with age, being stronger for the older speakers than for the younger ones, whatever the region may be. Finally, we mention that there is no difference in relative vowel duration between the two conditions '*brin*' and '*brun*'.

21. As for *patte – pâte*, the PFC word list contains two occurrences of each word (*brin* and *brun*). First, they are arbitrarily distributed in the list and, second, at the end of the list, *brin* immediately follows *brun*.

22. Even though the difference between the two nasal vowels is theoretically explained by the rounding criterion only, studies on the French nasal vowels have shown that the relationship between their acoustic and auditory properties is complex and not so categorical. According to Delvaux et al. (2002), /ɛ̃/ and /œ̃/ can also differ on two other criteria (height and position of the tongue). Moreover, Montagu (2002, 2007), in showing that the oral vowel corresponding to /ɛ̃/ is not /ɛ/ but /a/, questions the pertinence of the IPA symbols for the French nasal vowels.

To sum up, the comparison of the vowels in *brin* and *brun* produced by our Neuchâtel and Nyon speakers has revealed that the contrast is maintained in Neuchâtel only. In this variety, /œ̃/ is more rounded than /ɛ̃/ with lower F2 values, but surprisingly without differences on F3. The data also show that, in both regions, the difference is less present in the younger speakers, which seems to indicate that the contrast is declining in use in the Swiss varieties of French. In order to further confirm our data and particularly to understand why no difference on F3 showed up in our data, it is necessary to conduct an additional study with more production data and more speakers, especially with younger ones, susceptible of partially or completely merging the two vowels.

2.2.7 *The vowel system of the Neuchâtel variety: Synthesis*

In the previous sections, we have carried out an acoustic analysis of a number of quantitative and qualitative vowel contrasts in the Neuchâtel variety. The main findings are presented in Table 3 (the grey cells refer to long contrastive vowels unattested in French and which consequently have not been searched for in our data, i.e., /œː/, /oː/ and /ɔː/).

While the previous literature has provided information regarding Neuchâtel speakers' intuitions about the vowel system, our acoustic approach to the data adds another dimension to the phonological analysis. Importantly, however, the perceptual salience of the vowel contrasts observed in our data would need to be tested in order to confirm their phonological pertinence.

Table 3. The Neuchâtel vowel inventory (word-final syllables)

		Front				Back			
		Unrounded		Rounded		Unrounded		Rounded	
		Short	Long*	Short	Long	Short	Long	Short	Long
Oral	Closed	i	iː	y	yː			u	
	Mid-high	e	eː	ø	øː			o	
	Mid-low	ɛ	ɛː	œ				ɔ	
	Open	a	aː						
Nasal		ɛ̃		œ̃		ɑ̃		ɔ̃	

* Because we have tested the contrastive vowel length in word-final closed syllables for two vowels only (/ɛ/ and /a/), the column labeled "long" is only valid for word-final open syllables. Note however that whereas /ɛː/ is found in both word-final closed and open syllables, /aː/ is found in word-final closed syllables only.

3. Distribution of schwa

In this section, we discuss the behavior of schwa in the Neuchâtel conversational data. We confine ourselves to a sole focus on schwa in word-initial syllables, and this for two reasons. First, there is an ongoing debate as to whether the vowels traditionally analyzed as schwas all share the same status in grammar, i.e., researchers take different stands on the phonological correspondent to the graphic <e> in *le* 'the$_{\text{SG-MASC}}$', *cheval* 'horse', *doucement* 'gently' and *autre* 'other'. The vowel corresponding to <e> in word-initial syllables (*cheval*) seems however to be the least controversial in that there is a general consensus on its presence in the input (/ʃəval/), as opposed to word-final schwa (*autre*), for example, which is often considered to be epenthetic in the northern varieties. Second, regular schwa variation is confined to two positions only, i.e., word-initial syllables and monosyllables (e.g., *le*). While judgment data will complement our production data in the discussion on word-initial syllables, such data are not available for monosyllables, and we therefore leave the study of schwa in the latter context for future research.

The section is organized as follows: In Section 3.1, we present previous research on schwa in Swiss French before, in Section 3.2, we look at the distribution of schwa in the Neuchâtel variety. We confine ourselves to examining nouns, adjectives and verbs – three lexical classes with a large number of schwa-items.

3.1 Schwa in Swiss French: Previous research

The French schwa vowel has received a lot of attention in work on phonological theory, and traditionally, the data serving as testing ground have been taken from FR. Whereas this methodological choice has been criticized by scholars eager to present French in all its diversity, this normative variety has, according to Morin (2000), been used solely for practical reasons, as "cette variété de français serait particulièrement bien décrite et assurerait une base empirique exceptionnelle pour la formulation de généralisations théoriques" (2000: 104). Schwa has however proven to be subject to diatopic variation, and in recent years, theoretical analyses have emerged, attempting an account of some of these inter-regional differences, cf. for instance Eychenne (2006), couched within the framework of Optimality Theory (Prince & Smolensky 1993), and Pustka (2007), using the exemplar model (cf. Bybee 2001, among others). Already prior to these comparative theoretical studies, it had for a long time been established that the Midi French varieties are distinct in obligatorily realizing all underlying schwas, except for word-final schwas preceding a vowel in a breath group (cf. for instance Durand et al. 1987). Walter (1982, 1990), in a large-scale study of 111 informants residing

across francophone Europe, observed further inter-regional variation regarding schwa deletion, and particularly important for our study, she claimed that in the northern part of the area, schwa in word-initial syllables was stabilizing.[23] However, this finding could not be generalized to the speakers of Swiss French who were subjects of her study since several of them were among those that most frequently deleted schwa in word-initial syllables during the conversation. Racine (2008) strengthened this finding in a psycholinguistic study, in which she compared judgment data from speakers of the Nantes variety (western France) and speakers of the Neuchâtel variety. Asking them to judge the estimated frequency of the two variants of a schwa-item (one variant with the vowel present, e.g., *chemin* 'road', and one variant with the vowel absent, e.g., *ch'min*), she obtained data indicating that the Swiss French are more inclined to accept vowel deletion than speakers in Nantes (for more details regarding the procedure, cf. Section 3.2).

The creation of the PFC database has allowed us to revisit – for speakers across the francophone world – various factors established in the literature as having an influence on schwa in production. For instance, we can study the segmental context of schwa (i.e., the nature of the surrounding consonants) and the material to the immediate left of the schwa-item (vowel, consonant or pause), or we can study the frequency of the schwa-item itself and the frequency of its output variants. Further, to mention but a few more examples, we can examine the interaction between schwa presence and emphatic stress, or the importance of the formality of the register (reading vs. semi-directed vs. informal speech). Finally, we can search for generational effects on the rates of schwa presence versus absence. Several studies have already been carried out using data from the previously mentioned Nyon investigation point, but only a few of these focus on the rates of schwa deletion – the most comprehensive in this respect being Andreassen (2004) and Andreassen & Lyche (2009). Neither of these have revealed any particular divergence from FR, but Andreassen & Lyche (2009) did nevertheless observe that schwa in word-initial syllables, in a V#CəC context, was present in less than half of the cases in spontaneous speech (36%, i.e., 75/208 occurrences), thereby contributing to the strength of the findings in Walter (1982, 1990) and Racine (2008).[24] Importantly, the Nyon data have indicated that schwa is particularly

23. "De nos jours, les prononciations *des ch'minées*, *très m'suré*, *qui d'vait*, *la f'melle*, *est r'connu*, *il m'a r'mis* sont plus rares que *des cheminées*, *très mesuré*, *qui devait*, *la femelle*, *est reconnu*, *il m'a remis*" (Walter 1990: 29).

24. In what follows, we will examine schwa in three various contexts, i.e., schwa in the initial syllable of a polysyllable preceded by a word ending in a vowel (V#CəC) or a consonant (C#CəC), or preceded by a pause (##CəC). For examples, see Table 4. Also note that throughout the paper, we will use the symbol [ə] as the transcription of schwa, all while acknowledging that

prone to being realized when the informant is "dans une phase de planification de son discours" (Andreassen & Lyche 2009: 79), i.e., when he hesitates, repeats himself etc.

In the following section, we will examine the distribution of schwa as it manifests itself in the Neuchâtel data, but let us recall that we do not expect the Neuchâtel speakers to differ notably from the Nyon speakers, as the two varieties share the majority of phonetic and phonological features. For this reason, at present, we will not perform a detailed comparison of the two investigation points, but we nevertheless acknowledge the necessity of a future inter-variety study confirming (or disconfirming) that the rates of schwa deletion are identical across the Swiss French varieties.

3.2 Distribution of schwa in the Neuchâtel variety

The Neuchâtel corpus comprises 543 occurrences of schwa in the initial syllable of a polysyllable, orthographically corresponding to <e>, <ai> (e.g., ***fai**sait* 'do$_{3\text{-SG-IMPERF}}$') or <on> (***mon**sieur*). Approximately ten minutes per speaker per conversation have been coded in accordance with the PFC protocol (Durand & Lyche 2003), and when these occurrences are classified according to the material to the immediate left of the schwa-item, we obtain the repartition presented in Table 4 (note that the percentages refer to the rate of schwa *presence* in each context). In the discussion following Table 4, we will first comment on the occurrence of schwa in the contexts C#CəC and ##CəC, where we expect schwa to be present due to structural (Grammont 1894; Dell 1985) and/or perceptual (Côté 2000) requirements, i.e., there are constraints in the grammar preventing the creation of the structures C#CC and ##CC. Thereafter, we will comment on the occurrence of schwa in the context V#CəC, where schwa is expected to delete frequently and to create a V#CC structure in the output.

Table 4. Rates of schwa presence in the Neuchâtel corpus (percentage and occurrences)

Context	%	Occurrences
V#CəC e.g., *la fenêtre* [lafənɛːtʁ]	23	103/455
C#CəC e.g., *cette demande* [sɛtdəmɑ̃d]	52	34/65
##CəC e.g., *regarde!* [ʁəgaʁd]	83	19/23
Total	29	156/543

in most varieties, it is (near-)identical to [œ] or [ø] (for inter-regional information regarding the phonetic quality of schwa vs. the mid front, rounded vowels, see Bürki et al. 2008).

As expected, the level of schwa presence is higher when the item is preceded by a consonant-final word or a pause, but interestingly, schwa absence still amounts to 48% (31/65 occurrences) in the context C#CəC. First, ten occurrences of an absent schwa are observed for the verbal forms *devais* 'must$_{\text{1-SG-IMPERF}}$', *faisais* 'do$_{\text{1-SG-IMPERF}}$' and *ser-ai/ais* 'be$_{\text{1-SG-FUT/COND}}$', preceded by the 1SG pronoun *je* realized as a single consonant, e.g., *je faisais* [ʃfzɛ] 'I did'. Further, 11 occurrences consist of schwa-items with an initial [s], in most cases preceded by a word ending in a sonorant, e.g., *par semaine* [paʁsmɛn] 'per week' and *école secondaire* [ɛkɔlzgɔ̃dɛːʁ] 'secondary school' – the latter item, *secondaire*, subject to regressive voicing assimilation /s/→[z] in all four occurrences. In the majority of remaining occurrences with an absent schwa in the context C#CəC, the word-final consonant is a nasal, e.g., *une leçon* [ynlsɔ̃] 'a$_{\text{SG-FEM}}$ lesson'. Concerning the four schwa absences in the context ##CəC, these consist of three occurrences of *petit(s)* [pti] 'small$_{\text{SG/PL-MASC}}$' and one occurrence of *cheni* [ʃni] 'dust, junk, mess etc. (reg.)'.[25] First, as regards *petit*, it constitutes a long-established counterexample to the ban on schwa deletion in the context ##Plosive + ə + Plosive (Dell 1985: 225). Second, whereas *cheni* is in other regions produced with a variable schwa, a small survey conducted in Neuchâtel by the authors seems to indicate that the default production variant of this item in this area is in fact without schwa, whatever its immediate left context. Thus, although word-initial [ʃn] is a marginal member of French phonotactics, this seemingly does not constitute an obstacle to the preference for the schwa-less form, and possibly the lexicalization of /ʃni/ without schwa altogether.

Before leaving the results on schwa in the contexts C#CəC and ##CəC, it is important to mention that the items we have observed as subject to schwa absence in these contexts are items occurring at a high frequency in the language. If it has already been established by Dell (1985: 229) that it is "les mots peu courants ou d'usage littéraire" that are least subject to deletion in the appropriate context, our few examples of an absent schwa in the less appropriate contexts for deletion seem to pattern with Dell's (1985) observation. In the two contexts where grammatical constraints are expected to block schwa deletion, and thereby avoid the creation of the structures C#CC and ##CC, the items' high token frequency seems – at least to some degree – to take precedence over the segmental and phonotactic constraints in the phonology.[26]

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25. Alongside *cheni*, we find the alternative spellings *chenis*, *chenil* and *chenit* (cf. Thibault 2004, *DSR* s.v. *cheni*).

26. The importance of token frequency for the rate of schwa absence has already been established in a production study by Racine & Grosjean (2002), who showed that, among seven

If we turn to the context V#CəC, schwa is absent in 77% of the occurrences (352/455), and when we break these numbers down into three sub-groups, the following numbers result: 87% absence in the group of nouns and adjectives (131/150), 77% absence in the group of verbs (195/253), and 50% absence in the 'other' group (26/52), the latter not subject to our study.[27] Let us recall that the judgment data on schwa in the context V#CəC obtained by Racine (2008) indicated that the variant without the vowel was in numerous cases preferred to the variant with the vowel present, and an interesting question in this regard is whether the judgments reflect the reality in production.[28] Table 5 presents the nouns and adjectives attested in our data, divided into three groups according to the combined estimated frequency (*c.e.f.*) value, which indicates the rate of schwa alternation: items with a positive value, from 3.0 to 0.0, which are considered as highly frequently alternating, items with a negative value, from –0.01 to –3.0, which are considered as alternating, and items with a strongly negative value, from –3.01 to –6.0, which are considered as non-alternating. A fourth group contains nouns and adjectives that were not part of the test material in Racine (2008), and these will not be further commented upon. Table 5 is to be read as follows: For each of the above-mentioned three groups of items (highly frequently alternating, alternating, non-alternating), we present the words that are examined in Racine (2008) and also attested in our conversational data. The percentages and occurrences we provide are calculated on the basis of each group as a whole, i.e., Table 5 does not provide information regarding the total number of occurrences or the rate of deletion for specific items. Thus, for example, for the group *Highly frequently alternating* as a whole, 124 occurrences are attested in the context V#CəC, out of which nine occurrences (or 7%) are produced with the schwa present in the output.

variables that could hypothetically explain the variability of schwa in a V#CəC context, the frequency of the item was the most important.

27. The 'other' group consists of adverbs, prepositions, pronouns, toponyms and derivatives of the latter (e.g., *genevois* 'Genevan').

28. Racine (2008) tested various types of items, including those with an expected variable absence of schwa, e.g., *le chemin* 'the$_{\text{SG-MASC}}$ road'. On a scale of 1 to 7 (very infrequent to very frequent pronunciation), the speaker separately evaluated the two variants of the word presented in written form, and for *le chemin*, the values given to the variants with and without vowel were 3.92 and 5.25, respectively, the combined estimated frequency (henceforth *c.e.f.*) amounting to 5.25 – 3.92 = 1.33. A (highly) negative *c.e.f.* value indicates the relatively stable presence of the vowel, whereas a (highly) positive *c.e.f.* value indicates the relatively stable absence of the vowel. *C.e.f.* values around zero indicate that both variants are equally well accepted.

Table 5. Rates of schwa presence in nouns and adjectives in the context V#CəC (percentage and occurrences)

c.e.f.	**Items attested in the Neuchâtel corpus (*c.e.f.*)**	**V#CəC**	
		%	**occ.**
3.0 → 0.0 (Highly frequently alternating)	petit-fils (2.58), cheveu (1.92), petit (1.5), chemin (1.33), relève (1.25), retard (1.25), demie (1), seconde (0.67), semaine (0.67), revanche (0.58), leçon (0.5), chevet (0.42), remarque (0.42), repas (0.42), reproche (0.33), devoir (0.08), retour (0.08), relation (0)	7	9/124
–0.01 → –3.0 (Alternating)	retraité (–0.33), secret (–0.5), besoin (–0.58), femelle (–0.75), recrue (–1.33), relaxation (–1.33), degré (–1.83), registre (–2.17)	35	7/20
–3.01 → –6.0 (Non-alternating)	chevreuil (–5.5)	100	2/2
Not examined by Racine (2008)	cheni, petit-enfant, relecteur, représentatif	25	1/4

First, an examination of the nouns and adjectives in the Neuchâtel corpus reveals that the majority of the attested items are judged with a positive *c.e.f.* or with one that centers around zero in Racine (2008).[29] Despite the preference for the schwa-less variant in the judgment data, we attest nine occurrences of schwa realization in items with a *c.e.f.* of 0.0 or higher. For instance, regarding *petit*, it is – as expected – generally produced in its reduced form (88/90 occurrences), and the two occurrences of schwa presence can possibly be explained as a reflection of extra-grammatical requirements. First, during the semi-directed conversation, the subject scarp1 produces the vowel in *c'était vraiment euh un, un petit à côté* 'it was really euh a, a small [job] on the side', where the schwa-item follows a hesitation and a repetition. Second, during an informal discussion on inter-variety differences in the labeling of principal meals, the subject scapm1 assigns emphatic stress to the schwa syllable in *fait un petit déjeuner (et puis un déjeuner)* 'makes a breakfast (and then a lunch)', cf. Figure 2.

29. A notable exception is *chevreuil* 'roe deer', with a *c.e.f.* amounting to –5.5, and, as expected, realized with a vowel in our production data. When we take into account that the seven items with initial <chevr> present in Racine's material were judged with a *c.e.f.* value lower than –5, both in the Neuchâtel and the western French data, a pattern emerges whereby the creation of tri-consonantal *[ʃvʁ] is not authorized. The grammaticality of tri-consonantal [dgʁ] in *degré* in Neuchâtel, with a *c.e.f.* value of –1.83 (vs. –5.67 in western French), leads however to the conclusion that there is no general ban on the creation of tri-consonantal sequences in Swiss French.

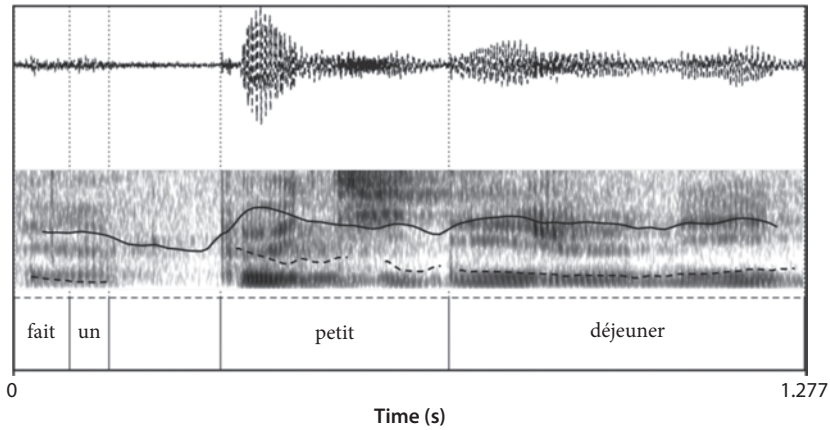

Figure 2. Emphatic stress assigned to the schwa syllable in *petit* 'small$_{\text{SG-MASC}}$' – intensity (solid line) and pitch (dashed line)

For the remainder of the nouns and adjectives that authorize schwa absence (*c.e.f.* of –3.0 or higher), emphatic stress and preceding hesitations or repetitions can account for several of the schwa presences attested, and this observation seems to strengthen the finding in Andreassen & Lyche (2009), whereby schwa presence frequently is a reflection of extra-grammatical factors. The importance of these latter factors is further strengthened by the attestation of the influence that orthography bears on pronunciation. The subject scapm1, during the informal conversation, reads aloud a phrase containing the item *repas* 'meal', where he produces the schwa-vowel,[30] whereas in the semi-directed conversation, a register that compared to the informal conversation could be expected to contain a higher level of schwa presence (cf. Lucci 1983), the same subject deletes the vowel in the one occurrence of *repas*. The scarce number of occurrences prevents us from drawing any conclusions, but we can nevertheless hypothesize that the phonological constraints assumed to be visibly active during reading are still visible when the reading is 'integrated' into a conversation, even an informal one.

Let us now turn to the last lexical category under examination, i.e., the verbs. Unfortunately, there are no judgment data available for the verbal category, and we will therefore provide a segmental analysis of these data. As previously mentioned, one factor relevant to schwa alternation is the segmental context of the vowel, and in terms of markedness, one could expect schwa deletion in the V#CəC context to be more frequent when the resulting structure V#CC is

30. *Est-il plus correct de dire pour le repas du midi … dîner ou déjeuner?* 'Is it more correct to say *dîner* or *déjeuner* for the midday meal?'

Table 6. Rates of schwa presence in verbs according to the segmental environment in the context V#CəC (number of occurrences)

C1 \ C2	Plosives		Fricatives		Nasals		Liquids	
Plosives			d(ə)v	(8/18)	d(ə)m	(2/23)		
			d(ə)vj	(0/2)	t(ə)n	(1/6)		
			d(ə)vw	(2/2)				
			d(ə)vʁ	(6/9)				
Fricatives			f(ə)z	(0/33)	v(ə)n	(1/25)	f(ə)ʁ	(0/4)
			ʃ(ə)v	(0/1)	v(ə)nj	(1/1)	s(ə)ʁ	(0/11)
Nasals					m(ə)n	(1/1)		
Liquids	ʁ(ə)p	(3/9)	ʁ(ə)f	(2/4)	ʁ(ə)m	(2/14)	ʁ(ə)l	(3/3)
	ʁ(ə)pʁ	(2/11)	ʁ(ə)v	(4/8)				
	ʁ(ə)t	(3/10)	ʁ(ə)vj	(5/7)				
	ʁ(ə)tʁ	(4/8)	ʁ(ə)s	(1/10)				
	ʁ(ə)d	(0/1)	ʁ(ə)ʃ	(0/1)				
	ʁ(ə)k	(4/8)						
	ʁ(ə)g	(2/21)						
	ʁ(ə)gʁ	(1/2)						

present elsewhere in the language. For instance, as Obstruent + Liquid (henceforth OL) clusters are authorized word-initially in French, e.g., ***fraise*** 'strawberry', the absence of a schwa preceded by [f] and followed by [ʁ] (e.g., ***fera*** 'do$_{\text{3-SG-FUT}}$') would not violate any dominating phonotactic constraint in the grammar. Conversely, as Liquid + Obstruent clusters are not authorized word-initially in French, the absence of schwa preceded by [ʁ] and followed by an obstruent, e.g., ***refaire*** 'do again$_{\text{INF}}$,' should be less favored. Table 6 presents the segmental contexts of schwa observed in the verbal forms in our corpus, with the number of schwas present indicated in parentheses.

As could be expected on the basis of the low rate of schwa presence attested for the nouns and adjectives (cf. Table 5), the number of schwas present is low for the verbal forms as well, whatever the segmental context of the vowel. Nevertheless, in what follows we will focus on only a few types of consonantal combinations.

First, we observe that the 15 instances of a Fricative + ə + Liquid combination are produced without a vowel, a result that patterns well with the Québec judgment data in Côté (2009) that indicate the loss altogether of schwa in the OL context. The 100% absence in our data could be explained as a reflection of phonotactic well-formedness, but when we take into account the type of schwa-items found in this group – ***fer-*** 'do$_{\text{FUT/COND}}$' and ***ser-*** 'be$_{\text{FUT/COND}}$' – we cannot exclude the possibility that token frequency also has an effect on the vowel (cf. Hansen

1994; Racine & Grosjean 2002). The importance of token frequency seems further confirmed when we include the result from the schwa-item *fais-* 'do$_{\text{IMPERF/PRES-PART}}$' where the surrounding consonants [f] and [z] are both fricatives: None of the 33 occurrences are produced with the vowel present.

If we now turn to the consonantal combinations of decreasing sonority, unattested as regular word-initial clusters in French, they seem to act more heterogeneously with regard to schwa alternation. Among the 114 occurrences of an underlying schwa preceded by [ʁ] and followed by a plosive, fricative or nasal, 82 (or 72%) are realized with the schwa absent, leading to output sequences like [ʁk ʁs ʁm] in *je r'connaissais* 'I recognized' (scahd1), *vous r'cevez* 'you receive$_{\text{2PL-PRE}}$' (scajb1), and *j'ai r'marqué* 'I have noted' (scacm1). Already indicated in the literature, the relatively low number of schwas present here further strengthens the claim that there is more to the explanation of schwa absence than a requirement on word-initial phonotactic well-formedness: For instance, whereas Côté (2000) considers schwa absence to reflect the perceptual salience of the preceding consonant,[31] Hansen (1994) highlights the importance of token frequency – this latter approach moving some of the explanation outside the domain of phonological constraints.

To end our section on the distribution of schwa in the Neuchâtel variety, let us first confirm that token frequency, the frequency of variants, extra-grammatical constraints and segmental constraints are factors that influence schwa alternation in the context V#CəC. Finally, however, yet another factor that remains to be taken into account is the subjects themselves. Recall from the acoustic analysis of the vowel system that the stability of several contrasts varied as a function of age (cf. Section 2.2). Thus, we have examined the rate of schwa presence in the nouns, adjectives and verbs per subject, and when we divide the corpus in two age groups (age ranges of 27–44 years and 54–78 years), it turns out that the seniors realize schwa at a higher percentage than the juniors, i.e., in 35% (45/173) vs. 14% (32/230) of the occurrences. If the low number of recurring items across the corpus prevents us from testing the significance of the age variable, this factor nevertheless seems worth considering more thoroughly in future research on schwa alternation in Swiss French. Differences have been established between age groups in the Neuchâtel corpus in work on articulatory rate by Schwab & Racine (2012) as well, and taking this result into account in the analysis, it is not impossible that

31. According to Côté (2000: 113), "prevocalic /r/ behaves like an obstruent, specified as [–sonorant]".

the preservation of schwa in the context V#CəC is yet another phenomenon that can be explained as varying with age.[32]

4. Distribution of liaison

In this section, we examine the phenomenon of liaison as it manifests itself in our conversational data. Although our starting point is the classification proposed by Delattre (1966) in his study on FR, we also aim to compare our findings with the analyses of PFC data in Durand & Lyche (2008) and Andreassen & Lyche (2009), cf. Section 4.1. In the examination of the Neuchâtel data in Section 4.2, our main focus will be on categorical liaisons and on verbal liaisons traditionally considered as variable. Regarding the other types of variable liaisons attested in the literature (e.g., plural noun +, adverb +), these are excluded because of their lack of frequency in the corpus. Outside of a verbal context, our data contain a single occurrence of a variable liaison, i.e., the negation *pas* 'not', realized by the subject scapy1 during the informal conversation, cf. (1).

(1) Je pense qu'au niveau de la presse ils préféreraient ne **pas** [**z**]en parler maintenant.
'I think that in the press, they would prefer not to talk about it now.'

4.1 Liaison in Swiss French: Previous research

Durand & Lyche (2008) – drawing their data from ten PFC investigation points – examined the liaisons classified as categorical and variable in Delattre (1966). For the former type of liaison, the PFC data patterned with the classification in Delattre in the contexts personal pronoun + verb, determiner + substantive, and verb + clitic. The PFC data diverged from Delattre, however, in displaying variable liaison in the contexts monosyllabic preposition +, preposed adjective + noun, and *c'est* +, considered as categorical by Delattre. For the latter type of liaison, one of the prototypical contexts is after a verbal form. Durand & Lyche (2008) focused on the verb *être*, and they observed a difference in the rate of realization of liaison depending on the verbal tense, with a higher rate for the present than for the past tense.

32. Whether this would be an instance of a generational change or age-grading (Hockett 1950) is of course another matter to determine. See also Malécot (1976), who reported a small age effect on the rate of schwa deletion.

As regards Swiss French, Passy (1892: 119) stated that "[o]n fait infiniment plus de liaisons dans la Suisse romande […] que dans la région parisienne". This impressionistic claim was tested by Andreassen & Lyche (2009) in their study of the Nyon variety. Concerning categorical liaisons, the Nyon data seemed slightly more conservative than those examined by Durand & Lyche (2008). Regarding variable liaisons, in the Nyon data they were restricted to a limited number of verbal forms – the most important being the present and imperfect forms of the verb *être* 'be$_{\text{INF}}$'. For the forms in 3-SG-PRE vs. 3-SG-IMPERF, the rates of realization amounted to 38% (49/129) and 11% (2/37), respectively (Andreassen & Lyche 2009: 83). These results pattern with Durand & Lyche (2008) who, for the same verbal forms attested 50% and 9% of realization, and therefore do not confirm the claim Passy made more than 100 years ago.

Andreassen & Lyche (2009) further observed that the majority of verbal liaisons were produced by the older subjects, e.g., three seniors were responsible for 14/24 occurrences of *est* [ɛt] 'be$_{\text{3-SG-PRE}}$'. In fact, with the exception of *est*, *c'est* 'it is' and *doivent* 'must$_{\text{3-PL-PRE}}$', verbal liaison was restricted to four subjects aged 52–70 years.

In the following section, we will make use of these latter results from Andreassen & Lyche (2009) and search for a link between rate of verbal liaison and age. Note that, as in the case of schwa, we do not expect the Neuchâtel speakers to differ notably from those in Nyon, but we once again underline the importance of a future inter-cantonal study confirming (or disconfirming) this claim.

4.2 Distribution of liaison in the Neuchâtel variety

In accordance with the PFC protocol, five minutes per conversation have been coded, providing us with 1,217 tokens of potential linking words, with the following break-down: 510 instances of a forward-linked liaison, four occurrences of a liaison consonant in a pre-consonantal context (item *quand* [kɑ̃t] 'when'), and 703 instances where the liaison consonant is not realized. As regards the forward-linked liaisons, 98% (498/510) are attested in monosyllables, where the nature of the liaison consonant is distributed as follows: [n] = 45% (223/498), [z] = 42% (209/498) and [t] = 13% (66/498). In the polysyllables with a forward-linked liaison, we exclusively observe [z] (12/12 occurrences).

Concerning the liaisons judged categorical by Delattre (1966), the Neuchâtel data conform to the results obtained by Durand & Lyche in that personal pronouns and prenominal determiners are obligatorily realized with liaison.[33]

33. Our data contain no example of a post-verbal clitic.

Regarding the contexts observed as variable by Durand & Lyche (but categorical by Delattre), our data seem to further strengthen the variability attested in the PFC database. First, concerning the monosyllabic prepositions, although *en* entails liaison in all 74 occurrences, *dans* is realized in 2/13 occurrences without [z]. Note however that in one of the cases of absence, *dans* precedes a pause in the signal, which possibly causes the non-realization of the liaison consonant. Turning to the prenominal adjectives in our corpus, they only constitute 18/1,217 tokens in a liaison context. Interestingly, however, whereas the scarce occurrences of 'elementary' adjectives are realized with the liaison consonant, e.g., *bon* [**n**]*accent* 'good accent', *grand* [**t**]*âge* 'old age' and *belles* [**z**]*images* 'beautiful pictures', the two occurrences of preposed *parfait* 'perfect$_{\text{MASC}}$' are produced without [t]: *Il parle un* ***parfait*** *// allemand, il parle un* ***parfait*** *// anglais* 'He speaks perfect German, he speaks perfect English' (scapm1). Finally, concerning *c'est* +, attested 43 times in our data, the liaison consonant is realized in six occurrences only, and this by speakers who also realize *c'est* without [t] in the same situational context, thereby illustrating true variation, cf. the subject scajd1 during the informal conversation, presented in (2).

(2) Donc maintenant **c'est** //un peu compulsif. Si elle voit des chaussures qui lui vont bien, elle les [z]achète même si elle en [n]a pas besoin. Ben moi, **c'est** [**t**]un peu pareil.
'So now it is a bit compulsive. If she sees shoes that fit her, she buys them even if she doesn't need to. Well, it is a bit like that for me, too.'

In sum, concerning the liaisons judged categorical by Delattre (1966), our data are in conformity with the PFC data studied by Durand & Lyche (2008).

When we now include the verbal forms whose liaison consonant is considered in the literature as variably realized, we first of all observe that, like in Andreassen & Lyche (2009), the presence of variable liaisons is extremely low in our data, i.e., 6% (19/325), the above-mentioned occurrences of *c'est* included. In Table 7, we present the verbal forms in which we have retrieved the 19 instances of a liaison consonant in the output, alongside the occurrences and percentage of liaison realization.

First, we observe in Table 7 that variable liaison is only found for the verb *être*. Second, we note the absence of the imperfect form. This is in line with the results in Durand & Lyche (2008), who observed, for this verbal tense, a low 5.34% rate of liaison realization in the northern varieties (10/187) (vs. 15.75% rate of liaison in the southern varieties (11/97)). Both Nyon and Neuchâtel seem to pattern with the former varieties in that [t] in *(c')était* is realized in 4/37 and 0/31 of the occurrences, respectively. Second, four Neuchâtel subjects are responsible for 14 out of the 19 occurrences of a verbal liaison, i.e., the women scajb1 and scamm1, and

Table 7. Realization of variable liaisons in a verbal context (percentage and occurrences)

Verbal form	%	Occurrences
suis	32	7/22
est	25	4/16
c'est	14	6/43
sommes	100	1/1
sont	11	1/9

the men scaaf1 and scarp1, aged 67–78 years. Although the remaining five occurrences are found in younger speakers,[34] illustrating the fact that they master both variants (with and without the liaison consonant), it is still interesting to note that all occurrences of a liaison consonant not belonging to *est*, are produced by the senior subjects. While the numbers are low and do not allow for a conclusion, we nevertheless find attractive Andreassen & Lyche's (2009) discussion on variable liaisons in the Nyon corpus, where "nous concluons à la prégnance du facteur âge/locuteur sur la réalisation des données variables" (2009: 84).

To conclude this section, we further confirm that the claim by Passy (1892) cannot be transferred to contemporary Swiss French production data – the distribution of variable liaisons in Neuchâtel seems as restricted as in the Nyon variety.

5. Conclusion

The present chapter contains the first thorough analysis of the PFC investigation point of Neuchâtel, and these recently collected production data have allowed us to pay particular attention to three different phenomena, i.e., the vowel system, the schwa vowel and the liaison consonant. Using previous literature as a starting point, an acoustic approach to the vowel system in Neuchâtel has revealed the following results. First, the analysis of vowels produced in the reading of word lists has shown the preservation of contrastive vowel length both in word-final open (*nu* vs. *nue*) and word-final closed syllables (*belle* vs. *bêle*), the latter being less stable than the former. Second, the analysis has revealed an opposition for two pairs of mid vowels in word-final open syllables: /o/–/ɔ/ (*peau – pot*) and /e/–/ɛ/ (*pourrai – pourrais*). None of the contrasts seem to vary as a function of the speakers' age. Third, for /a/–/ɑ/, our data indicate that the opposition is absent

34. Four occurrences of *c'est* produced by scacm1 (aged 39), scajd1 (aged 27), scapm1 (aged 42) and scapy1 (aged 44), respectively, and one occurrence of *est* produced by scacy1 (aged 43).

in word-final open syllables (*rat – ras*). The absence of a qualitative difference has further been confirmed by the word pair *patte – pâte*. In this latter case, however, a durational contrast has been detected, seemingly stable as it does not vary as a function of the speakers' age. Finally, the opposition /ɛ̃/–/œ̃/ is maintained in Neuchâtel but seems to decrease as a function of age.

The Neuchâtel data have additionally made it possible to perform a first intercantonal analysis of the current vowel system in the Swiss French varieties. Performing a comparative acoustic analysis of two PFC investigation points (Nyon and Neuchâtel), we have observed that regarding the last two above-mentioned contrasts (/a/–/ɑ/ and /ɛ̃/–/œ̃/), the Nyon variety differs from the Neuchâtel variety. First, for the low vowels, the Nyon data show a qualitative difference only, both in *rat – ras* and in *patte – pâte*. Second, for the nasal series, the Nyon data indicate the absence of a contrast.

As regards the two phonological variables studied here, the schwa vowel and the liaison consonant, both are attested as highly unstable. If schwa is absent in 77% of the cases in a V#CəC context, the liaison consonant, in contexts where it is traditionally considered as variably authorized, is attested in a few verbal forms only, and this at a very low rate. These results confirm previous studies, but they also underline the importance of not blindly comparing old and new data. Concerning schwa, although Walter (1982, 1990) claimed that schwa was stabilizing in word-initial syllables in the northern varieties, she also discovered that this did not hold for all speakers of Swiss French, an observation confirmed by Racine (2008). Concerning liaison, Passy (1892) claimed that Swiss French speakers produced more liaisons than Parisian speakers. It is perfectly possible that Passy was right for his time, but we nevertheless underline that his claim is contested by the contemporary Nyon and Neuchâtel data.

To conclude, when we take into account older studies, recent ones and the analyses provided in this chapter, it is interesting to note that not only do we find generational variations with regard to the vowel system, but our senior speakers also slightly diverge from our younger speakers in producing more schwas and more liaisons. It thus seems that the Neuchâtel corpus reflects variation at two different levels. First, it illustrates a system in movement in that the senior speakers are more conservative than the younger speakers. Second, it illustrates a system that can be regionally identified. If the Neuchâtel variety undoubtedly turns out to pattern with other (Swiss) French varieties at various levels of linguistic analysis, it nevertheless contains particularities hitherto not confirmed as still being present in other regions.

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Appendix

Additional word lists designed by the authors for the collection of the Neuchâtel data.

List 1

1. cratère
2. bar
3. cheval
4. rigolo
5. gouvernement
6. année
7. zurichois
8. semaine
9. scier
10. bêle
11. neveu
12. lot
13. il paie
14. au milieu
15. orteil
16. il se noie
17. nuage
18. le but
19. poil
20. ami
21. vélo
22. nu
23. femelle
24. juin
25. partenaire
26. poutzer
27. voiture
28. ils veulent
29. renne
30. bleue
31. bilinguisme
32. penser
33. caisse
34. heureuse
35. Stöck
36. il passe
37. fausse
38. vigneronne

List 2

1. appartement
2. cheminée
3. bouée
4. mot
5. crever
6. district
7. carré
8. bedaine
9. seau
10. football
11. vague
12. skier
13. je mettrais
14. poêle
15. tu vois
16. neuve
17. générale
18. fosse
19. amie
20. la moutre
21. bout
22. même
23. vrai
24. il gueule
25. nue
26. ski
27. feuillu
28. tète
29. voie
30. final
31. mètre
32. rigolote
33. nuée
34. vit
35. août
36. l'eau
37. la paye
38. genou

39. boue
40. Lyon
41. gentil
42. général
43. ils croient
44. le réseau
45. la crève
46. requin
47. carnotzet
48. empreinte
49. buée
50. drague
51. général
52. fleuve
53. mettre
54. sotte
55. sûre
56. le fatre
57. vraie
58. roux
59. neuf
60. je mettrai
61. bistrot
62. vie
63. la gueule
64. voix
65. longue
66. carrée
67. finale
68. skie
69. m'aime
70. reine
71. je pourrais
72. maux
73. enfouir
74. fédéral
75. tête

39. Zurich
40. langue
41. soleil
42. pensée
43. rêne
44. emprunte
45. cratse
46. millier
47. Sierre
48. ils se noient
49. vigneron
50. heureux
51. stylo
52. fenêtre
53. poutzée
54. sûr
55. je pourrai
56. roue
57. sot
58. il veut
59. le zoo
60. bleu
61. belle
62. fédérale
63. meute
64. gentille
65. maître
66. époque
67. renard
68. Bach
69. enfuir
70. boulot
71. lion
72. beignet
73. linguistique
74. voilà
75. il croit

PART III

North America

Map 3. North America

CHAPTER 9

An overview of the phonetics and phonology of Acadian French spoken in northeastern New Brunswick (Canada)

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1. Introduction

1.1 Acadian French in New Brunswick

Acadian French is one of the two major groups of French dialects spoken in Canada. In terms of its history and linguistic structure, it differs significantly from its well-known neighbor *français laurentien,* usually referred to as "Québec French" and "Canadian French". Acadian French has close linguistic ties with "Cajun French", spoken in the Louisiana region of the United States.

Speakers of Acadian French live in the eastern extremities of Canada in a region that is called the Atlantic Provinces. As the map in Figure 1 shows, no geographic area or political boundary clearly delimits *Acadie*. Acadian communities are scattered across the four provinces that make up the Atlantic region. Three of the provinces have relatively small Acadian populations: Newfoundland and Labrador (almost 2,000 according to the 2006 Canadian Census), Nova Scotia (about 34,000), and Prince Edward Island (about 6,000). The largest Acadian population is in New Brunswick, where about 233,000 francophones make up one-third of the province's population (730,000). In addition, there are pockets of francophones who are of Acadian origin on Québec's Gaspé Peninsula (around Carleton and Bonaventure in Figure 1), on the Magdalen Islands and on the French Territorial Collectivity of Saint-Pierre-et-Miquelon (located south of Newfoundland).

New Brunswick is Canada's only officially English-French bilingual province. In 1969, the provincial government passed the Official Languages of New Brunswick Act that legislated bilingualism in various governmental jurisdictions including justice, education and government services. A more recent law known

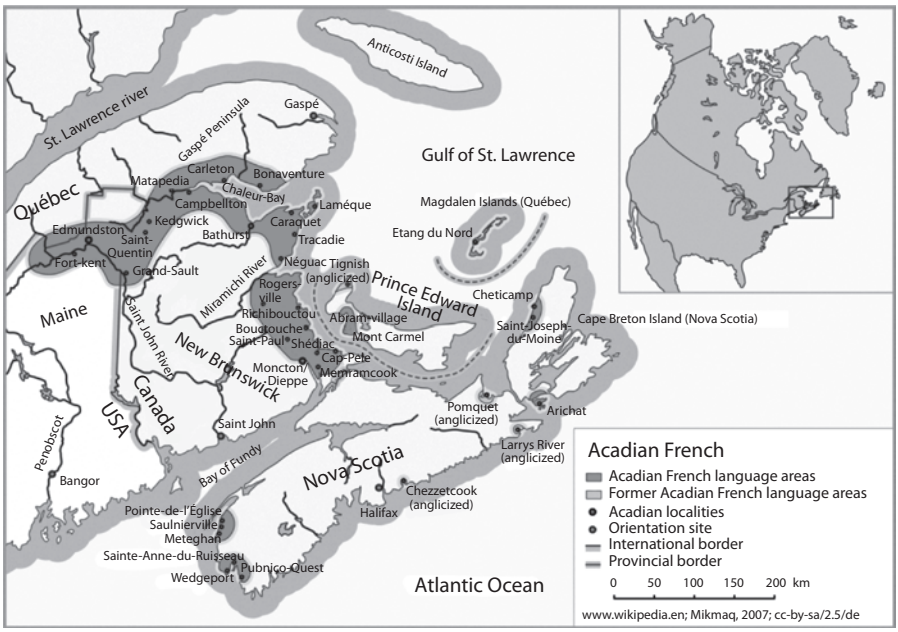

Figure 1. Map of regions in eastern Canada where Acadian French is spoken (Source: Mueller 2007)

as Bill 88 recognizes the equality of the two official linguistic communities; it was passed in 1981. In reality, the presence of the French language varies considerably across the province. Numbers of French speakers tend to be greatest in northern and northeastern regions (where concentrations of francophones vary between 50% and 95%), followed by eastern (75%) and southeastern (35%) areas. Western and southwestern parts of the province are predominantly English speaking and generally have less than 5% francophones.

The overview presented in this chapter is based on a survey that was carried out in the municipality of Tracadie-Sheila, which is located in the northeastern corner of New Brunswick on the Gulf of St. Lawrence. This municipality is often referred to simply as "Tracadie," and we will use the term "Tracadie French" in our description. Tracadie lies in the middle of the Acadian Peninsula, the sparsely populated rural area that is delimited roughly by the triangle formed by the towns of Lamèque, Caraquet and Néguac (see Figure 1). This is an area of forests, rivers and gently rolling hills; most towns and villages are found on or near the seacoast. The nearest urban centre is Moncton, located about 220 kilometers to the south. Like the Acadian Peninsula in general, Tracadie is predominantly francophone. Landry and Allard (1994) describe the vitality of the French language in the

Acadian Peninsula area as one of the strongest of all the francophone regions in New Brunswick.

1.2 Socio-historical Background of Tracadie

The municipality of Tracadie-Sheila has a population of about 4,500 (according to the 2006 Canadian Census). It is made up of two main towns, Tracadie and Sheila. The area was originally a summer camp established around 900 AD by the Mi'kmaq, an aboriginal (First Nations) people who are members of the Algonquian language family. European settlers began to arrive during the mid 1780s, and they brought both French and English languages. These Europeans were from surprisingly diverse backgrounds; historians (Basque 2010; Ganong 1906; Kerry et al. 1984) have studied family names in order to uncover the social history of the area.

The majority of French speakers are descendants of Acadian settlers. The first Acadian families had arrived from France during the early 1600s, and they settled in what was then Nova Scotia. However, during the period of upheavals called the *Grand Dérangement* ("Great Expulsion") between 1755 and 1763 (Faragher 2005), Acadians were either deported from their lands or forced to flee. Some (with family names such as Bastarache and Saulnier) eventually settled on the Acadian Peninsula in the Tracadie area. Other French-speaking settlers (Brideau, Desjardin dit Lausier) arrived soon afterwards from Québec. Still others (LeBreton, Roussel, Vienneau) came directly from Europe. During the 19th century, a number of francophone Quebeckers made important contributions to life in Tracadie: the first schoolteachers were from Québec as were the first Catholic priests. In the late 1860s, several members of the congregation of the Religieuses Hospitalières de Saint-Joseph arrived from Montréal to administer a lazaret for the care of lepers. These Catholic nuns eventually established the local hospital and an orphanage.

The first English speakers settled in Tracadie in about 1786, shortly after the arrival of the first Acadians. They were Loyalists (Ferguson, McLaughlin), who had left the events of the American Revolution. Other settlers came from Ireland (McGrath, Walsh), Scotland (Young) and England (Drysdale, Richardson) in the early 19th century, during a period of economic difficulties in Britain. They occupied positions as the Officers who administered the region; some were responsible for the Episcopalian Church. Many of the descendants of these settlers eventually assimilated to the larger Acadian population. Ganong (1906: 195–196) gives the following description: "Most of the English-speaking settlers … have descendants now living at Tracadie, many of whom speak French rather than English, have become Catholics, and are otherwise largely gallicized."

The combination of Acadian and Québec French, English, Irish and Scottish ethnic groups with different languages and cultures has lead to what Kerry et al. (1984: 79) call *la mentalité tracadienne*. Today, over 95 percent of the residents of Tracadie are francophone, and they consider themselves to be Acadians.

The Tracadie area has always had a diversified economy (Haines 1979; Kerry et al. 1984). Throughout the 19th century, residents often worked at a combination of fishing, forestry and agriculture. However, Tracadie was never a regional leader in any of these activities, with the result that residents were ensured only of basic survival. Fishing, one of the main industries, has decreased steadily over the past decades; today only one fish plant is still in operation, and Tracadie's wharf is used primarily for recreational boating. In the early part of the 20th century, Tracadie started to attract small commercial enterprises such as telegraph, telephone and newspapers. Gradually, the town became a commercial centre for the region, and today it offers services such as shopping, both primary and secondary schools, a regional hospital and other medical facilities, government offices, and restaurants.

1.3 Existing studies of the phonology of Acadian French

Only a few phonological investigations have been carried out on Acadian French. Two significant studies are Lucci (1973), who describes speech in villages near Moncton in southeastern New Brunswick, and Ryan (1981), who analyzes the phonology of French spoken in Meteghan in the Baie Sainte-Marie region of southwestern Nova Scotia. Based on original corpora collected by the authors, both studies are set in a functionalist framework and offer clear presentations of the inventory of phonemes and their allophones. Another important reference is Flikeid's study (1988) of similarities and differences in the phonologies of French in the five main Acadian areas in Nova Scotia. Flikeid's research is based on a large sociolinguistic database (130 speakers) that is stratified by age, social group and region. She argues for the inclusion of sociolinguistic and stylistic variation in order to uncover underlying phonological systems.

Flikeid is also the author of a sociophonetic study of Tracadie French (Flikeid 1984). She carried out the fieldwork in the mid 1970s for her doctoral dissertation; a major theme of her research is the retention of conservative or traditional Acadian features by speakers in Tracadie. Two of the most noteworthy features that she describes are the rhotic consonant, which shows a pattern of ongoing change from an apical [r] to a uvular [ʀ] realization, and the /ɔ̃/–/ɑ̃/ contrast, which is often neutralized (Flikeid 1982, 1985). Throughout this chapter, we will make links between Flikeid's sociolinguistic findings and our overview of the phonetics and phonology of Tracadie French.

Other studies deal with various aspects of the sound system of Acadian French. Studies of particular features include work on nasal vowels in Nova Scotia (Landry 1985); on affrication in Prince Edward Island (King & Ryan 1989), in northwestern New Brunswick (McKillop & Cichocki 1989), and across the Maritime Provinces region (Morgan 1978); and on /R/ in New Brunswick (Phlipponneau 1991) and across the Maritime Provinces region (Cichocki 2006, 2008). Geddes (1908) is a descriptive account of Acadian French spoken on the Gaspé Peninsula at the beginning of the 20th century. Falkert (2010) describes phonetic variation in the Acadian French spoken on the Magdalen Islands, focussing on the retention of traditional features. Diachronic information is presented by Massignon (1962), who carried out a large dialectological survey of Acadian French in the 1940s, and by Flikeid (1994).

1.4 The corpus

The participants in the Tracadie French corpus are twelve speakers, six women and six men, who were interviewed in the summer of 2005. All are natives of the Tracadie-Sheila area and have spent all or most of their lives in this area. They are members of three generations of one Acadian family. Table 1 presents the distribution of the speakers in terms of age and gender.

The speakers received their education in French. The amount of education increases with each generation: the oldest speakers have between 5 and 7 years of formal schooling; those in the middle age group between 9 and 12 years; all speakers in the youngest group have received at least a secondary school diploma (12 years). Only one speaker has a good command of English; the others report a limited knowledge of English. Occupation was not a factor in the selection of speakers. Their occupations include carpenter, child care worker, equipment operator, salesperson, and secretary; one of the women in the oldest age group worked at home raising 14 children.

The speech of each family member was recorded during sociolinguistic interviews that followed the PFC protocol. This protocol was designed to elicit both formal and spontaneous styles. The same person conducted each interview. She is a native speaker of Tracadie French who was in her mid 20s at the time of the

Table 1. Tracadie French corpus by age and gender

Age (years)	Male	Female
21–24	2	2
36–48	2	2
71–87	2	2

interviews. Speakers were recorded separately in a quiet room in their home. High quality audio recordings were made with a portable Sony digital recorder and a Shure unidirectional microphone.

2. Phonemic inventory

2.1 Oral vowels

Tracadie French has 12 oral vowels plus schwa. There are three high vowels /i, y, u/, seven mid vowels /e, ɛ, ɛː, ø, œ, o, ɔ/, and two low vowels /a, ɑ/.

2.1.1 *High vowels*

Each of the high vowels has two main allophones: tense vowels [i, y, u] occur in open syllables; lax vowels [ɪ, ʏ, ʊ] are found in syllables closed by most consonants. Examples of words with the lax allophones are *ville* [vɪl], *huit* [ɥɪt], *plume* [plʏm], *pitoun* [pitʊn]. Exceptions to the laxing process are syllables closed by the lengthening consonants [v, z, ʒ, ʀ]; in this context the vowel is tense and generally long: *lire* [liːʀ], *douze* [duːz], *court* [kuːʀ], *juge* [ʒyːʒ].

Two interesting processes occur in spontaneous speech style. First, high vowels are sometimes devoiced when they occur between voiceless consonants: *pitoun* [pi̥tʊn]. This process is common in Québec French but is not mentioned in surveys of Acadian French. Second, high vowels tend to be lengthened in English borrowings: *jeep* [ʤiːp]. Note that information about Québec French used in the comparisons given in this overview is based on research such as Morin (2002), Walker (1984), and the chapters by Côté, Tennant and Walker in this volume.

2.1.2 *Mid vowels*

The minimal pairs associated with seven mid vowels have the following realizations:

/e/–/ɛ/: *épée* [epe] – *épais* [epɛ], *piquer* [pike] – *piquet* [pikɛ]
/ɛ/–/ɛː/: *mettre* [mɛtʀ] – *maître* [mɛːtʀ], *faites* [fɛt] – *fête* [fɛːt]
/ø/–/œ/: *jeûne* [ʒøːn] – *jeune* [ʒœn]
/o/–/ɔ/: *paume* [poːm] – *pomme* [pɔm], *beauté* [boːte] – *botté* [bɔte]

There is a noticeable variation in the quality of /ɛ/ and /ɛː/ which are sometimes more central than the cardinal vowel [ɛ].

In spontaneous speech style, the seven mid vowels have a number of different realizations. Some mid vowels show diphthongization: /ɛː/ *bête* [bɛjt], *même* [mɛjm], and /œ/ *chaleur* [ʃalœɥʀ], In closed unstressed syllables, /e, ɛ/ are

lowered before /R/: *certain* [saʀtɛ̃], *différent* [dɪfaʀɑ̃] and *permission* [paʀmɪsjɑ̃]. This lowering process can also occur in closed final syllables before /R/: *l'hiver* [livæʀ], *une réserve* [ʀezaʀv] *d'Esquimaux*. Both of these processes are also found in Québec French.

Tracadie French has two other processes involving mid vowels. In word-final syllables, mid-low vowels can be raised to mid-high before /R/: *misère* [mizeːʀ], *dix heures là* [dizøːʀlɑ], *il est mort* [jemoːʀ]. In the case of /ɛ/ raising, the word class that participates in this process is different from the class that participates in the lowering of /e, ɛ/ before /R/. Finally, mid back vowels can be raised to a high back vowel in a well-defined word class, a process known as "ouisme": *comme* [kum, kʊm], *gros* [gʀu], *ôter* [ute]. Both processes are considered to be traditional Acadian pronunciations; neither process is found in Québec French.

2.1.3 *Low vowels*

The phonemic distinction between the low vowels /a/ and /ɑ/ is supported by the realizations of minimal pairs such as *patte–pâte, malle–mâle* and *male–mâle*. Speakers make this contrast by using the features of degree of frontness (/ɑ/ is less fronted) and vowel length (/ɑ/ is longer). While vowel quality varies, speakers consistently use both degree of frontness and vowel length to distinguish between these phonemes. Pronunciations fall into one of two patterns: either *patte* [pæt] – *pâte* [paːt] and *mal, malle* [mæl] – *mâle* [maːl], or *patte* [pat] – *pâte* [pɑːt] and *mal, malle* [mal] – *mâle* [mɑːl].

/a/ is realized as [æ, a], as in *tabernacle* [tabɛʀnæk]. In open syllables in word-final position, /a/ often has the low back allophone [ɑ]; compare *éclater* [eklate] and *éclat* [eklɑ]. The phoneme /ɑ/ is realized as [ɑ, ɒ] and can be diphthongized in final closed syllables, as in *Jacques* [ʒɒːk, ʒawk].

The pronunciation of words with orthographic <oi> varies according to style, environment and word class. In reading style, the <oi> in word-final syllables tends to be realized as [wɑ] in open syllables (*doigt*, *froid*, *toi*) and in syllables closed by /R/ (*avoir*, *boire*, *noir*). In non-final syllables (*boisson*, *soirée*) one finds [wa]. In spontaneous style, speakers tend to pronounce the <oi> in word-final syllables – both open (*je crois*, *fois*, *toi*, *pourquoi*, *soit*) and closed (*avoir, soir, voir*) – as [we, wɛ] (cf. Chapter 11, Section 2.4.2). However, exceptions to this pattern include a class of words (*choix*, *le bois*, *mois*) where final open syllables are pronounced as [wɑ]. Against this backdrop of variability, some speakers say [wa] in all contexts, as in *français de référence* or referential French (henceforth FR, see Chapter 1). The possibility of a /wa/–/wɑ/ phonemic contrast (as suggested by Côté, this volume) is open to further work. These complex patterns highlight the importance of this feature as a sociolinguistic variable, a topic discussed at some length by Flikeid (1984).

2.2 Nasal vowels

Previous studies (Flikeid 1988; Lucci 1973; Ryan 1981) note that Acadian French has three nasal vowel phonemes /ɛ̃, ɑ̃, ɔ̃/. However, like FR and Québec French, Tracadie French has a fourth vowel, a mid front rounded /œ̃/. It is found in the minimal pair *brun–brin*. Like Québec French, Tracadie French also has some diphthongization in word-final closed syllables.

/ɛ̃/ is realized as [ɛ̃] or as a higher mid [ẽ]. In non-final positions we find *intact* [ẽtak] and *infect* [ẽfɛk], and in final position: *médecin* [metsɛ̃], *brin* [bʀɛ̃]. In word-final closed syllables, there is often a slight diphthongization: *quinze* [kɛ̃ʲz], *épingle* [epɛ̃ʲglə].

The /œ̃/ phoneme is pronounced [œ̃] in *un* [œ̃], *brun* [bʀœ̃]. The phoneme may show some diphthongization as in *emprunte* [ãpʀœ̃ɥ̃t] and even [ãpʀɛ̃ʲt].

In most environments /ɑ̃/ is realized as [ɑ̃] or [ã]: *quarante* [kaʀãt], *cent* [sã] and *rendu*, [ʀãdy]. The low fronted vowel [æ̃] and a diphthong can occur in word-final closed syllables: *lente* [læ̃t], *blanche* [blæ̃w̃ʃ].

/ɔ̃/ has a number of posterior realizations: a higher mid [õ] and a more open [ɔ̃] in *explosion*, *maison*, *crayon*. Diphthongization occurs in words such as *honte* [hãw̃t].

In spontaneous speech there is a strong tendency for /ɑ̃/ and /ɔ̃/ to neutralize in open syllables. Thus, while minimal pairs such as *blanc–blond* are clearly differentiated in reading style, this is not the case in informal style. Often the /ɔ̃/ vowel is lowered – *longtemps* [lãtã], *construction* [kãstʀyksjã], *mon dieu* [mãʤø] – and sometimes it is lowered and fronted to [ã] – as in *jambon* [ʒãbã] – or diphthongized – as in *non* [nãw̃, nɑ̃w̃]. Flikeid (1984, 1985) observes similar lowering and fronting of /ɔ̃/, and suggests that this variation is geographically based and related to the original settlement patterns in the region around Tracadie.

2.3 Vowel fusion

In spontaneous speech, a sequence of two vowels may be reduced to one vowel. The process appears to retain the more open vowel, which is often the second of the two vowels. Both oral and nasal vowels are involved in this process. Examples are: *un garçon qui était* [ketɛ], *j'ai asteur* (= *à cette heure*) [ʒastøᵊ], *ç'a été tough* [satetɔf], *tomber enceinte* [tɑ̃bɑ̃sɛ̃ʲt], *ben on était à Saumarez* [bɔnetasɔmaʀɛjz].

The process operates after the optional deletion of certain consonants. Note the deletion of /l/ in *garder la maison* [gaʀdamezɑ̃] and of /z/ in *dans un an* [dɛ̃nɑ̃].

2.4 Glides

Tracadie French has three glides [j, ɥ, w] whose phonemic status is not clear. Lucci (1973: 34–40) argues that minimal pairs such as *pays* /pei/ – *paye* /pej/ that occur in FR are not found in Acadian French. This leads to the analysis that [j] is a positional variant of the high front vowel /i/ when /i/ occurs before a vowel. Similarly, Lucci analyzes [ɥ] as an allophone of /y/, when /y/ occurs before a front vowel, and [w] as an allophone of /u/, when /u/ occurs before a front vowel. The Tracadie French data show that contrasts such as *miette–muette–mouette* (see below) confirm distinctions among the three glides, but the data reveal no minimal pairs that might contribute to the discussion about their phonological status with respect to the high vowels.

In reading style, the three high vowels /i, y, u/ are realized as glides [j, ɥ, w] in contexts similar to those found in FR. In words where a single consonant precedes the vowel, there are cases of syneresis, dieresis and, sometimes, dieresis accompanied by a glide. For /i/ one observes: *épier* [epʰje, epije], *scier* [sje, sie], *nier* [nie, nije], *liège* [ljɛːʒ, lijɛːʒ], *lierre* [lijaːʀ]. Some words such as *miette* [mjɛt], *million* [miljɔ̃] and *nièce* [njɛs] have syneresis only. What is remarkable is the high frequency of dieresis in [i]. Both /y/ and /u/ also display a tendency for dieresis: *duel* [ʤyɛl, dyɛl, dyɥɛl], *muette* [myɛt, myɥɛt], *mouette* [mwɛt, muwɛt]. The context where /y/ is followed by /i/ has the [ɥ] glide, as in FR: *cuisine* [kɥizɪn], *tuile* [tɥɪl, ʧɥɪl]. After obstruent-liquid clusters, the high vowel retains its full vocalic character and is followed by a transitional glide: *quatrième* [katʀijɛm], *prendriez* [pʀɑ̃dʀije], *prendrions* [pʀɑ̃dʀijɔ̃], *trouer* [tʀuwe].

In informal style, several patterns suggest that /j/ is a phoneme rather than an allophone of /i/. There are noticeably fewer cases of dieresis than in reading style. The pronoun *yelle* (= emphatic *elle*) is pronounced [jɛl] but not [iɛl], and the third-person-plural imperfect verb ending *-iont* – as in *ils étiont* (= *ils étaient*) [jetjɑ̃] – is pronounced [jɑ̃] but not [iɑ̃]. The [j] glide can be inserted between two vowels: *on était quatre* [ɔ̃jetɛkæt]. On the other hand, there are cases where /i/ becomes a glide across word boundaries: *s<u>i</u> on aurait* [sjɑ̃nɑʀɛ] *marché*. The issue of the phonemic status of the three glides is open to further work.

2.5 Consonants

The inventory of consonant phonemes – as listed in Table 2 – has approximately 21 elements. Many of these phonemes appear in all contexts – word-initial, word-medial and word-final.

Table 2. Inventory of consonants in Tracadie French

	Bilabial	Labio-dental	Dental	Alveolar	Alveo-palatal	Palatal	Velar	Uvular	Glottal
stops	p / b		t / d				k / g		
fricatives		f / v		s / z	ʃ / ʒ				h
affricates					ʧ / ʤ				
nasals	m		n			ɲ	ŋ		
lateral			l						
rhotic								ʀ	

2.5.1 *Some general observations about stops*

In syllable-initial positions /p, t. k/ are generally unaspirated. In word-final position /t/ is often realized as a glottal stop or as a glottalized dental stop, as in *nous-autres* [nuzoːʔ, nuzoːʔt].

2.5.2 *Assibilation and affrication*

Assibilation is the realization of the dental stops /t, d/ as alveolar affricates [ts, ʤ] in the context before high front vowels [i, y], and front glides [j, ɥ]; for example, *petit* [ptsi], *du* [ʤy]. This phenomenon is a well-known feature of Québec French, although it has not been generally associated with Acadian French. Only two studies observe this feature in Acadian communities, one on Prince Edward Island (King & Ryan 1989) and the other in northwestern New Brunswick (McKillop & Cichocki 1989). Indeed, Morgan (1978) suggests that assibilation is a major isogloss that separates Acadian from Québec varieties.

In Tracadie French, we observe assibilation in both reading and spontaneous speech styles; it appears to be more frequent among younger speakers than older speakers. In addition to the alveolar affricates [ts, ʤ], /t, d/ are also realized as the alveopalatal affricates [ʧ, ʤ]; this affrication of /t, d/ occurs mainly before [y, ɥ]. As well, /t/ occurs sometimes as an aspirated stop. Thus, /t, d/ have several allophones in the assibilation environment: /t/ is realized as [t, ts, ʧ, t^h] and /d/ as [d, ʤ, ʤ]. Both assibilation and affrication appear to be more frequent with /t/ than /d/. Here is a sample of the variation observed in the reading text.

/t/: *d'identité* [ʤidãtsite, didãt^hite, didãʧite],
soutien [sutsjɛ̃, sutʃɛ̃, sut^{h}jɛ̃],
tube [tsʏb, tʃʏb, tʏb, t^hʏb],
tuile [tʃɥɪl, tɥɪl, t^hɥɪl],

/d/: *dire* [ʤiᵊ, diʀ],
diète [ʤiɛʔt, diɛt],
rendu [ʀãʤy, ʀãdy],
duel [ʤyɛl, dyɛl]

Assibilation can occur across word boundaries. In the case of *pas d'idées* and *d'identité*, where there is a weak word boundary, we find both [d] and [ʤ]. No assibilation occurs across the stronger word boundary in *voûte immense*.

2.5.3 *On the status of* [ʧ, ʤ]

All varieties of Acadian French have the alveopalatal affricates [ʧ, ʤ], which are generally considered to index traditional pronunciations (Flikeid 1984). In Tracadie French, these affricates occur only in spontaneous speech style. Furthermore, they occur in specific lexical items. Some of the words and pronunciations observed are: *tiendre* (= *tenir*) *les œufs* [ʧɛ̃lezø], *diable* [ʤɒb], *mon dieu* [mɑ̃ʤø], *quelque chose* [ʧɛtʃoːz, kɛtʃoːz], *calcule* [kaltʃʏl], *taquet* [tatʃɛ].

The phonological status of these affricates has been the subject of some debate. A widely held analysis (Lucci 1973; Ryan 1981) is that these affricates are allophones that have two sources: /t, d/ and /k, g/. In the case where /t, d/ are the underlying consonants, the affricates correspond to the sequences [tj, dj] in FR, as in *tiède* [ʧɛd], *tiens* [ʧɛ̃], *dieu* [ʤø], *diable* [ʤɒb] (cf. Chapter 11, Section 4.2.1.1). It is noteworthy that there is overlap here with the context for assibilation – for example *tiède* [tsjɛd]. The second source of these affricates is the phonemes /k, g/ when these stops occur before non-low front vowels and semivowels, as in *cœur* [ʧøːʀ], *cul* [ʧy], *guerre* [ʤɒːʀ] (cf. Chapter 11, Section 4.2.1.1). The analysis is a process of affrication that operates in both contexts to generate the forms with alveopalatal affricates. There is some support for this analysis in the fact that speakers of Tracadie French alternate between the standard and traditional pronunciations. Because they do so freely depending on style, it is likely the case that the speakers are aware of /t, d/ and /k, g/ as the underlying consonants.

A separate consideration in establishing the status of these affricates is that they occur in a large number of English borrowings. In spontaneous speech style, we find the following: *mon chum* [ʧɔm], *watcher* [watʃe], *checker* [ʧɛke], *le jeep* [ʤiːp], *une job* [ʤɔb]. Because these borrowings are used widely in Tracadie, it is reasonable to propose that these affricate consonants are phonemes.

2.5.4 *Deletion of* /v/

In a small number of cases in spontaneous speech, /v/ is deleted before the <oi> sequence. Examples include *avoir* [awæːʀ], *envoie* [ɑ̃wɛj], *savoir* [sawæːʀ]. Acadian speakers consider this to be a traditional phonetic feature (Flikeid 1984).

2.5.5 *Aspirate* /h/

The phonemic status of /h/ is justified by pairs such as *haut* [ɦo] – *eau* [o] and *haut* [ɦo] – *faut* [fo]. In both reading and spontaneous styles, this phoneme is often pronounced as either a voiceless or a voiced fricative [h, ɦ]. These aspirated

allophones appear frequently in word-initial position – *honte* [ɦõt, hũt], *hasard* [ɦæzɒᵊ]. In intervocalic position, in addition to the glottal fricative one also observes a glottal stop or no indication of the fricative – *dehors* [dahoᵊ, daoᵊ, doːʀ, daʔoᵊ]. /h/ does not appear in word-final position. As in FR, this phoneme can have a zero phonetic realization, and it blocks liaison and schwa deletion in the preceding determiner.

This fricative is pronounced in some English borrowings – *un hobby* [ɛ̃hɔbɪ] – but not in others – *les backhoe* [lebæːko].

2.5.6 /ɲ/ *and* /ŋ/

The /ɲ/ phoneme has two main allophones [ɲ, ŋ]. There is a tendency for the palatal nasal to appear in syllable-initial position and for the velar nasal to be in syllable-final position, but this pattern is not consistent. We observe *agneau* [aɲo, æŋo], *compagne* [kɔ̃paɲə], *baignoire* [bɛ̃ɲwɛᵊ, bɛ̃ŋwɛᵊ], *champagne* [ʃãpaɲə].

The velar nasal is retained in English borrowings, where it appears in word-final position: *la gang* [gæ̃ŋ], *le jogging* [ʤɔgĩŋ]. The palatal nasal does not appear in these forms, which suggests giving a phonemic status to /ŋ/ for these cases. Thus, the velar nasal stop is an allophone of both phonemes.

2.5.7 *The rhotic*

The /R/ phoneme has numerous allophones: a dorso-uvular fricative or trill [ʀ], an apico-alveolar tap or trill [r], a vocalized variant that is similar to schwa [ə], and a zero realization in contexts where there is deletion. There is also a small number of occurrences of the alveolar approximant [ɹ]. Note that we use the symbol R in those instances in which the word "rhotic" (in a general sense) could be used. The symbol ʀ is used when we are referring specifically to the dorso-uvular fricative or trill, or in the transcription of words or consonant sequences in which any of the rhotic variants might occur.

Flikeid's (1982, 1984) sociophonetic study of /R/ in Tracadie found considerable variation between apical [r] and dorsal [ʀ] allophones. At the time of her study (in the mid 1970s), older speakers used the alveolar variant almost exclusively, and younger speakers had both [r] and [ʀ] variants. Speakers who had not shifted completely to the dorsal variant had the following complementary distribution: the dorsal [ʀ] occurred in syllable-final position and alveolar [r] occurred elsewhere. These data lead Flikeid to propose that a change was ongoing and that it had started in syllable-final position.

The impression from our PFC survey is that a large number of occurrences of /R/ are dorsal [ʀ] and that only a small number of occurrences are apical [r]. Indeed, [ʀ] occurs in all contexts. Furthermore, the apical variant seems to be more frequent among older speakers than younger speakers. When combined with the

results of Flikeid's apparent-time study, this suggests that the putative change in progress has continued from [r] toward greater usage of [ʀ]. A quantitative study is necessary to confirm the progression of the change across age groups, across phonetic environments and across the lexicon.

The apical [r] variant is observed in both reading and spontaneous styles. It is found predominantly in syllable-initial environments – as in *rhinocéros* [rinɔserɔs], *quarante* [karɑ̃t], *brun* [brœ̃] – and, in a few cases, in syllable-final position, as in *reliure* [rəliyr].

A vocalized schwa-like realization occurs in word-final position for most speakers. Examples are: *préfecture* [pʀefɛktʃyᵊ], *port* [poᵊ], *boulevard* [bulvɒᵊ]. This is a case of /R/ weakening; this realization is clearly not a voiceless apical or uvular variant as in *part* [pa̯r̥, pa̯ʀ̥]. Further acoustic and articulatory analyses are needed to provide a more precise description of this allophone.

The alveolar approximant [ɹ] occurs in only a few cases in spontaneous speech after mid front vowels: *asteur* [astøːɹ]. It does occur frequently in English borrowings (see Section 5 below).

Two processes involve the deletion of /R/ in word-final position. One is limited to a small set of lexical items that end in [ø] or [o]: *pêcheur* [pɛʃøː], *pécheur* [peʃøː], *bord* [boː]. The other process is the simplification of obstruent-liquid consonant clusters such as /bʀ/ *libre* [lɪb], /tʀ/ *ministre* [minɪs], *notre* [nɔt]. Both processes occur in reading and spontaneous speech styles. Word-initial deletion of /R/ is specific to certain lexical items – such as *rien que* [jɛ̃k, ɛ̃k] – and it occurs in spontaneous speech.

/R/ also participates in metathesis with schwa. Examples are: *entre nos deux* [ɑ̃tərnodø], *revenir* [ərvəniʀ]. /l/ has a similar process: *un couple de fois* [kupəldəfwɛ]. Metathesis occurs in spontaneous speech. A related although not very frequent process is the insertion of schwa in consonant-liquid clusters, as in *quatrième* [katərjɛm].

2.5.8 *Retention of certain word-final consonants*

In spontaneous speech style, speakers retain certain word-final consonants. This is the case with /t/. We observe: *boute* (= *bout*) [bʊt], *frette* (= *froid*) [fʀɛt], *icitte* (= *ici*) [isɪt], *juillet* [ʒɥijɛt]. The past participle of *faire* is [fɛt] as in *j'ai fait* [fɛt] *mes cours*. The case of *tout* is more complex. In the pronoun and quantifier, we generally find [tʊt]: *tout* [tʊt] *quoi c'que j'fais*, *rien en toute* (= *rien du tout*) [tʊt], *j'ai tous* [tʊt] *fait mes cours*. The underlying form is likely /tut/. However, note that [tu] occurs in the following expressions, which appear to be lexicalized: *tout de suite* [tusɥɪt], *toutes sortes* [tusɔʀt] *d'affaires*, *tout le monde* [tulmõd].

Word-final /s/ is retained in the adverb *plus* if the following word begins with a consonant or a vowel: *plus* [plʏs] *jeune*, *plus* [plʏs] *exigeant*, *plus* [plʏs] *comme*

off là, j'ai plus [plʏs] *aimé ça.* The pronunciation of negations is different and does not retain /s/: *j'en ai plus* [py], *t'as plus* [py] *le droit.* These facts suggest two different underlying forms: /plys/ *plus (adverb)* and /py/ *plus (negation).*

3. Schwa

The general pattern of schwa occurrence is similar to FR. This is the case in reading style where the contexts that favor and that disfavor schwa are the same in both varieties. However, schwa has a noticeably small frequency of occurrence in spontaneous speech in Tracadie French. Schwa is realized as a central vowel with a pronunciation in the general area of [œ, ø]. Because the occurrence of this vowel is sensitive to prosodic phrasing, we indicate a major Intonation Phrase boundary by "‖" and a minor Intonation Phrase boundary by "|".

3.1 Contexts that favor the occurrence of schwa in the reading corpus

Schwa shows a strong tendency to be present in four of the contexts identified in the PFC protocol: utterance-initial position, initial position of polysyllabic words, monosyllabic words, and sequences of words with schwa.

Schwa always occurs in utterance-initial (or sentence-initial) position. In this position, the schwa is generally found in the initial position of major IPs. Examples are: ‖*Le̲ village de* and ‖*De̲ plus*.

The initial syllable of polysyllabic words also favors the retention of schwa. The position of the word with respect to the prosodic boundary does not seem to be a determining factor. Schwa may occur in the first, second or third syllable that follows a major or minor phonological phrase boundary. Compare: *baisser* |*de̲puis,* ‖*ses che̲mises* and |*est en re̲vanche.*

Schwa is almost always present in monosyllabic words such as *ce*, *de*, *que*, *ne*, and *le*. The one context where schwa never occurs is in the expression *qu'est-ce que* pronounced [kɛskœ]. In a few cases there is a tendency to delete schwa in *le* as in *dans l'coin* and *il a l'sentiment*, and in *de* as in *pas d'la*, *décidé d'faire*. The deletion of schwa may be followed by a devoicing assimilation in cases where one of two adjacent consonants is voiceless, for example, the sequence /df/ in *décidé d̲'faire* [desidetfɛːʀ].

Finally, sequences of schwa always entail realization. In both sequences of words in the reading text – *sentiment de̲ se̲ trouver*, *plutôt que̲ de̲ se̲ trouver* – all schwas are pronounced. We note that these cases involve monosyllabic words, a context that favors the retention of schwa.

3.2 Contexts that disfavor the occurrence of schwa in the reading corpus

There are two contexts where schwa occurs rarely or never: word-final position before vowels and consonants, and sentence-final position before a pause.

Words that end in one consonant such as *italiennes* and *profondes* never have their final schwas realized. In words that end in consonant clusters followed by schwa, there is a reduction of the consonant cluster and a deletion of the schwa; for example, *Ministre* is pronounced [minɪs] or [minɪst].

Schwa never marks the feminine in word-final postvocalic position; that is, it is never pronounced at the end of words such as *année* or *inconnue*. Similarly, schwa is not pronounced in word-final postconsonantal positions that are followed by a word-initial vowel; usually, an enchaînement occurs as in *faire étape* [fɛʀetap].

3.3 Occurrences of schwa in spontaneous speech

While there are generally fewer occurrences of schwa in spontaneous speech than in the reading corpus, four contexts favor its pronunciation.

Schwa tends to occur often in utterance-initial position. We observe ‖*pe̲tites moyennes entreprises*, ‖*que̲ t'envoies ça* and ‖*Le̲ pré*. In a few cases, schwa is deleted as in ‖*j'vas êt' certain*.

Schwas are usually retained in cases where the three consonant rule is in effect (see Chapter 1): *à part de̲ ça, job de̲ nèg' là* (= *job de nègre là*), *en cause de̲ zeux* (= *à cause d'eux*). This retention also occurs where the preceding word has had a consonant cluster reduction: *c'est jus' que̲ tu travailles*. In other contexts, however, schwas in monosyllabic words such as *ce*, *de*, *que*, *ne*, and *le* tend to be deleted. Examples are: *quoi d'différent, des gars d'même, tout l'temps, quand c'qu'on avait*.

In sequences of schwa, the second schwa tends to be retained. Examples are: ‖*comm' j'te̲ dirais, où c'que̲ j'suis*. In some cases, however, sequences of schwas are deleted: *ça peut t'met' d'la vie dans l'corps*.

Words with consonant cluster reduction in word-final position do not retain schwa: *trop diab'*‖, *c'est jus'*‖. However, phrase-final schwas are retained in monosyllabic words: *peut-êt' de̲*‖, *ça fait que̲*‖.

Two processes distinguish Tracadie French from FR in spontaneous style. One is the deletion of the schwa that follows consonant cluster reduction in obstruent-liquid groups, which is systematic in Tracadie French. This process is also found in informal Québec French. The other process is the loss of schwa in monosyllabic words, which occurs with high frequency in spontaneous speech in Tracadie French.

4. Liaison

4.1 Liaison in the reading corpus

Liaison patterns are similar to those in FR. There is a significant contrast in the realization of liaison in reading and spontaneous speech styles. Our discussion distinguishes between obligatory and optional contexts of liaison.

In the reading passage, speakers realized liaisons in almost all of the contexts that are traditionally considered as obligatory or system categorical. Only the expression *Jeux olympiques* is not realized with a liaison but with a pause between the noun and adjective. In the other obligatory contexts, we observe a liaison with enchaînement. The obligatory contexts and the relevant liaison consonants are:

- determiner plus noun
  son [n] *usine*, *un* [n] *arbre*, *les* [z] *élections*
- monosyllabic prepositions plus XP
  dans [z] *un*, *en* [n] *effet*
- subject pronoun plus verb
  on [n] *est*, *on* [n] *en* [n] *a*, *nous* [z] *avons*, *tout* [t] *est*
- adjective plus noun
  quelques [z] *articles*, *grand* [t] *honneur*, *grand* [n] *émoi*

Note that in *grand émoi* there is liaison with enchaînement but the liaison consonant is [n] and not [t].

The striking observation about the diagnostic reading passage is that there are almost no cases of liaison in optional or system variable contexts. The one exception is after the verb *être* in *est* [t] *en;* however, there is no liaison in the case of *s'est* ‖ *en*. Similarly, no liaison occurs with *avoir* as in *ont* ‖ *eu*.

The other optional contexts in the diagnostic passage are realized with a pause or a glottal stop. These are:

- plural N plus XP
  circuits ‖ *habituelles*, *pâtes* ‖ *italiennes*, *visites* ‖ *officielles*
- verb plus XP
  provoquer ‖ *une* , *préparent* ‖ *une*, *se trouver* ‖ *au*
- adverb
  toujours ‖ *autant*, *vraiment* ‖ *en*

4.2 Liaison in spontaneous speech style

Spontaneous speech shows the same difference between obligatory and optional contexts. However, obligatory liaison consonants are realized considerably less frequently in spontaneous speech than in the reading style. In optional contexts, liaison almost never occurs.

The most notable cases of absence of liaison in obligatory contexts are with subject pronouns:

- *ils* before vowel-initial verbs is often pronounced as a vowel or a glide, as in *ils ont* [ijɔ̃, jɔ̃]. In verb forms in the third-person-plural, the traditional suffix *-ont* generally occurs with the prefix /i-/ as in *i appellont* (= *ils appellent*) [japlɑ̃]; one does not observe [izaplɑ̃]. It would appear that the underlying representation of the prefix is /i-/ and not /ilz/, and this suggests that this is not a context for liaison.
- *on* often occurs with no liaison, as in *on était quatre* [ɔ̃jetɛkæt], *quand on était jeunes* [kɔ̃jtɛʒœn]; occasionally the *on* is deleted.
- in certain monosyllabic prepositions such as *dans,* liaison tends not to occur: *dans un an* [dɛ̃nɑ̃].

Several insertions are also observed in the speech of older speakers: *ça leur* [z] *aidait à vivre*, *il commence à être* [n] *âgé.*

There is variation in the pronunciation of the final consonants of certain numerals. Some speakers make a gender distinction in the case of *deux* and *trois*: [dø, tʀwa] are masculine and [døs, tʀwas] are feminine. For example, the referent *sœurs* in the following is feminine: *y en a encore deux* [s] *là, ces trois* [s] *là.* However, we also observe the following where the referent is feminine: *deux* [z] *enfants.* In the case of *huit* the liaison consonant is [z]: *dix-huit* [z] *enfants.*

Finally, individual words can show different patterns. The adverb *bien* is usually pronounced [bɛ̃] but it sometimes displays liaison: *ç'a vraiment bien* [bɛn] *été, ç'a bien* [bɛ̃] *été.* The conjunction *mais* is pronounced [mɛ] with no liaison.

In general, three liaison consonants are attested: [z, n, t]; we do not observe /ʀ, p, g/ as liaison consonants. Liaison occurs in most of the so-called obligatory or system categorical contexts, and the non-occurrence of liaison in these contexts is associated with spontaneous speech style. Optional liaison occurs in very few cases regardless of speech style.

5. Related topics

5.1 Influences from English

Given the many years of contact between French and English in the Atlantic region, the presence of English borrowings in Acadian French is not unexpected. In a linguistic atlas survey of technical fishing vocabulary of Acadian French, Péronnet et al. (1998) found that almost 25% of the 3,000 entries in the atlas are borrowings from English. However, in spontaneous speech style the proportion of borrowings is considerably smaller. Flikeid's (1989) survey of five Acadian communities in Nova Scotia, including localities surveyed in the linguistic atlas survey, shows community borrowing rates of between 2% and 8%. Furthermore, these rates vary not only by community but also with respect to style (in-group vs. out-group context), speaker's gender and speaker's age. No studies of English borrowings in spontaneous speech exist (to my knowledge) for speech in northeastern New Brunswick.

English borrowings are often well integrated into the phonetic patterns of Acadian French. Péronnet's (1989) study of older Acadian speakers from southeastern New Brunswick observes that borrowings tend to be mostly interjections and conjunctions – such as *well*, *alright*, *anyway, but* – and these forms have a high level of phonetic integration into French. However, using data from the linguistic atlas survey mentioned above, Cichocki (2008) finds that phonetic integration of the English retroflex [ɹ] – that is, replacement of the retroflex pronunciation by either the apical or dorsal realizations [r, ʀ] – is related to the local proportion of French speakers. Localities with higher proportions of francophones have higher rates of phonetic integration than localities with lower proportions of francophones. Localities in northeastern New Brunswick, where proportions of francophones are generally over 95%, showed some of the highest rates of integration of this consonant (over 75% of English-origin words).

In the spontaneous speech recorded in Tracadie, borrowings display fairly regular morphological integration into French. Most borrowings observed are nouns and verbs; the number of borrowed adjectives and interjections is relatively small. All nouns receive a gender, and verbs generally take French morphology, especially verb endings. In our discussion of the inventory of vowels and consonants we mentioned the retention of English sounds in the case of the phonemes /ʧ, ʤ, h, ŋ/. The following is an overview of some of the phonetic processes that are involved in the phonetic integration of English borrowings.

The replacement of the approximant [ɹ] by [r, ʀ] is variable. We note no replacement in *au parking* [opaːɹkɪːŋ], *je sais pas quoi c'qu'i y avait de wrong* [dəɹɑ̃ːŋ], but find it in *le trip* [lətʀ̥ɪp] and *j'ai tout l'temps tripé* [tʀ̥ɪpe] *là-dessus*. The other

examples in this section attest to the variable nature of the rhotic replacement process.

The stressed central vowel [ə], sometimes transcribed as [ʌ], becomes a lower mid back vowel [ɔ] as in *c'était l'fun* [stɛlfɔn], *un chum* [œ̃tʃɔm], *c'est une bad luck* [stʏnbæːdlɔk] *pareil*, *ç'aurait busté* (*buster* = 'to bust, break') [bɔste] *les moteurs*. Similarly, the low back [ɑ] vowel may become [ɔ]: *une job* [ʏnʤɔb]. However, we find a variable pronunciation for the word *boss* as [bɔs, bɒːs].

English diphthongs may become tense monophthongs that are often long. For example, [ɔw] becomes [oː] in *c'était tout l'temps en jokes* [ɑ̃ʤoːk], *Tilley Road* [tiliroːd]. The diphthong [ɛj] becomes [e] in *un break là* [œ̃bɹeːklɒ], *la gate* [lageːt], *un steak de noce* [œ̃stekdənɔs]. However, some features of English phonetic patterns remain. The /aj/ diphthong is pronounced [aj] in *une drive* [ʏndrajv]. Curiously, although raising of /aj/ to [əj] before voiceless consonants is widespread in Canadian English (this rule is known as Canadian raising), it does not occur in words such as *une pipe* [ʏnpajp], *Pizza Delight* [dlajʔt].

Final consonant clusters are simplified. Note the loss of the final consonant in the sequences /vz/ in *des drives (de bois)* [dedrajv] and /ts/ in *pousse let's go* [lɛzgoː].

A feature found in polysyllabic words is the presence of a stress on the first syllable that accompanies a word-final stress. The first stress is realized with a lengthening and/or a pitch tone, and it is often the secondary stress. The second stress is also realized with lengthening and pitch, and it is generally the primary stress. This sequence of stresses sometimes gives the impression of a stress clash. The pattern is especially noticeable in place names: *à Bathurst* [aˌbæːˈtœɹs], *à Campbellton* [aˌkæːmɪlˈtɔn]; and in verbs: *on a flyé* [ɔ̃naˌflaːˈje] *au fond à l'hôpital*, *j'ai feelé mal* [ʒeˌfiːleˈmæl], *le coq nous chasait* (*chaser* = 'to chase') [ˌtʃeːˈsɛ].

Another process that occurs with English borrowings is vowel fusion. The adverb *anyway,* which is pronounced [æniwɛ] in citation form, can show fusion of both initial and final vowels: *mais anyway à trente ans* [mɛniwatʀɑ̃tɑ̃].

5.2 Future perspectives

5.2.1 *Prosody*

In this chapter we have not described the prosody of Tracadie French. Speech rhythm is a noticeable feature of all varieties of Acadian French. Certain vowels have longer durations; these include nasal vowels, the higher mid vowels /e, ø, o/, back /ɑ/ and certain occurrences of /i/ (Cichocki 1996; Lucci 1973). However, the phonological implications of this rhythm issue are still not well understood.

Stress in Tracadie French is similar to the general pattern found in FR: it occurs on the final syllable of a prosodic phrase and on the final syllable of words spoken in isolation. However, Tracadie French has an optional lengthening of penultimate syllables, as in *chez nous là* [ʃenuːlɑ], where both the penultimate and final syllables are long. Furthermore, this optional lengthening is sometimes accompanied by a steep rising-falling pitch on the two lengthened syllables. This rise-fall melodic pattern also occurs on the final syllable of an Intonation Phrase: ‖*c'était pas ouvert*‖, ‖*on pouvait pas sortir d'la maison*‖. A similar pattern sometimes accompanies English borrowings (see above). The challenge of describing rhythm and intonation is open to future work.

5.2.2 *Traditional phonetic features*

Another direction for further research is the study of traditional phonetic features in Acadian French. The conservation of these features and their stylistic variation have been ongoing themes in Acadian studies (see Cichocki & Beaulieu 2011; Falkert 2010; Flikeid 1984 among others). On the one hand, traditional variants have a strong presence in informal conversational speech; on the other, only certain traditional variants occur in formal styles. The relevant information that is needed is the linguistic and social conditioning of this stylistic variation.

Based on the preliminary survey described in this overview, traditional features that occur in both formal and informal contexts are mid-vowel raising before /R/, aspirate /h/, and the <oi> word classes. Among the traditional features that occur only in informal speech are: neutralization of the /ɔ̃/–/ɑ̃/ contrast, "ouisme", lowering of /ɛ/ before /R/, pronunciation of the traditional alveopalatal affricates [ʧ, ʤ] in a defined class of words, deletion of /v/, and retention of certain word-final consonants. These observations need to be confirmed in a careful quantitative study.

5.2.3 *Sound change*

This survey reveals other sociophonetic studies that can be undertaken with the PFC corpus of Tracadie French. An examination of age-grading in the corpus, accompanied by real-time comparisons with Flikeid's (1984) earlier study of Tracadie French, will provide a basis for uncovering the social and linguistic trajectories of some of the putative sound changes that are ongoing in this variety of Acadian French. We note two changes in particular: a shift in the /R/ phoneme to a dorsal pronunciation and an increase in the assibilation and affrication of dental stops.

6. Summary

The general observation from this overview is that the phonological system of Tracadie French is similar to that of FR. Phonemic differences in the vowel system are the /ɛ/–/ɛː/ and /a/–/ɑ/ contrasts, and the presence of the nasal vowel /œ̃/. The consonant system has an /h/ phoneme, which is often realized phonetically as a fricative, and several phonemes that have a basis in English borrowings /ʧ, ʤ, ŋ/. The phonological status of the three semi-vowels in Tracadie French is not clear. Schwa and liaison follow the main patterns of FR, although optional liaisons tend not to be realized.

Tracadie French differs from FR in the way that vowel and consonant phonemes are realized phonetically. Many of the vocalic differences between Tracadie French and FR are features that Tracadie French shares with Québec French. These features include: the laxing of high vowels, high vowel devoicing, lowering of /ɛ/ before /R/, oral and nasal vowel diphthongization, pronunciation of the low vowels along the front-back continuum, variation in the pronunciation of words with orthographic <oi>, and vowel fusion. We note that for all of these features there are between-variety differences with respect to word class, phonological environment, frequency of occurrence, and acoustic realization. Those features that are unique to Tracadie French are: /ɔ̃/–/ɑ̃/ neutralization, mid-vowel raising before /R/, and "ouisme". The latter three processes belong to the group of features that are generally perceived to be traditional features of Acadian French.

Similarly, there are numerous consonantal differences between Tracadie French and FR. Those that Tracadie French shares in general with Québec French are: assibilation of /t, d/, aspirate /h/, velarization of /ɲ/, variation in /R/, metathesis with schwa, consonant cluster simplification, retention of word-final consonants, and deletion of /v/. Those features that distinguish Tracadie French from Québec French are: the affrication of /t, d/ and the glottalization of /t/, which are recent features, and one traditional feature, the pronunciation of the alveopalatal affricates [ʧ, ʤ] in a defined class of words.

This is a rich collection of features, and it reflects the unique history and current realities of French speakers who live in a small municipality in eastern Canada. Our overview has described numerous points of similarity with FR and with Québec French. It has also pointed out several traditional variants that are unique to Acadian French, a few recent variants, and a small number of English-like pronunciations. We have been able to identify such a large number of features because the PFC interview protocol elicits both formal and spontaneous speech styles, allowing us to observe those features that occur in only one of the styles. It is important to emphasize that a complete description of the sound system of this

variety of Acadian French – and, indeed, other varieties of Acadian French – will necessarily need to take into account these stylistic differences.

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CHAPTER 10

Laurentian French (Quebec)

Extra vowels, missing schwas and surprising liaison consonants*

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1. Presentation of the survey

This chapter exploits the PFC survey carried out in Trois-Rivières (Quebec, Canada), as a representative sample of Laurentian French (see Chapter 1 for a general presentation of the PFC project). Laurentian French is one of the two historical varieties of French spoken in Canada, with Acadian French. It originated in 17th century New France, along the St. Lawrence river, and subsequently spread to other parts of present-day Quebec, more western Canadian provinces and New England.

Laurentian French is more widely known as Canadian or Quebec French. "Laurentian" appears more appropriate, for reasons that are worth mentioning briefly here, given that most readers are likely to be unfamiliar with the term. First, "Canadian French" is ambiguous insofar as there are two historically distinct French settlements and dialects in Canada: Acadian and Laurentian. Canadian French is used to refer sometimes to varieties of French spoken in Canada, without distinguishing between Acadian and Laurentian French, sometimes to Laurentian French proper, in accordance with the historical usage of the word Canada as designating the French colony established along the St. Lawrence. Since the word Canada is no longer used in this sense, the need to find a term that refers specifically to the non-Acadian variety has arisen. The term "Quebec

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French" has gained popularity with the rise of Quebec's self-assertion as a distinct society in the 1960's, but its politico-geographical basis does not adequately reflect the historical and linguistic reality. Laurentian French is spoken outside of Quebec, as witnessed by other PFC surveys presented in this volume (see chapters by Tennant and Walker), and some eastern parts of the province were settled by Acadians. The term "Laurentian" includes all and only those communities whose historical roots go back to the St. Lawrence colony. Although the adjective has not been widely adopted by linguists, it is a traditional one, frequently used in other scholarly domains.

Today there are approximately 6.5 million native speakers of Laurentian French; 90% of them live in Quebec. According to the 2006 Canadian census, French is the first language of 80% of the population of Quebec, the only Canadian province whose population is predominantly French-speaking. French speakers make up 33% of the total population of New Brunswick and no more than 4% in the other Canadian provinces. The situation of French in Quebec is therefore unique in North America, in terms of the number of speakers and its social and legal status. It is the only official language of the province, which has put in place a number of measures to protect and promote its use in all spheres of society. Of particular concern is the integration of newcomers in the French-speaking community, as English remains highly attractive in the Canadian and North American context.

Trois-Rivières is a city located on the north shore of the St. Lawrence river, at the confluence of the Saint-Maurice river and approximately halfway between Montreal and Quebec City, the two main cities in Quebec. Founded in 1634, it is the second oldest city in New France, after Quebec City. With its population of almost 130,000 inhabitants, called *Trifluviens*, Trois-Rivières is the administrative, economic and cultural hub of the Mauricie region. The current limits of Trois-Rivières result from the amalgamation in 2002 of the historical city of Trois-Rivières and four adjacent towns; the speakers who participated in the PFC survey come from the larger city. Ethnically and linguistically, the city is remarkably homogeneous, with (Laurentian) French being the mother tongue of 97% of the population. Contact with English is largely limited to the school context, where it is taught as a foreign language, and to the bilingual content of consumer products and public signage. Beyond that, knowledge and usage of English is very much a matter of individual choices and circumstances. In the 2006 census, 75% of adult French-speaking *Trifluviens* declared being unable to conduct a conversation in English.

The survey includes 12 participants (six women, six men), who fall into two clear age groups: 21–24 for the younger speakers and 52–79 for the older ones.

Table 1. Speakers in the PFC Trois-Rivières French corpus

Code	**CC**	**BP**	**WD**	**HD**	**CL**	**JB**	**LL**	**AD**	**LC**	**JG**	**MC**	**SB**
Gender	F	M	M	F	F	M	M	F	F	M	M	F
Birth	1931	1933	1934	1937	1957	1958	1986	1987	1987	1987	1987	1989
Age	79	77	76	73	53	52	24	23	23	23	23	21

The older group itself includes four speakers in the 73–79 range and two middle-aged speakers of 52–53. Each age group and sub-group is divided equally between men and women. All speakers grew up in Trois-Rivières and at least one of their parents was born in Trois-Rivières or in a neighboring village. The level of education is on average relatively high, as all participants have at least two years of post-secondary education (general or technical) and studied until the age of 20–23. Two are currently enrolled in master's programs at the Université du Québec à Trois-Rivières (AD in literature, LC in philosophy). This survey is therefore representative of relatively educated groups, while offering a wide range of speech styles in terms of carefulness, attention to the perceived norm of "international French" or implicit promotion of Laurentian features. Clearly, though, all speakers sound distinctly "Laurentian". Participants' knowledge of English varies from basic to very good, but none is really bilingual or uses English on a regular basis, with the exception of JB, whose mother was a native speaker of English and who holds a BA in translation.

Table 1 summarizes the speakers' main individual characteristics at the time of recording.

The recordings took place in August 2010 and were conducted by two interviewers. One interviewer, a *Trifluvien* himself, recruited the participants within his social network, the other interviewer had no connection with the community but is also a native speaker of Laurentian French. The interviews were organized so as to maximize the register difference between the guided and free conversations. Except for one participant, the guided conversation took place at the beginning of the interview, when speakers are most likely to be aware of the recording situation and adjust their speech accordingly. The remaining participant completed the reading tasks first, followed by the guided and free conversations, in that order. The guided conversation was conducted by the interviewer who is an outsider to the community. By contrast, the free conversation was intended to be a spontaneous dialogue with the local interviewer, who already knew all the participants, with the exception of CC. The conversations are coded for schwa and liaison according to the PFC conventions: three minutes of each conversation for schwa and five minutes for liaison. In addition to the standard PFC components – the two conversations, the wordlist and the text – participants were

asked to read a fairly long list of 209 words or short sequences designed to test a number of processes specific to Laurentian French; see Appendix. The discussions in this chapter draw extensively on the complementary list and the entire free conversations.

As the main historical variety of French spoken natively outside of France (from the point of view of number of speakers), Laurentian French has been extensively described and analyzed, with respect to its historical origins, linguistic structure, and sociolinguistic situation. The bulk of this work has naturally focused on Quebec, given the large concentration of Laurentian speakers in this province, and I can only provide here a small sample of relevant references. See Auger (2003, 2005), Conseil de la langue française (2008) and Poirier (2009) for recent overviews of French in Quebec. The historical dimension of this variety is developed in Juneau (1972), Mougeon & Béniak (1994), Caron-Leclerc (1998), Morin (2002) and Gendron (2007), while Dulong & Bergeron (1980), Poirier (1998) and the TLFQ project (2010) offer a lexicographic perspective. The sound system of Quebec French is described in Gendron (1966), Léon (1969), Walker (1984), Dumas (1987), Ostiguy & Tousignant (1993) and the PHONO website (Paradis & Dolbec 1998). More specialized references will obviously be added as they become relevant in the course of the discussion. One reference that deserves a specific mention is Deshaies-Lafontaine (1974), a lengthy sociolinguistic investigation of the French spoken in Trois-Rivières.

The rest of this chapter examines the segmental inventory (Section 2), the behavior of schwa (Section 3) and liaison (Section 4) in the Trois-Rivières PFC survey. All display interesting specificities of Laurentian French, some previously undocumented. Most of these features occur across the entire Laurentian domain, as amply illustrated in Tennant's and Walker's chapters (this volume), which describe Laurentian varieties spoken at a considerable distance from Trois-Rivières. Many features are also shared by Acadian French; see Cichocki (this volume, especially Section 6) for a more systematic comparison between Laurentian and Acadian varieties.

While the presentation of the segmental inventory is often simply offered as background for more specific investigations, it represents here an important focus of my contribution. The inventory of Laurentian French is not generally considered controversial; one may consult Walker (1984) for a detailed presentation of the standardly accepted set of phonemes. Yet I argue for an inventory that differs in some important respects from the traditional picture.

2. Segmental inventory

The vocalic system of Laurentian French, described in Section 2.1, is particularly complex, both in its phonemic inventory and allophonic processes. First, Laurentian French, including of course Trois-Rivières, displays a rich set of vocalic oppositions; the contrasts that are regressing or absent in other varieties of French are stable in Laurentian French and show no sign of weakening. This variety also exhibits distinctions absent elsewhere in the French-speaking world. In addition, a series of rising diphthongs is argued to hold phonemic status. In total, 23 contrastive vowels may be identified, excluding schwa (see Section 3), which exceeds the number of 15 typically posited for French (e.g., Lyche 2010).

The consonant inventory is, in comparison, relatively straightforward. Points of discussion include the dorsal nasal and the articulation of the rhotic. Consonants are also subject to regular assimilation patterns, notably assibilation, and C-zero alternations word-finally and in clitic pronouns. The consonantal system is presented in 2.2.

2.1 Vocalic system

The full set of vocalic oppositions in Laurentian French is realized in final closed syllables. As many as 23 contrastive vowels can be identified in this context, as shown in Table 2 with examples present in the Trois-Rivières corpus. Most words appear in the standard or complementary wordlist; *game*, *amuse*, *cool*, *coule* and *conjointe* are taken from the conversations. Table 2 distinguishes between 15 oral vowels, four nasalized vowels, and four rising diphthongs. Segments are grouped in three columns: front unrounded, front rounded and back (rounded).

Table 2. Oral and nasalized vowels and rising diphthongs

i	*frise* 'curl'	y	*amuse* 'amuse'	u	*cool* 'cool'
ɪ	*quiz* 'quiz'	ʏ	*tube* 'tube'	ʊ	*coule* 'flow'
e	*game* 'game'	ø	*jeûne* 'fast'	o	*paume* 'palm'
ɛ	*faites* 'do.2PL'	œ	*jeune* 'young'	ɔ	*pomme* 'apple'
ɜ	*fête* 'party'				
a	*patte* 'leg'			ɒ	*pâte* 'dough'
ɛ̃	*crainte* 'fear'	œ̃	*jungle* 'jungle'	ɔ̃	*honte* 'shame'
				ɒ̃	*lente* 'slow.FEM'
ɥi	*tuile* 'tile'				
wɛ̃	*conjointe* 'partner'				
wa	*boite* 'limp'			wɒ	*boîte* 'box'

These vowels undergo a number of allophonic processes, which give rise to yet additional variants. They are also subject to neutralization patterns; as a result, some pairs of vowels are contrastive in certain contexts and allophonic in others, which makes this system particularly complex. The following description focuses on final syllables, which display most of the characteristic traits of the Laurentian vocalic system; a complete analysis of non-final syllables will not be undertaken here.

Sections 2.1.1–2.1.4 focus on the monophthongs in Table 2. Distinguishing between non-high vowels and high vowels, Sections 2.1.1 and 2.1.2 establish the contrasts, motivate the symbols used to represent them (which are not always those encountered in the literature on French phonology), and present some allophones specific to each category. Vowel length, a fundamental aspect of the entire Laurentian system, is discussed in 2.1.3, followed by a description of the neutralization patterns in final open syllables and in final syllables closed by /R/ (2.1.4). The status of the rising diphthongs in Table 2 and their independence from the corresponding vowels is addressed in 2.1.5.

2.1.1 *Non-high vowels*

The monophthongs in Table 2 include all the oppositions tested in the standard PFC protocol: /e–ɛ/ (*épée–épais*), /ø–œ/ (*jeûne–jeune*), /o–ɔ/ (*paume–pomme*), /ɛ–ɜ/ (*faites–fête*), /a–ɒ/ (*patte–pâte*), /ɔ̃–ɒ̃/ (*blond–blanc*) and /ɛ̃–œ̃/ (*brin–brun*).[1] These pairs are all consistently distinguished by the Trois-Rivières participants (and, indeed, by Laurentian speakers in general).

All vowels differ in quality, including those in *fête* and *faites*, traditionally taken to implicate a length distinction: /ɛː/ in *fête*, /ɛ/ in *faites*. In fact, the quality of the vowel in *fête* is not that of (a long) /ɛ/ in Laurentian French – it is more open and central (Santerre 1974, 1976) – and there seems to be no reason to distinguish *fête* and *faites* by vowel length, but as for other vowel contrasts – /e–ɛ/, /o–ɔ/, /ø–œ/, /ɒ–a/ – by quality. In each of these pairs, the first vowel is longer but the difference in quality appears to dominate that in length. Pronunciations such as [fɛːt] or [paːt] for *fêtes* or *pâte* are unnatural in Laurentian French. Following Santerre, I adopt the notation /ɜ/ for the vowel of *fête*, which emphasizes both its distinct position in the vowel space and the uniform treatment of the entire vocalic inventory, based on vowel quality.[2]

1. Symbols appearing between /…/ may be interpreted as labels for sets of related surface realizations and not necessarily in terms of abstract or underlying sound units.

2. The fact that the Laurentian descriptive tradition has mostly maintained the standard length treatment of the vowel of *fête* may be partly related to the absence of a phonetic symbol for a low-mid front vowel distinct from both [æ] and [ɛ]. The symbol [ɜ] proposed by Santerre

The vowel /e/ is usually taken to be excluded from closed syllables in French. This is generally true of /e/ in French lexical items but Laurentian French has arguably extended the distribution of /e/ to closed syllables through the integration of English borrowings such as *tape* [tep] or *brake* [bRek].[3] Evidence of the nativization of such words includes their undergoing French morphological derivation (e.g., the verbs *taper* [tepe] 'to tape' and *braker* [bReke] 'to brake') and the presence of a French rhotic (as in *brake*). Two examples of closed-syllable /e/, taken from the free conversations, are given in (1). In this syllabic context, /e/ contrasts with both /ɛ/ and /ɜ/, as in the triplet *date* /det/ 'date (romantic engagement)' vs. *dette* 'debt' /dɛt/ vs. *tête* 'head' /tɜt/.

(1) a. *c'est pas du tout la même game* [gem] (AD)
'it is not at all the same game'
b. *il y a des brakes* [brek] *dans les chars* (BP)
'there are brakes in (the) cars'

The low back oral vowel is transcribed as the rounded /ɒ/ rather than the usual unrounded /ɑ/, establishing the roundedness of the entire back series /u o ɔ ɒ/. Evidence for the rounded quality of this vowel in Laurentian French can be found in its two main allophones, further discussed below. First, the diphthongized variant, found in closed syllables, has an off-glide [u] whose rounded quality is taken to originate in the roundedness of the underlying vowel. Second, /ɒ/ surfaces variably as [ɒ] or [ɔ] in open syllables (e.g., *rat* 'rat' [Rɒ ~ Rɔ]); these two vowels contrast in final closed syllables but freely alternate word-finally, where /ɔ/ and /o/ are neutralized to [o] (see Section 2.1.4).

Turning now to nasalized vowels, Laurentian French firmly maintains four phonemes, with a distinct vocalic quality: /ẽ, œ̃, ɔ̃, ɒ̃/. The vowel of *brin* /ẽ/ is higher than in most other varieties of French and the low vowel of *blanc* /ɒ̃/ surfaces with a variable place of articulation, depending in particular on the syllabic context: it tends to be back and rounded in closed syllables [ɒ̃] (like its oral counterpart /ɒ/) but regularly fronts to [æ̃] or [ã] in open syllables.

is appropriate given its low-mid and central quality. Morin (2009) adopts [æ] instead, which has the disadvantage of being more often used as an allophone of /a/ or /ɛ/ in descriptions of Laurentian French; the vowel of *fête* also appears to behave like a mid rather than a low vowel, since it neutralizes to /ɛ/ word-finally (see Section 2.1.4).

3. The symbol [R] is used to refer to the rhotic consonant without specifying its alveolar or uvular point of articulation (see Section 2.2.1).

2.1.2 *High vowels*

High vowels surface as tense or lax, short or long, as amply illustrated in the Trois-Rivières corpus. Variation in high vowels is largely dependent on the context; see McLaughlin (1989) for a global analysis of high vowels in Laurentian French.

In final syllables, high vowels surface as lax in syllables closed by consonants other than /v, z, ʒ/ and as tense elsewhere; they are long in syllables closed by /R, v, z, ʒ/, the so-called lengthening consonants, and short elsewhere (see Section 2.1.3). This distribution yields four realizations of high vowels, illustrated in (2) with words taken from the complementary wordlist. Forms of the verb *dire* 'say' also display these four variants: *dit* [dᶻi] 'said.MASC', *dire* 'say.INF' [dᶻɪːR], *dise* 'say.SUBJ' [dᶻiːz], and *dite* [dᶻɪt] 'said.FEM'.

(2) a. [i, y, u] in final open syllables
e.g., *génie* [ʒeni] 'rotten', *bourru* [buRy] 'gruff', *minou* [minu] 'cat'
b. [ɪː, yː, ʊː] in final syllables closed by /R/
e.g., *dire* [dᶻɪːR] 'say', *dur* [dᶻyːR] 'hard', *court* [kʊːR] 'short.MASC'
c. [iː, yː, uː,] in final syllables closed by /v, z, ʒ/[4]
e.g., *vive* [viːv] 'live.SUBJ', *juge* [ʒyːʒ] 'judge', *douze* [duːz] 'twelve'
d. [ɪ, y, ʊ] in final syllables closed by consonants other than /R, v, z, ʒ/ (including /R/ followed by another consonant)
e.g., *île* [ɪl] 'island', *tube* [tˢyb] 'tube', *courte* [kʊRt] 'short.FEM'

This distribution is categorical in the traditional French lexicon, for which only one series of high vowels has to be posited underlyingly, with laxing and lengthening applying allophonically in predictable contexts. However, borrowings from other languages, especially English, have generated lexical exceptions to the generalizations in (2c–d): words with short lax vowels before final /v, z, ʒ/ and long tense vowels before consonants other than /R, v, z, ʒ/.[5] This suggests that the tense-lax distinction has been reinterpreted as contrastive (which may have been favored by its already distinctive status in mid vowels). All speakers, for instance, produced a clear opposition in the complementary wordlist between a tense

4. The distinct quality of high vowels before /R/ and /v, z, ʒ/ is consistent with the claim in 2.1.3 below that there is no uniform lengthening process before /R, v, z, ʒ/.

5. The generalizations in (2a–b) remain exceptionless. Before final /R/ (2b), vowels are invariably long and the tense-lax distinction is never contrastive. Traditionally, vowels are described as tense before all lengthening consonants /R, v, z, ʒ/. In fact, there appears to be variation within the Laurentian domain with respect to the quality of high vowels before /R/, as in [dziːR] vs [dzɪːR]. The factors involved in this variation – regional, diachronic or other – remain to be defined, but the lax variants seem to dominate and the claimed tenseness of high vowels before all lengthening consonants, including /R/, in the literature appears to follow the tradition more than a specific empirical analysis.

vowel in *frise* 'curl' [fRiːz] and a lax vowel in *quiz* 'quiz' [kwɪz] (which otherwise is phonologically integrated in the French system). *Vive* 'live.SUBJ' [viːv] also contrasts with *Tel Aviv*, variably produced [tɛlaviːv] or [tɛlavɪv] by the participants. Exceptions are now also found in French lexical formations, such as the truncated form of *bizarre* 'odd', pronounced [bɪz] (also the name of a well-known artist in Quebec), which forms a minimal pair with *bise* 'kiss' [biːz] (see Côté 2010a for more examples). Words with long high vowels before non-lengthening consonants were not included in either the common or the complementary wordlist, but the conversations contain minimal or near-minimal pairs such as *coule* 'flow' [kʊl] vs. *cool* [kuːl], *bibitte* 'insect' [bɪbɪt] vs. *beat* [biːt], *tripe* 'have fun' [tRɪp] vs. *cheap* [tʃiːp].

Such contrasts establish two series of high vowels in final syllables closed by consonants other than /R/: tense /i, y, u/ vs. lax /ɪ, ʏ, ʊ/. Since borrowings typically do not contain /y/, the contrast is active for /i–ɪ/ and /u–ʊ/ but may be considered only potential for /y–ʏ/. I could not find actual examples of [ʏ] before /v, z, ʒ/ or [yː] before consonants other than /R, v, z, ʒ/, but a form such as [mʏz] for *musique* is quite conceivable, on a par with [bɪz] above and in opposition to *muse* 'muse' [myːz].

Lax vowels in syllables closed by /v, z, ʒ/ and tense ones in syllables closed by other consonants must be lexically specified for tenseness. However, the lexical representation of lax and tense vowels which conform to the generalizations in (2) remains a matter of debate: the introduction of a contrast may have led to a general reanalysis of high vowels in the lexicon (see Reighard (1986) for a model with all high vowels lexically specified for tenseness), or may have left the regular forms unspecified, with their lax or tense value determined by contextual rules. This issue, in fact, may also arise for other pairs of contrastive vowels in Table 2, such as /ø–œ/, whose distribution is also largely dependent on the context. I leave this issue open.

Laxing also applies in a non-distinctive fashion in non-final syllables.[6] Several items in the complementary wordlist were included to test non-final laxing, which is triggered variably in two distinct contexts (Dumas 1976; Dumas & Boulanger 1982; Poliquin 2006): (1) in open syllables by virtue of a harmony process with another lax high vowel in a final closed syllable (e.g., *pilule* 'pill' [pilʏl ~ pɪlʏl]; *souligne* 'underlines' [sulɪŋ ~ sʊlɪŋ]); (2) in closed syllables, with or without a lax high vowel in the final syllable (e.g., *Victor* [viktɔːR ~ vɪktɔːR]). In non-final closed syllables, the frequency of laxing depends in particular on the nature of

6. It has been suggested that length is marginally contrastive in penultimate open syllables for a number of vowels, including high ones (McLaughlin 1986; Reighard 1986; Picard 1987). This issue is left for future work.

the closing consonant. For example, the tense [i, y, u] are more frequent before /s/, as in *mystère* 'mystery' and *muscade* 'nutmeg' (22 out of 23 productions in the complementary wordlist), than before sonorant consonants, as in *Linda* (name) and *turban* 'turban' (6/24). The presence of a lax high vowel in the following syllable also favors laxing, as in *multiple* 'multiple', produced with a lax [ʏ] more often than *sultan* 'sultan' (11/12 vs. 6/12).

High vowels in non-final syllables are also affected by devoicing when adjacent to voiceless obstruents, especially in medial syllables (Gendron 1966; Martin 2004). Three words in the complementary list present the ideal context for devoicing: *équiper* 'equip', *député* 'deputy' and *écouter* 'listen'. The reading task does not favor devoicing, yet inspection of the spectrograms indicates that two thirds of the medial vowels in these three words (23/36) were fully devoiced. Devoicing interacts with laxing, as in *coutume* 'custom', associated with at least three possible pronunciations: [kut̥ˢʏm] with devoicing (in which case it is difficult to determine the lax or tense quality of the vowel), [kʊtˢʏm] with laxing and [kutˢʏm].

2.1.3 *Lengthening and diphthongization*

Length is a central aspect of the Laurentian vowel system, even though the inventory in Table 2 only involves vowel quality. A subset of the vowels are considered intrinsically long; these include all mid-high and nasalized vowels and diphthongs, plus /ɜ, ɒ/ (3). These vowels surface as long in final closed syllables, the contexts exemplified in Table 2, and, more variably, in non-final open syllables; see Côté (2010a). Vowel length is neutralized in final open syllables.

(3) Long vowels: /e, ø, o, ɜ, ɒ, ẽ, œ̃, ɔ̃, ɒ̃/

Vowels other than those in (3) may also be lengthened contextually, when followed by the so-called lengthening consonants /R, v, z, ʒ/. All vowels are conventionally described as lengthened in syllables closed by /R, v, z, ʒ/, but I have argued that only /R/ triggers lengthening of all vowels, while /v, z, ʒ/ only lengthen /i, y, u, a/ (without excluding some degree of phonetic lengthening of the other vowels) (Côté 2010a).

Length, whether intrinsic or contextual, is enhanced by diphthongization, especially in final closed syllables. Only [aː] escapes diphthongization, for reasons that remain unclear. Diphthongization is variable, both in whether or not it applies and, if it does, in the form of the resulting diphthong. These allophonic diphthongs are falling, unlike the contrastive ones in Table 2, which we turn to in 2.1.5. They adopt in general the place of articulation (anterior or posterior), the nasality and rounding of the original long vowel, while the initial and final height of the diphthong is variable. For example, the diphthongized variants of [ɜː] and

[œː] include, respectively, [ai, ae, aɜ, ɜi, ɜe] and [œy, œø, œœ, œy, œø]: the initial height is that of the original long vowel or a degree lower, and the final height that of the vowel or higher, up to the corresponding high vowel. However, diphthongs arising from low vowels are always rounded and their final place of articulation is always back.

Diphthongized variants are stigmatized to a degree, especially those with more variation in height, and diphthongization tends to be avoided or articulatorily reduced in higher registers and social classes. A detailed analysis of diphthongization in the Trois-Rivières data is beyond the scope of this chapter (see Demharter 1980; Dumas 1981; Dagenais 1986, 1993; Santerre & Millo 1978), but it is quite clear that it is much less frequent in the reading tasks and that interspeaker variability is substantial. This is illustrated by the range of pronunciations in (4) obtained for *neige* in the complementary wordlist on the part of the 12 Trois-Rivières participants.

(4) *neige* 'snow' [nɜːʒ, naeʒ, nɜiʒ, naɜʒ, nɛiʒ, naiʒ]

2.1.4 *Contextual neutralizations*

The inventory of 15 oral vowels in Table 2 is reduced in two specific contexts, which favor tense vowels in word-final open syllables and lax vowels in final syllables closed by /R/. The nasal vowels and rising diphthongs remain fully contrastive in both closed and open final syllables.

Final open syllables essentially allow the following set of vowels: [i, y, u, e, ɛ, ø, o, ɒ]. As in the standard variety, the /œ–ø/ and /ɔ–o/ contrasts are neutralized to [ø] and [o], respectively. The /a–ɒ/ and /ɛ–ɜ/ contrasts are subject in Laurentian French to similar word-final neutralizations, in favor of [ɒ] and [ɛ]. As shown in Table 3 (first line), both [o] and [ɔ] in final closed syllables correspond to [o] word-finally; likewise for [œ] and [ø] (second line), [a] and [ɒ] (third line) and [ɛ] and [ɜ] (fourth line). Lax high vowels in final closed syllables also correspond to tense ones in open syllables (last line). Several options are available for the underlying vowel in a word like *chat*: /a/, assuming the same lexical vowel in *chat* and *chatte* and the application of a backing process word-finally; /ɒ/, assuming that *chat* and *chatte* are lexicalized separately; /A/, a low vowel unspecified for backness. This issue goes beyond the objectives of this discussion, but I simply note that the behavior of final vowels is independent of whether or not a different vowel appears in a closed syllable in other forms of the paradigm (as in the *chat-chatte* case); in other words, instances of [ɒ] in *gras* and *chat* behave identically.

The ban on final [œ, ɔ, a], however, requires qualifications. First, [œ] appears in stressed clitics, notably as the vowel of the enclitic *le* (3rd person masculine

Table 3. Neutralizations in final open syllables

Final closed syllable		Final open syllable	
[ɔ]	*sotte* 'silly.FEM' [sɔt]	[o]	*sot* 'silly.MASC' [so]
[o]	*grosse* 'big.FEM' [gRoːs]		*gros* 'big.MASC' [gRo]
[œ]	*pleuve* 'rain.SUB' [plœv]	[ø]	*pleut* 'rain.PRES' [plø]
[ø]	*gueuse* 'beggar.FEM' [gøːz]		*gueux* 'beggar.MASC' [gø]
[a]	*chatte* 'she-cat' [ʃat]	[ɒ]	*chat* 'cat' [ʃɒ]
[ɒ]	*grasse* 'fat.FEM' [gRɒːs]		*gras* 'fat.MASC' [gRɒ]
[ɜ]	*fraîche* 'fresh.FEM' [fRɜːʃ]	[ɛ]	*frais* 'fresh.MASC' [fRɛ]
[ɛ]	*prête* 'ready.FEM' [pRɛt]		*prêt* 'ready.MASC' [pRɛ]
[ɪʏʊ]	*frite* 'fried.FEM' [fRɪt]	[iyu]	*frit* 'fried.MASC' [fRi]
[iyu]	*mise* 'put.FEM' [miːz]		*mis* 'put.MASC' [mi]

object pronoun) in imperative constructions (ex. *bois-le* 'drink it' [bwalœ][7]), and in the name of the letter *E* (see Séguin 2010: 35–37). Second, word-final [a] is found in three specific contexts: reduplicated forms (e.g., *papa* 'daddy' [papa], *tata* 'idiot' [tata]), the enclitic *la* (3rd person feminine object), and the sequence [wa] corresponding to orthographic <oi>, addressed in Section 2.1.5. In addition, the letter *A* is named [a] or [ɒ], depending on the speaker. The vowel [a] (or [æ]) is also a word-final allophone of /ɛ/, occasionally attested in the conversations, as in *était* 'was' [etɛ ~ eta]. Finally, word-final [ɔ] appears as an allophone of /ɒ/, as already noted (including [ɒ] corresponding to [a] in morphologically related forms, e.g., *chat* [ʃɒ ~ ʃɔ], *gras* [gRɑ ~ gRɔ]).

To complicate matters further, the raised and diphthongized realizations of the vowel /ɒ/ ([ɔ] and [ɒu]) are subject to some degree of social stigmatization. This manifests itself in the unstable pronunciation of /ɒ/, which may be fronted to [a] or even [æ], depending on the speaker and register. The variability in the pronunciation of /ɒ/ is well illustrated in the Trois-Rivières corpus, as some speakers show no tendency to front /ɒ/, while others produce instances of [a]~[æ], especially in the reading tasks and in word-final position. Thus the pronunciation of *rat* 'rat', *cadenas* 'lock' and other items in the wordlists ending in a low vowel ranges from [ɔ] to [æ] with several intermediate realizations. The same variability is observed in some non-final /ɒ/ as in *passant* 'passer-by', but less so in *râteau* 'rake' or in *pâte* 'dough'. The fronted realizations of /ɒ/ weaken the distinction with /a/ and may lead to cases of lexical reanalysis from /ɒ/ to /a/. The word *gazette* 'newspaper', for instance, is undergoing a shift from /gɒzɛt/ to /gazɛt/ and it was

7. The enclitic *le* is variably pronounced [le] or [lœ] in Laurentian French. The only example found in the Trois-Rivières conversations is actually [le].

pronounced with the traditional /ɒ/ by only three of the Trois-Rivières speakers in the complementary wordlist. The reasons for such lexical and contextual variation in the avoidance of variants of /ɒ/ are not entirely clear.

Before word-final /R/, oral vowels display a different neutralization pattern. Only [ɪ, ʏ, ʊ, ɜ, œ, ɔ, a, ɒ] appear (in their lengthened variants; see 2.1.3). High and mid vowels neutralize in favor of their lax version, with a strong tendency to also lose the opposition between /ɒ/ and /ɔ/ and, to a lesser extent, /ɒ/ and /a/.[8] The infinitive forms *gérer* 'manage', *libérer* 'free' and *serrer* 'press' in the complementary wordlist provide a nice illustration of the /e–ɛ–ɜ/ neutralization before final /R/. The unsuffixed form of these verbs is invariably realized with [ɜ]: *serre* [sɜːR], *libère* [libɜːR], *gère* [ʒɜːR]. After suffixation, however, the quality of the stem vowel varies between [ɜ], [e] and [ɛ]: *libérer* is produced with [e] by all 12 participants, *serrer* with [ɜ] by 11 of them, and *gérer* is more variable.[9]

The contrast between /ɒ/ and /ɔ/ before /R/ is at best weak and unstable. This confusion originates in the raised variants of /ɒ/, which reach the quality of [ɔ]. In contexts other than before final /R/, these raised variants do not lead to confusion between /ɒ/ and /ɔ/, for one of two reasons. In final open syllables, /ɒ/ is free to raise since /ɔ/ would surface as [o] in this position anyway. In other contexts, the clear length distinction between the two vowels – /ɒ/ surfaces as long and is often diphthongized while /ɔ/ is short, e.g., *mâle* 'male' [mɒːl] vs. *molle* 'soft.FEM' [mɔl] – keeps them apart. Before /R/, however, all vowels lengthen; this is in fact the only environment where long variants of /ɔ, œ/ are attested. Nothing reliably distinguishes [ɒː] from [ɔː] in their diphthongized or non-diphthongized variants, considering that not only does [ɒ] raise to [ɔ] but that the initial part of a diphthongized [ɔː] may also lower to [ɒ].

The /ɒ–ɔ/ confusion before /R/ is tested in the complementary wordlist by the minimal pair *port* 'port' and *part* 'part' (which appear next to each other in Walker's initial list; see Appendix). Only one participant did not distinguish between *part* and *port*; all the others produced a fronter and/or lower vowel in *part* (ranging from [æː] to [ɔː]). This pair, then, suggests that the /ɒ–ɔ/ distinction remains active before final /R/. However, this would be a misinterpretation of the

8. The other lengthening consonants /v, z, ʒ/ pattern differently and all vocalic contrasts are at least potentially maintained before them (see Côté 2010a).

9. The generalization of mid-low vowels before /R/ is a relatively recent process and mid-high vowels are still attested in conservative Laurentian varieties in a limited set of words, including *père* 'father' and *collège* 'college' with /e/, *beurre* 'butter' with /ø/ and *encore* 'again' and *dehors* 'outside' with /o/ (Morin 2009). *Père* /peR/ may then contrast with *paire* 'pair' /pɜR/. Both words, as well as *beurre* and *dehors*, were part of the complementary wordlist, but none was pronounced with a mid-high vowel in the Trois-Rivières corpus, even by the older speakers.

facts (see also Dumas 1987: 132). Most pronunciations of *part* sound unnatural: after producing *port*, speakers strongly tended to accentuate the distinction with *part* by failing to raise the vowel or by fronting it. This is confirmed by the other words ending in the sequences /ɔR/ and /ɒR/ scattered in the wordlists (the first four words in (5a) vs. *dehors* 'outside' and *Victor*). Despite the occasional fronting tendency that affects /ɒ/ in the reading tasks, it is clear that the final rimes of those words are hardly distinguishable.

The last issue in relation to neutralization before final /R/ is the merger in progress between /a/ and /ɒ/, nicely illustrated by the Trois-Rivières data. Laurentian French maintains a distinction between /a/ and /ɒ/ before final /R/. While /ɒ/ appears in most words (see a few examples in (5a)), /a/ is found in a small number of items, all listed in (5b) (see also Dumas 1987: 128, 139). The complementary wordlist includes five /a/-words (*bulgare*, *guitare*, *gare*, *démarre*, *prépare*), in contrast with four /ɒ/-forms (*homard*, *lézard*, *boulevard* in the complementary list, *fêtard* in the common list).

(5) a. /ɒ/-words: *homard* 'lobster'; *lézard* 'lizard'; *boulevard* 'boulevard'; *fêtard* 'reveler'; *bar* 'bar'; *art* 'art'; *phare* 'lighthouse';
b. /a/-words: *gare* 'station'; *guitare* 'guitar'; *cigare* 'cigar'; *bagarre* 'fight'; *tare* 'defect'; *bulgare* 'Bulgarian'; verbs in *-are*: *prépare* 'prepare', *accapare* 'monopolize', *démarre* 'start', *sépare* 'separate, *dépare* 'spoil', *compare* 'compare'

The Trois-Rivières data indicate a clear shift from /a/ to /ɒ/.[10] The /ɒ/-words are all consistently pronounced with the expected back vowel, while the /a/-words display an age-dependent pattern. The older speakers all have a front vowel, as does one of the young speakers (LL). The four remaining young speakers show an expansion of /ɒ/: in *guitare* and *gare* for all four speakers, in *bulgare* for MC and JG and in *prépare* for JG. This speaker seems to have completed the /a–ɒ/ neutralization before final /R/, as even *prépare*, arguably the most deeply entrenched /a/-form, has shifted to /ɒ/. Note that the direction of neutralization from /a/ to /ɒ/ is both natural and surprising. On the one hand, /ɒ/ is more common before final /R/; on the other hand, normative pressure favors fronted articulations for low vowels, but this pressure has not been sufficient to block or even reverse the direction of neutralization in this particular context.

10. Two female speakers, CL and AD, were excluded from the analysis, as their propensity to front all low vowels in the reading tasks made it impossible to reliably establish the place of articulation of the vowels. Also, one word – *démarre* – showed unsystematic variation across speakers and does not participate in a clear way in the shift.

2.1.5 *Rising diphthongs*

The segmental inventory of French typically includes three glides /j, ɥ, w/ in correspondence with the high vowels /i, y, u/. One interesting aspect of the phonology of French glides concerns the restriction on obstruent+liquid+glide sequences: high vowel gliding (6a) and schwa deletion (6b) are blocked if their application would yield such combinations.

(6) a. *cinquième* 'fifth' [sɛ̃kjɛm] vs.
quatrième 'fourth' [katrijɛm] *[katrjɛm]
b. *atteler* 'harness' [atle] vs.
atelier 'workshop' [atœlje] *[atlje]

It is well known that certain glide+vowel combinations escape this restriction and are allowed to surface after obstruent+liquid complex onsets, namely /wa, wɛ̃, ɥi/, with the addition of /wɒ/ in varieties that maintain the /wa–wɒ/ contrast, such as Laurentian French. Words exemplifying the marked obstruent+liquid+glide configuration are given in (7) with their Laurentian pronunciation.

(7) /wa/ *ploie* 'bend' [plwa] /wɒ/ *trois* 'three' [tRwɒ]
/wɛ̃/ *groin* 'snout' [gRwɛ̃] /ɥi/ *bruit* 'noise' [bRɥi]

One neglected issue in French phonology is whether these special glide+vowel combinations should be analyzed as independent diphthongs or as two-segment sequences. Their absence in conventional vocalic inventories of French indicates that a separate (phonemic) status for this series of rising diphthongs has not been endorsed. I argue otherwise, at least for Laurentian French, where three converging arguments reinforce the distributional evidence in (7): the different distribution of /wa, wɒ/ with respect to /a, ɒ/, the existence of patterns of alternation involving /wa, wɒ/ but not /a, ɒ/, and the marked status of [ɥ], which surfaces systematically only before [i]. [11]

As noted in 2.1.4, the opposition between /a/ and /ɒ/ is active in closed syllables but neutralized in favor of [ɒ] word-finally in Laurentian French (with the specific exceptions mentioned above). The diphthongs /wa/ and /wɒ/ are contrastive not only in closed syllables (8a), but also word-finally (8b). The complementary wordlist includes both minimal pairs in (8a) and the first pair in (8b); all participants produced the expected contrast.

11. The following discussion does not provide specific additional evidence for the independent status of /wɛ̃/, but its inclusion in the set of rising diphthongs in Table 2 is justified by the parallel distribution of /wa, wɒ, wɛ̃, ɥi/ in (7).

(8)	a.	/wa/	*poil* 'hair'	*boite* 'limp'	
		/wɒ/	*poêle* 'stove'	*boîte* 'box'	
	b.	/wa/	*boit* 'drink'	*Troie/Troyes* (cities)	*moi* 'me'
		/wɒ/	*bois* 'wood'	*trois* 'three'	*mois* 'month'

The only context where /a/ regularly occurs word-finally is thus in combination with /w/, where it is in fact much more frequent than /ɒ/. There is no tendency to turn these final /a/'s into [ɒ], as could be expected if the sequences /wa, wɒ/ were not independent from the corresponding low vowels.

Not only do /wa, wɒ/ have a distinct distribution, they are also subject to rules of allophonic variation that do not apply to /a, ɒ/. These diphthongs are associated with a remarkable range of realizations, well described in Picard (1974) and Dumas (1987): /wa/ and /wɒ/ surface as [wa, we, wɛ, e, ɛ, ɔ] and [wɒ, wɜ, we, ɜ], respectively (see Klingler & Lyche, this volume, for related comments in Cajun French). Such realizations tend to be perceived as sub-standard and, as such, are not expected to appear in a formal reading task. One item in the complementary list, however, succeeded in triggering four instances of [bwɜt] for *boîte* 'box' in the sequence *ferme ta boîte*, a familiar expression meaning 'shut up' (literally 'close your box'). The free conversation also offers [drwɛt] instead of [dRwa] for *droit* 'right' and numerous instances of [mwe] for *moi* 'me'. Note that the second part of the rising diphthongs (including the specific allophones of /wɒ/, i.e., [wɒ, wɜ, we, ɜ]) is also subject to lengthening and diphthongization, according to the general rules presented in 2.1.3. Diphthongization results in triphthongs, e.g., [wɒu] for /wɒ/ (e.g., *poêle* 'stove' [pwɒul]).

A third piece of evidence in favor of a distinct phonemic status for the exceptional glide+vowel combinations in (7) concerns the behavior of [ɥ]. This glide surfaces categorically only before [i] in Laurentian French; it is marked before other vowels, where dieresis is the norm for /y+V/ sequences. The wordlists contain 39 occurrences of the orthographic sequence <ui> per speaker, systematically pronounced [ɥi]: 34 repetitions of *huit* 'eight' (in the numbers introducing each item) and five other words (*enduit* 'coated', *tuile* 'tile', *minuit* 'midnight', *cuillère* 'spoon', *étui* 'case'). In contrast, the word *muette* 'dumb.FEM' in the common wordlist is produced in two syllables by all Trois-Rivières speakers [myɛt]. A quick look at items with <u> followed by another vowel in the conversation confirms the prevalence of dieresis (e.g., *situation* 'situation' [sitˢyasjɔ̃], *sensuel* 'sensual' [sɔ̃syɛl], *habitué* 'used' [abitˢye]). In other words, only [ɥi] functions as a unit.

Table 4. Consonants

	Labial	Labio-dental	Dental	Alveolar	Alveo-palatal	Palatal	Velar	Uvular
Stops	p b		t d				k g	
Fricatives		f v		s z	ʃ ʒ			
Nasals	m		n			ɲ		
Lateral				l				
Rhotic				(r)				(ʁ)

2.2 Consonantal system

2.2.1 *Segmental contrasts*

The consonantal inventory of Laurentian French in Table 4 is unexceptional and corresponds to that standardly posited for French.

Two points deserve further discussion. One will first notice the absence of the velar [ŋ] in the nasal series. This may appear surprising given that the hypothesized introduction of this segment in French has always been associated with English borrowings ending in *-ing*. Given the proximity of the two languages in the North American context, the velar nasal could be expected to be contrastive in the Laurentian system more than in almost any other variety of French. The issue here is simple: the dorsal nasal, which surfaces as the palatal [ɲ] in prevocalic position (e.g., in *baignoire* 'bathtub', *compagnie* 'company' and *gnôle* 'hooch'[12] in the common wordlist), is generally velarized to [ŋ] in coda position in Laurentian French, including, of course, word-finally (Brent 1971:61; Walker 1984). There is therefore no possibility of establishing a contrast between French and English words in the place of articulation of the final dorsal consonant. Indeed, the wordlists contain words of both types: *compagne* 'companion.FEM', *souligne* 'underline' and *Bourgogne* 'Burgundy' vs. *meeting*, *pouding* 'pudding' and *building*. The velar [ŋ] is dominant and the palatal [ɲ] occurs only in a few realizations, interestingly in both the French and English sets. Note that this general feature of Laurentian French appears to apply in all regions, including those with no or marginal contact with English. This does not support the hypothesis that velarization has its direct source in the English /ŋ/.

But arguably the most interesting aspect of this inventory concerns the place of articulation of the rhotic. The Laurentian domain is traditionally divided into two areas with respect to the realization of /R/: dorsal in the eastern part, centered

12. The word *gnôle* is unknown to Laurentian speakers, but an initial palatal nasal appears in the local word *gnochon* 'stupid' [ɲɔʃɔ̃].

around Quebec City, and apical in the Western part, centered around Montreal. The apical/dorsal distinction itself masks a variety of specific articulations, that stand in free, contextual or speaker-dependent variation (taps, trills, fricatives). In coda position, however, rhotics are regularly vocalized or deleted, without clear differences between the two dialectal areas. In some borrowings, /R/ may also be produced in an English-like manner, a feature that displays individual, lexical and geographical variation. See Tousignant (1987) for a description of /R/ in Montreal French.

Trois-Rivières is situated midway between Montreal and Quebec City, at the boundary between the two dialectal areas; see the isogloss in Dulong & Bergeron (1980: vol. 1, 31), which crosses Trois-Rivières. Further investigation, however, suggests that it belongs to the apical area. In what can be considered the first attempt in 1941 at a synthesis of geographical variation in the French spoken in Quebec, Father Laurent Tremblay situated the dividing line between the two rhotic zones 25 or 30 miles north of Trois-Rivières, commenting that Trois-Rivières people speak like Montrealers (Verreault & Lavoie 1999). Vinay (1950) also put the Mauricie region in the apical area and this is confirmed by Deshaies-Lafontaine's (1974) corpus of Trois-Rivières speech.

The apical rhotic, however, is rapidly losing ground and replaced by the back [ʁ], now clearly considered to be the standard articulation in Quebec, as it is in FR. This shift has been amply documented in Montreal (Clermont & Cedergren 1979; Santerre 1979, 1982; Cedergren 1985; Tousignant 1987; Tousignant et al. 1989; Sankoff et al. 2002; Blondeau et al. 2002; Sankoff & Blondeau 2007). But the proximity of Trois-Rivières to the dorsal area raises an interesting question regarding the transition between the two articulations: did it start or reach completion earlier than in other parts of the apical area?

The proportion of apical and dorsal /R/ in prevocalic position was evaluated for each speaker in the Trois-Rivières survey, based on five minutes of free conversation. The six younger speakers, born between 1986 and 1989 (aged 21–24), all categorically produce dorsal rhotics. The remaining six participants, born between 1931 and 1958 (aged 52–79) have a proportion of apical rhotics ranging from 3% to 100%, as summarized in (9).[13]

(9) One essentially "dorsal" speaker: CL (3%)
Three mixed speakers: CC, HD, WD (18–31%)

13. Note that the three women (CL, CC, HD) have a clear majority of dorsal consonants, suggesting, as expected, that women have led this change from above toward the standard dorsal rhotic (e.g., Sankoff & Blondeau 2007).

One essentially "apical" speaker: JB (91%)
One categorically "apical" speaker: BP (100%)

The small number of speakers does not allow us to draw firm conclusions on this issue, but the available data from the PFC survey and Deshaies-Lafontaine (1974) do not provide any indication that Trois-Rivières followed a path distinct from Montreal (Côté & Saint-Amant Lamy 2012).

2.2.2 *Allophonic processes*

The Trois-Rivières survey reveals some allophonic processes involving consonants. The most characteristic or frequent ones are mentioned below; see Walker (1984) for additional patterns, the presence of which in this corpus remains to be determined.

Any description of the Laurentian French consonantal system emphasizes the assibilation (or affrication) of /t, d/ to [tˢ, dᶻ] before high front vowels, diphthongs and glides /i, y, ɥi, j, ɥ/ (10). Assibilation is categorical inside words, including in the formal reading tasks.

(10) *tige* 'stem' [tˢiːʒ] *tube* 'tube' [tˢʏb]
dieu 'god' [dᶻjø] *tuile* 'tile' [tˢɥɪl]

There are, however, a few lexical exceptions, all English borrowings. Three such words are part of the complementary wordlist; *building* and *meeting* were produced with an unaffricated stop by all 12 participants, but *pouding* 'pudding' seems to be shifting toward affrication, as five of the six younger speakers applied it.

At word and clitic boundaries, the behavior of assibilation is unclear. According to Walker (1984), it is generally variable across clitic boundaries and within compound words, but absent at non-clitic word boundaries. The complementary wordlist, which includes sequences of /t, d/ followed by /i/ across different types of boundaries, offers a different picture. Affrication is categorical within compounds (e.g., *Sept-Îles*, a town in Northern Quebec) and variable elsewhere; it is more frequent across a clitic boundary (11a) than across a non-clitic word boundary (11b), the rates of affrication being respectively 75% (27/36) and 39% (11/28).

(11) a. *pas d'idée* 'no idea' *ça t'isolait* 'it isolated you'
b. *sept idées* 'seven ideas' *cet isolement* 'this isolation'

Another process involving /t, d/ and not mentioned, as far as I know, in other references on the phonology of Laurentian French, is the tapping of prevocalic /t, d/. The contextual conditions of this process are not entirely clear, but it seems to apply in antepenultimate syllables (or earlier) following a long vowel. Tapping is most notable in numbers formed with *soixante* 'sixty' followed by *et* (given

the prevocalic application of tapping), e.g., *soixante-et-onze* 'seventy-one, literally sixty-and-eleven' [swasɒ̃ːɾeɔ̃ːz]. *Et* surfaces obligatorily before *un* and *onze* and also variably in Laurentian French before other numbers (cf. *soixante-deux* ~ *soixante-et-deux* 'sixty-two'). In the Trois-Rivières corpus, tapping is observed in the speech of older male speakers (BP, JB, WD), especially BP, who inserts *et* in all numbers formed with *soixante* and who taps quite regularly in this context. A more complete investigation would be required to determine the contextual and sociolinguistic conditioning of tapping.

Voicing assimilation applies regressively within obstruent clusters (e.g., *médecin* 'doctor' [mɛtsẽ]) and triggers sonorant devoicing in the context of a voiceless obstruent (e.g., *socialisme* 'socialism' [sɔsjalɪsm̥], *meurtre* 'murder' [mœχtχ]). More characteristic is the nasalization of voiced stops followed by a nasal consonant (12a) or preceded by a nasalized vowel (12b). Nasalization is blocked if the stop is part of a stop-liquid cluster, but it is applicable after deletion of the liquid (12c). The data in (12) are taken from the complementary wordlist.

(12) a. *cadenas* 'lock' [kadnɒ ~ kannɒ]
b. *seconde* 'second' [sœgɔ̃d ~ sœgɔ̃n]
c. *épingles* 'pin' [epɛ̃gl ~ epɛ̃g ~ epɛ̃ŋ]

Other processes concern the variable pronunciation of consonants in word-final position and in clitic pronouns and determiners. First, a sizable class of vowel-final words in Standard French are variably pronounced with a final [t] in Laurentian French (Pupier & Grou 1974). This process is well attested across Canada and the United States, as confirmed by all the North American chapters in this volume, but eventual differences between the relevant varieties in the lexical distribution or conditioning of this phenomenon remain to be established. The Trois-Rivières data contain several words ending in a variable [t], including those in Table 5, listed with the number of tokens pronounced with and without the consonant in the entire free conversations. The word *fait* takes an optional final [t] as a noun ('fact'), in particular in the expression *en fait* 'in fact', and as a past participle ('done'), but not as a present tense form ('does'). These contexts pattern differently and are considered separately. Both *tout* and *tous* may be pronounced [tʊt], like the feminine *toute(s)*, resulting in gender and number neutralization. *Tout*, however, is a complex item and not all of its uses are compatible with the form [tʊt]. A detailed analysis of *tout* being beyond the focus of this paper, the numbers in Table 5 only concern *tous* (which can always be pronounced [tʊt]).

Such final [t]'s tend to be avoided in careful speech and my sense is that they are globally on the decline (see also Pupier & Grou 1974: 60). But each word follows its own path along the transition from the [t]-full to the [t]-less form. The form [isɪt] for *ici*, for instance, is not part of the repertoire of all speakers (all

Table 5. Words ending in variable [t]

			Without [t]	With [t]
bout	[bu ~ bʊt]	'tip, end, piece'	9	13
ici	[isi ~ isɪt]	'here'	44	8
droit	[dRwa ~ dRwɛt]	'right (adjective or adverb)'	0	1
tout/tous	[tu ~ tʊt]	'every, all'	15 (*tous*)	42 (*tous*)
fait	[fɛ ~ fɛt]	'fact (noun)'	4	4
		en fait 'in fact'	4	22
		'done (past participle)'	40	216

instances in the corpus come from two participants), but [fɛt] for *fait* is still the more common form, although one may certainly detect a recent tendency for some speakers to favor the vowel-final variant.

Word-final cluster reduction occurs in all varieties of French, as other PFC surveys abundantly illustrate; however, it appears particularly frequent in Laurentian French (see Côté 2004 for a detailed description and analysis). The proportion of simplified clusters in the schwa-coded portion of the conversations approximates 65% of all final clusters (256/395), substantially higher than 34% (3,927/11,684) for the entire PFC corpus. In the read text, the rate of simplification of final clusters drops considerably (27%) but remains higher than in the rest of the PFC corpus (20%). One factor favoring cluster simplification in Laurentian French relates to the behavior of schwa, to which we turn in Section 3.

In determiners and pronouns, /l/ is subject to variable gemination or elision (e.g., Bougaïeff & Cardinal 1980; Poplack & Walker 1986; Picard 1990). Gemination applies to the initial /l/ of the object pronouns *le* 'him' and *la* 'her' in intervocalic position. The complementary wordlist contains the sequence *je l'ai vu* 'I have seen him/her', where the initial /l/ is clearly geminated by half of the speakers [ʒœllevy]. The conversation yields a similar proportion of gemination in the sequence *je l'V*, where V stands for any vowel-initial verb. The example in (13a) exemplifies the variability of the process, as AD produces in the same passage the sequence *je l'avais croisé* with and without gemination (in the latter case the schwa of *je* is also omitted). The example in (13b) illustrates gemination after a word other than *je*.

(13) a. *Je pense je l'avais* [ʒœllavɛ] *croisé, j'étais allée au salon du livre pis je pense je l'avais* [ʒlavɛ] *croisé* (AD)
'I think I had come across him, I had gone to the book fair and I think I had come across him'

b. *on l'était* [ɔ̃lletɛ] *pas* (WD)
'we were not (it)'

The deletion of /l/ in *il* 'he' is quasi-systematic, including before vowel-initial words: *il* alternates between [i] before a consonant and [j] before a vowel (14a). *Elle* 'she' is more variable: its traditional and dominant pronunciation [a] before consonants and [a]~[al] before vowels is rivaled, especially in a more careful register, by [ɛ] and [ɛl] (14b).

(14) a. *il* [i] *savait* 'he knew'
il [j] *avait* 'he had'
b. __C *elle* [a] *peut* 'she can'
elle [ɛ] *pourrait* 'she could'
elle [ɛl] *fait* 'she does'
__V *elle* [al] *aime* 'she likes'
elle [a] *allait* 'she went'
elle [ɛl] *est* 'she is'

A richer aspect of /l/ in clitics concerns its variable deletion in the definite articles and object pronouns *la* 'her/the.FEM' and *les* 'them/the.PLUR'. Deletion is applicable when the clitic is preceded by a vowel-final word and followed by a consonant-initial word, as in (15).

(15) a. *tu as compris la* [kɔ̃pχia] *culture* (JG)
'you have understood the culture'
b. *qui les* [kje] *suit* (MC)
'that follows them'

This process of /l/ deletion is uncommon in this corpus, but more frequent in specific preposition+article and subject+object pronoun combinations. Baronian (2006) has argued that contracted preposition+article forms arising from /l/ deletion and subsequent vowel fusion are lexicalized; the same conclusion holds for pronoun sequences. The relevant combinations are presented in Table 6; they involve the prepositions *sur* 'on' (first line), *dans* 'in' (second line) and *à* 'at, to' (third line)[14] and the subject pronouns *je* 'I' (fourth line), *tu* 'you' (fifth line), *il/ils* 'he, they' (sixth line) and *elle* 'she' (seventh line).[15] The first column gives the different variants of each combination, in order of increasing contraction; /l/ deletion in *la*/*les* interacts here with a number of other reduction processes: final /R/ deletion in *sur*, schwa deletion in *je*, prevocalic /y/ deletion in *tu*, final /l/ deletion in *il(s)*

14. *À le* and *à les* are not possible sequences since they were historically reduced to *au* and *aux*, respectively, both /o/.

15. This table omits combinations with the subject pronouns *on* 'we, one', *vous* 'you.PL' and *ça* 'this', which do not give rise to further reduction or merger after /l/ deletion, e.g., *on la* [ɔ̃la ~ ɔ̃a] and *on les* [ɔ̃le ~ ɔ̃e].

Table 6. Preposition+article and subject+object pronoun combinations

sur la [sʏRla ~ syla ~ sya ~ saː]	*sur la rue* 'on the street' [sylaʁy] (HD)
sur les [sʏRle ~ syle ~ sye ~ seː]	*sur les genoux* 'on the knees' [syeʒnu] (BP)
	sur les profs 'on the profs' [seːpχɔf] (JG)
dans la [dãla ~ dãa ~ dãː]	*dans la lune* 'in the moon' [dãːlʏn] (CC)
dans les [dãle ~ dãe ~ dẽː]	*dans les écoles* 'in the schools' [dãezekɔl] (JG)
	dans les deux cas 'in the two cases' [dẽːdøkɔ] (LL)
à la [ala ~ aː]	*à la messe* 'at the mass' [aːmɛs] (WD)
je la [ʒœla ~ ʒla ~ ʒa]	*je la frappe* 'I hit her' [ʒafχap] (BP)
je les [ʒœle ~ ʒle ~ ʒe]	*je les connais* 'I know them' [ʒekɔnɛ] (MC)
tu la [tyla ~ tya ~ ta]	*tu la mets* 'you put her' [tamɛ] (JB)
tu les [tyle ~ tye ~ te]	*tu les changes* 'you change them' [teʃɔ̃ʒ] (CL)
il(s) la [illa ~ ila ~ ja]	*ils les accrochent* 'they hang them' [jezakχɔʃ] (SB)
il(s) les [ille ~ ile ~ je]	
elle la [ɛlla ~ ala ~ aː]	
elle les [ɛlle ~ ale ~ ae ~ ɛː]	

and *elle*, and vowel coalescence. The second column includes examples with /l/ deletion taken from the Trois-Rivières conversations.

3. Schwa

Schwa in Laurentian French functions globally as in other varieties of Northern France, in which three preferential contexts for its realization have been identified: (1) when preceded by two (or more) consonants and followed by one (or more) consonant (16a) – the famous *loi des trois consonnes* ('law of the three consonants', hereafter LTC; Grammont 1894); (2) when preceded by a phrase-initial consonant (16b); (3) between a consonant and a liquid+glide sequence (16c).

(16) Preferential contexts for the realization of schwa:
  a. CC_C
  b. ##C_
  c. C_LG

Deviations from this pattern correspond either to the omission of schwa in contexts where its realization is expected (16), or to the pronunciation of schwa elsewhere (when preceded by only one phrase-internal consonant and in non-preconsonantal position). In Laurentian French, both types of deviation are well attested, but it is clear that this variety leans toward a more economical use of

schwa. The discussion below is based on six minutes of speech per speaker (three in the guided conversation and three in the free one), for a total of 72 minutes and 2,530 contexts. The different categories of schwa – in monosyllables and in initial, internal and final syllables – are considered separately, as they exhibit quite distinct patterns of realization and omission.

When it is pronounced, schwa has the quality of [œ]. Martin (1998) has shown that schwa is not perceptually different from [œ] in Quebec City French, and Séguin (2010) extends this conclusion to the acoustic level, with a wider set of Laurentian French speakers. The identity between schwa and [œ] matches native speaker intuitions. Although no experimental study of the Trois-Rivières data has been performed, there is no reason to suggest different results for schwa in this corpus.

The surface quality of schwa leads to its phonological status. This issue will not be discussed in depth here since it has no direct bearing on the surface distributional properties of schwa, the focus of this section. The underlying or epenthetic nature of schwa is debated (see Côté & Morrison 2007 for a discussion of the different options), but the consensus is that at least morpheme-internal schwas must be lexically encoded. Concerning the identity of the underlying vowel, however, I depart from the tradition and consider that schwa is not a distinct phoneme in (Laurentian) French: vowels conventionally transcribed as schwa or [œ] are all expressions of the phoneme /œ/ (see Côté 2008). Hence the absence of schwa in the vocalic inventory in Section 2.1. The distinguishing characteristic of schwa is its instability in non-final syllables (including proclitics), but even in identical segmental and prosodic contexts, different words exhibit different deletion patterns, without a categorical distinction between stable /œ/'s and unstable schwas. I assume that non-final /œ/'s appearing in contexts compatible with deletion are lexically marked with a deletability index ranging from 0 (stable vowels) to 1. However, I continue to use the word "schwa" to refer to variable /œ/'s.

Word-internal schwas systematically follow the basic pattern in (16). Schwa is omitted after only one consonant (e.g., *sûr(e)ment* 'surely', *crèm(e)rie* 'shop selling dairy products'), with only three isolated exceptions. It is systematically realized after two consonants (e.g., *just<u>e</u>ment* 'rightly', *gard<u>e</u>rie* 'day-care center') and before liquid+glide sequences (e.g., *Dav<u>e</u>lyuville* (village in Quebec); *bach<u>e</u>lier* 'bachelor'), with three apparent exceptions that in fact illustrate a regular process in verbal conjugations in Laurentian French. Schwa is normally omitted in future and conditional forms of verbs of the first conjugation (verb stems+*r*V, where V ∈ {e, ɛ, ɒ, ɔ̃}[16]), including with verb stems ending in two consonants (e.g., *rest(e)rais*

16. Schwa is maintained before the 2nd plural conditional ending *-riez* [rje], as before other liquid+glide sequences, e.g., *aim<u>e</u>riez* [ɛmœrje].

'would stay' [ʁɛstχɛ]; *retourn(e)rais* 'would return' [ʁœtuʁnʁɛ]). Schwa omission even applies after verb stems ending in an obstruent+liquid cluster, as in *entr(e)ra* 'will enter' [õtχɔ], where the absence of schwa also triggers deletion of the stem-final rhotic. To the extent that liquid deletion in obstruent+liquid clusters and schwa omission regularly apply word-finally but not medially, this stem-suffix boundary appears to function like a word boundary.

Final syllables also display a very regular pattern, but a different one from internal syllables. Schwa is essentially excluded word-finally in conversational speech, irrespective of the number of preceding consonants. In VC#C contexts, unsurprisingly, no final schwas appear: in over 1,200 tokens, only two are coded as realized schwas and these are clear cases of hesitation. This absence extends to the CC#C environment, contrary to the prediction of the LTC. Out of 223 CC#C combinations, only six contain an intervening schwa; consonant sequences occurring at word boundaries are either produced in full or simplified by the deletion of one (or more) word-final consonants.[17] Only the very small set of words in (17), excluded from the preceding count, escapes this generalization and triggers regular schwa insertion, categorically in (17a–b), variably in (17c).[18] In the latter case, schwa even appears in prevocalic position in *n'importe̲ où* 'anywhere' [nɛ̃pɔRt(œ)u].

(17) a. *presque* 'almost'
b. *quelque(s)* 'some' (in particular in *quelque chose* 'something')[19]
c. *n'importe* 'any' before *quand*, *comment*, *qui*, *quoi*, *quel*, *où*, *combien*

The absence of word-final schwas holds phrase-internally and finally. The occurrence of pre-pausal schwas has been well documented in European varieties of French (e.g., Hansen 1997; Carton 1999; Fagyal 2000), but this phenomenon is not characteristic of Laurentian French. In 596 pre-pausal contexts in the schwa-coded portion of the conversations, only five schwas were reported, interestingly all in the guided conversations.

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17. The absence of schwa at word boundaries in conversations does not extend to the read text, where schwa is present in 29% of CC#C contexts (and in seven out of 1,280 VC#C contexts).

18. To this short list of words one could add compounds formed with *que*: *parce que* 'because' and *est-ce que* (interrogative particle). These forms clearly behave as units, but their final schwa appears to pattern like those in monosyllables. Note that the internal schwa in *parce que* is also systematically omitted; this item was excluded from the analysis of the behavior of schwa in internal CC__C contexts.

19. Unlike *presque* and *n'importe*, the pronunciation of *quelque(s)* with the final cluster belongs to a formal or careful register. The more colloquial (and much more frequent) form is [kɛk]~[kœk], with no final cluster and no motivation for final schwa insertion.

Schwas in monosyllables are more variable and give rise to a significant proportion of realized schwas after one consonant and omitted schwas after two consonants and in phrase-initial syllables. In the environment V#C_#C, one in five monosyllables is realized with schwa (130/543). Around the same proportion of schwas are unexpectedly omitted in C#C_#C contexts (50/268), as illustrated in (18a–b). In phrase-initial syllables, schwas are absent in a proportion of 1/3 (18c) (59/172).

(18)	a.	*ça fait que je voyais* ‘it followed that I saw’	[safɛkʒvwajɛ]	(LC)
	b.	*eux-autres se sont dit* ‘they told themselves’	[œzotssɔ̃dᶻi]	(LL)
	c.	*je vas y penser* ‘I will think about it’	[ʒvɔipãse]	(JB)

Schwas in initial syllables display similar tendencies as monosyllables, although the corresponding proportions are more difficult to interpret, since many vowels coded as initial-syllable schwas are variable in the standard variety but stable in Laurentian French (e.g., *religion* ‘religion’, *secondaire* ‘secondary, specifically in *école secondaire*’; see Côté (2009) about schwa in initial syllable in Laurentian French). These vowels are not schwas in the sense of deletable vowels and their realization is therefore not subject to the generalizations in (16).

Schwas in monosyllables and initial syllables also pattern alike in allowing so-called metathesis, whereby schwa appears to the left of the word-initial consonant rather than to its right, in post-consonantal or phrase-initial contexts. Metathesis is considered quite characteristic of Laurentian French; it is not frequent in the Trois-Rivières corpus but the coded portion of the conversation does offer a nice range of examples, involving *le* ‘the.MASC’ (19a), *je* ‘I’ (19b) and a *re*-initial verb (19c), the three preferential contexts for metathesis.

(19)	a.	*le guide*	‘the guide’	[œlgɪd]	(JB)
	b.	*je trouve ça*	‘I find that’	[œʒtχuːvsɔ]	(WD)
	c.	*juste regarder*	‘only look’	[ʒʏsœʁgaʁde]	(LL)

Laurentian French can be globally characterized as a schwa-avoiding variety. Two factors largely contribute to reducing the number of realized schwas, in comparison with the rest of the PFC database. First, when one considers that 26% of all realized schwas in the PFC database occur in final syllables (this proportion is identical in a northern area like Île-de-France), the absence of word-final schwas in Laurentian French has a considerable effect on the total number of schwas. Second, in non-final syllables, deviations from the ideal distribution predicted by the LTC are shared roughly equally in Trois-Rivières between “extra” schwas (realized

when the LTC predicts their omission) and "missing" schwas (omitted when the LTC predicts their realization). In the whole PFC corpus, as well as in the Île-de-France region, "extra" schwas largely outnumber "missing" ones.

4. Liaison

Liaison does not generally display massive dialectal variation and Laurentian varieties obey the main rules and tendencies observed elsewhere. Nevertheless, the Trois-Rivières survey uncovers a number of interesting specificities of liaison in Laurentian French and potential ambiguities in its analysis. The liaison-coded portion of the corpus contains 1,647 potential liaison sites and 660 realized liaison consonants: 297 [n], 221 [z], 139 [t], 2 [r], and 1 [p]. In addition to this standard set of liaison consonants, Laurentian French adds [l], which is attested in the non-coded portion, as we will see below.

Contexts of categorical and variable liaison in conversational French are listed in (20) and (21), respectively, putting aside liaison in compounds and fixed phrases (Durand & Lyche 2008; Côté 2011). The variable contexts appear in order of decreasing frequency, to the extent that a hierarchy can be extracted from the considerable category-internal variation. Liaison consonants are indicated between brackets in the orthographic representation, the absence of liaison with |.

(20) Contexts of categorical liaison
  a. Clitic pronoun + Clitic/Verb
     on [n]*en* [n]*avait* 'one had some'
  b. Verb + Clitic pronoun
     allez-[z]*y* 'go there'
  c. Determiner + Noun/Adjective
     les [z]*os* 'the bones'

(21) Contexts of variable liaison
  a. Adjective[20] + Noun
     belles ([z])*images* 'nice images'
     gros ([z])*outil* 'big tool'
  b. Preposition + X
     dans ([z])*une cage* 'in a cage'
     Conjunction + X
     quand ([t])*on veut* 'when one wants'

20. Adjectives include indefinite and interrogative adjectives and numerals.

	Adverb + X	
	mieux ([z])*habillé*	'better dressed'
c.	Verb + X	
	est ([t])*unique*	'is unique'
	venez ([z])*ici*	'come here'
d.	Noun-PL + Adjective	
	amis ([z])*islandais*	'Icelandic friends'

The contexts in (20) also essentially trigger categorical liaison in Trois-Rivières, with some qualifications concerning proclitics (20a). First, the subject pronouns *on* 'we, one' and *ils* 'they' have been described as triggering variable liaison in Laurentian French (Ameringen 1977; Ameringen & Cedergren 1981; Tousignant 1978; Tousignant & Sankoff 1979; De Jong 1993). Most speakers omit liaison categorically with *ils*, as was the case historically in general French. Only upper-class speakers may use liaison in [z], a reflection of normative pressure favoring liaison with *ils*. The coded portion of the conversations – ten minutes per speaker – includes 66 instances of *ils* before vowel-initial verbs. Only BP variably inserts a liaison [z] and the remaining speakers invariably omit liaison, as in *ils* | *allaient* 'they went' [jalɛ] (which is homophonous with *y allaient*).

Unlike liaison with *ils*, liaison with *on* is taken to be variable for most speakers. The Trois-Rivières coded data, however, offer only one token of *on* without the liaison [n], out of 152: *on* | *y va* 'we go there' (HD). A single isolated example does not suffice to confirm the variability of liaison with *on*, but the naturalness of this example for Laurentian speakers suggests that something more subtle is going on. Indeed, the entire free conversations (not only the portions coded for liaison) yield eight instances of *on y*, five of them without the liaison [n]. We lack sufficient corpus data to adequately identify the locus of variation in liaison with *on*, but speaker judgments suggest that the absence of liaison is particularly favored before the proclitic *y* [i].

One last comment on preverbal clitics concerns the existence of liaison in [l] after *ça* 'this' and *elle* 'she'. The [l] appearing with *elle* is usually taken to be a stable word-final consonant, but in a system where it alternates between [a] before consonants and [a ~ al] before vowels, as in Laurentien French, the [l] effectively functions like a liaison consonant. This pattern has been extended to the clitic *ça*, always pronounced [sa] before consonants and alternating between [sa] and [sal] before vowels (Morin 1982). Here is an example with [l], analyzed as a liaison consonant: *ça* [l] *a juste* 'it has just' (BP).

The contexts in (20b–c) are more straightforwardly categorical. The coded sections contain more than 150 instances of prenominal determiners and, apart from a single odd example (*mon* | *ordi* 'my computer' (AD)), liaison fails to surface

only before h-*aspiré* words: *homard* 'lobster' and letter names (*X*, *i grec*, *iPod*, *iPhone*, *mp3*).

Prenominal adjectives (21a) are traditionally considered to trigger obligatory liaison, but corpus studies have established the variability of liaison in this context. The Trois-Rivières survey is consistent with this quasi-categorical characterization of the adjective+noun context. Liaison is systematic in the coded portion of the conversations (if we except the one case of *jeunes* | *Européens* 'young Europeans' with a pause between the two words). Adjectives after which liaison is attested include: *petit* 'petit', *premier* 'first', *bon* 'good', *fameux* 'famous', *plein* 'full', *quelques* 'some', *deux* 'two', *trois* 'three', *six* 'six', *dix* 'ten', various plural adjectives (e.g., *jeunes* 'young', *grandes* 'tall.FEM', etc.). The coded portion even contains two examples of so-called epenthetic liaison consonants in adjective+noun contexts: *super* [z] *emplois* 'super jobs' (LL) and *vrai* [t] *investissement* 'real investment' (JG). But the rest of the free conversations contains at least one example where liaison fails to apply after a prenominal adjective: *premiers* | *épisodes* 'first episodes' (MC).

Prenominal numerals deserve a couple of specific comments. First, *six* and *dix* display an alternation between [siz]/[dᶻiz] and [sɪs]/[dᶻɪs] before vowel-initial words. The first variant corresponds to the preconsonantal form [si]/[dᶻi] with liaison [z], while the second variant generalizes the pre-pausal form [sɪs]/[dᶻɪs] (with high vowel laxing in closed syllables). This alternation is heavily conditioned by the following noun. Before *ans* 'years' and *heures* 'hours', only the tense vowel+liaison forms appear acceptable, and all the relevant tokens in the corpus indeed contain the [iz] sequence. Before other nouns, both forms are possible (e.g., *six* [siz] *enfants* 'six children' (HD); *dix* [dᶻɪs] *étudiants* 'ten students' (JG)). The complementary wordlist also contains the sequence *six étuis* 'six cases', produced with a liaison [z] by three speakers and with the prepausal form by nine participants (with enchaînement between the final [s] and the following vowel).

Second, in some spoken varieties of French, including Laurentian French, liaison in [z] may extend by analogy to all numerals, beyond those for which the norm commands it (i.e., *deux* 'two', *trois* 'three', *six* 'six', *dix* 'ten'). The Trois-Rivières conversations do not offer any such examples (and in fact contain few potential examples with nouns other than *ans* and *heures*). But the complementary wordlist includes *100 épaves* 'hundred wrecks', *20 épingles* 'twenty pins', *trente innocents* 'thirty innocent people' and *sept idées* 'seven ideas' (20 and 100 are written in numbers, to avoid spelling effects), which display cases of analogical plural [z].

FR commands liaison in [t] after *vingt* and *cent*, but three outputs are attested: the standard liaison in [t], the analogical liaison in [z] and no liaison. *Trente* and *sept* end in a stable [t], giving rise to two different pronunciations before vowel-initial words: with and without a liaison [z] (enchaînement between the final [t] and the following vowel is expected if liaison fails to apply). The analogical [z]

accounts for half of the productions with *20* and *100* (respectively produced by five and seven of the twelve participants); the rest of the productions were divided between liaison in [t] (five after *20*, two after *100*) and no liaison (two after *20*, three after *100*). In comparison, only one analogical [z] was produced after *trente* and none after *sept*. The obvious relevant difference between the two pairs of numbers concerns their final segment: [z] is favored only with numbers ending in a vowel.[21] This generalization is consistent with what I have observed with other numbers in Laurentian French and it suggests that the extension of [z] is conditioned by the nature of the preceding segment.

The category in (21b) – prepositions, conjunctions and adverbs – is, as in any other variety of French, a very mixed bag. The liaison-coded sections of the conversations display categorical liaison with *en* 'in' (87 tokens), *très* 'very' (7 tokens), *bien* 'well' (2 tokens) and *rien* 'nothing' (1 token); for *bien* and *rien*, however, the number of tokens is too small to draw any conclusions. Liaison is variable after *quand* 'when', *dans* 'in', *chez* 'at someone's place' and *plus* 'more'.[22] A closer look at *chez* suggests, however, that it tends to behave categorically: liaison is systematic in the sequence *chez eux/elle* 'at their/her place' (*chez* | *eux* is not acceptable) but normally excluded outside of this restricted context, as in *chez* | *un autre ami* 'at another friend's place' (HD) and *chez* | *un Walmart* 'at a Walmart' (LL). *Quand* appears in some cases with a final [t] before a consonant-initial word (e.g., *quand* [t] *les gars étaient là* 'when the guys were there' (WD)). While such forms are often analyzed as exceptional cases of preconsonantal liaison, Morin (1990) shows that this is not the case and that the conjunction *quand*, which never appears at the pause (unlike the interrogative pronoun), simply allows two pronunciations in all contexts: [kã] and [kãt].[23]

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21. Another difference between *20/100* and *sept/trente* is that only the latter were represented orthographically in the reading list, which could more strongly block [z] insertion. The spelling factor cannot be entirely dismissed but I doubt it plays more than a marginal role. The proportions reported above may not accurately reflect the degree of generalization of [z] with numerals in spontaneous speech, as [z] was certainly to some extent avoided in the reading task. But there is a clear sense that [z] is the norm with *vingt* and *cent* but not with the consonant-final numbers.

22. *Moins* 'less' appears only once, without liaison, but liaison is also possible. *Pas* 'not' and *beaucoup* 'very much' are found once with liaison in [z] and [p], respectively. Such forms are exceptional and the *pas* example is a clear case of style shift, as indicated by the use of *ne*: *Watergate n'est pas* [z]*un scandale à propos de l'eau* 'Watergate is not a scandal about water' (LL).

23. Cases of [t d] insertion in the locutions *de ça* 'of this' [dœtsɒ] and *de là* 'of there' [dœdlɒ] cannot be considered instances of preconsonantal liaison. Such forms are frequent in Laurentian French.

Tout 'all' raises a number of difficulties in the interpretation of liaison, in addition to its complex status as an adjective, pronoun and adverb. As noted earlier in Section 2.2.2, *tout* is one of those words whose final [t] is variably pronounced, even in non-liaison contexts. The appearance of a [t] between *tout* and a vowel-initial word is therefore ambiguous between a stable final consonant and a liaison consonant. One diagnostic of the status of [t] is the quality of the preceding high vowel: high vowels lax before (stable) word-final consonants, as seen in 2.1.2, but they do not before liaison consonants (see Côté 2010b). Both vowel qualities are attested, e.g., *tout* [tut] *est compris* 'everything is included' (HD) vs. *tout* [tʊt] *est mort* 'everything is dead' (JG). Syllabification judgments are consistent with this double analysis: after a tense vowel, [t] syllabifies with the following vowel, as do all liaison consonants, but as a coda after a lax vowel, since lax vowels are only found in closed syllables word-finally.[24]

The same ambiguity between a word-final and a liaison [t] arises in the case of the past participle or noun *fait* 'done, fact', also regularly produced [fɛt] (e.g., *j'ai fait* [fɛt] *mon bac* 'I did my BA' (LC and JB)). An example such as *j'ai fait* [fɛt] *un cours* 'I took a course' (BP), where [t] is followed by a vowel-initial word, could in principle be analyzed as an instance of liaison. I would argue that in the case of *fait*, [t] is always the stable final consonant of *fait* and not a liaison consonant. This conclusion is consistent with speaker intuitions, which place [t] in the coda, and with the highly marked status of liaison after a past participle or a singular noun.[25]

Liaison after verbs (21c) yields some of the more interesting features of liaison in Laurentian French. This variety has generalized [t] after all forms of the present tense of *être* 'be', in fact the only productive liaison context after a verb (but see remarks on the infinitive *être* below). The 2nd person plural form *êtes* already has a fixed final [t] and does not involve liaison, while the forms *suis*, *es*, *est* and *sont*

24. In the two Laurentian survey points available on the PFC site, all instances of [t] between *tout* and a word-initial vowel are coded as liaison consonants. A more careful analysis would probably revise this initial coding.

25. A search through the entire online PFC corpus yields eight examples of liaison with the past participle *fait* 'done', all from the two Laurentian survey points (caa and cqa); one other example from Senegal is questionable and possibly a transcription error. Such a disproportion does not indicate an exceptional behavior of liaison in this variety but rather a different lexical form for *fait*. The PFC corpus also contains eight examples from six European survey points of the singular noun *fait* 'fact' followed by a liaison [t]. These include five tokens after the expression *en fait* 'in fact'. The pronunciation [fɛt] in *en fait* is noted in general dictionaries and such examples should probably also be analyzed as involving a fixed final [t]. The remaining three examples come from speakers born in 1932 or earlier, suggesting that they, like Laurentian speakers, have retained a historical consonant-final pronunciation of the noun *fait*.

Table 7. Rate of liaison after verbs

	Rate	Examples of liaison
suis	14/26*	*je suis* [t]*en ville* 'I am in town' [ʃtãvɪl] (LC)
es	0/4	*tu es* [t]*ébloui* 'you are dazzled' [teteblui] (WD)
est	30/31	*on* [n]*est* [t]*allés* 'we went' [ɔ̃ntale] (CC)
c'est	54/66	*c'est* [t]*ironique* 'it is ironic' [stˢiʁɔnɪk] (JG)
sont	7/9	*ils sont* [t]*installés* 'they are settled' [isɔ̃tẽstale] (JB)

* Notice that 13 of the 14 instances of liaison [t] with *suis* were produced by male speakers.

variably trigger liaison in [t]; liaison in [z] is excluded in all cases.[26] Representative examples of liaison appear in Table 7, with the rate of liaison realization with each form in the coded part of the Trois-Rivières conversations (the example with *es* is taken from the non-coded part). The presentative *c'est* 'it is' is treated separately from *est*. Notice that *je suis* 'I am' is typically reduced to [ʃ] before a voiceless consonant (including liaison [t], as in Table 7) and [ʃy] before other segments, through a series of assimilations and reductions: [ʒœsɥi] > [ʃsɥi] > [ʃʃɥi] > [ʃɥi] > [ʃy] > [ʃ]. The presence of the liaison [t] after *est* may also trigger the deletion of the vowel of the verb: *c'est* is reduced to [s], and *on est* to [ɔ̃n], as in Table 7, lines 3–4. After vowel deletion, the liaison [t] is left as the sole manifestation of the verb; in the case of *on est*, this results in the liaison [n] appearing on the surface before a consonant (the liaison [t]).

Liaison is more frequent with *est* and *sont* than *suis* and *es*, where [t] is not the norm and tends to be avoided (children are regularly told in school that such forms are incorrect). Note that the frequency of liaison after *est* and *c'est* is much higher in Laurentian French than in other varieties: in the entire PFC corpus, the rate of liaison after *est* is 31% (881/2,002), against 87% (84/97) in Trois-Rivières (not distinguishing between *est* and *c'est* and excluding cases of no liaison with an intervening pause and the expression *c'est-à-dire* 'that is', where liaison is obligatory).

Être 'be' is involved in another special case of liaison in Laurentian French, as it may be *preceded* by a liaison [t] in a variety of contexts, including after words that do not otherwise trigger it (Côté 2005). The Trois-Rivières data provide one excellent example of this phenomenon (22a). The conditions attached to the insertion of this [t] remain to be more fully understood but it is crucially excluded before infinitives other than *être* (e.g., **ça va* [t]*aller* 'it will go'). In the Trois-Rivières corpus, (22a) is an isolated example, [t] being normally absent, as in (22b–c).

26. The 1st person plural *nous sommes* is not part of the normal Laurentian repertoire and is replaced by *on est*.

(22) a. *Ça va* [t]*être des nouveautés* 'it will be new things' (JB)
b. *Tu vas* | *être obligée* 'you will be forced' (BP)
c. *Ça doit* | *être pour ça* 'it must be for that' (AD)

The final variable liaison context in (21d) involves plural nouns + adjective sequences, where liaison is extremely marginal in conversational Laurentian French. No relevant example could be found in the Trois-Rivières data, including in sequences that might be considered fixed expressions (at least in the Laurentian context), such as *dessins animés* 'cartoons', *communautés autochtones* 'aboriginal communities' and *personnes âgées* 'elderly'. The read text offers instances of liaison after plural nouns, but the rate of realized liaison in this context (14/60 or 23%) remains lower than in the entire PFC corpus (33%). Laurentian French distinguishes itself in the expression *jeux olympiques* 'olympic games', whose liaison [z] was omitted by half of the Trois-Rivières speakers.

In conclusion, can we say, on the basis of the Trois-Rivières survey, that in Laurentian French liaison is "globalement nettement moins réalisée que dans le FR" (Eychenne & Walker 2010: 257)? It should be clear that all conversational varieties of French, including Laurentian French, are expected to realize fewer liaisons than more formal registers. But do Laurentian speakers produce fewer liaison consonants than in other colloquial varieties and, specifically, those of Northern France? In the entire corpus (35 survey points, excluding the read text), 44% of potential liaison consonants are realized (17,629/39,971). For Trois-Rivières, this rate is 40% (660/1,647). This is arguably a bit lower than the PFC average, but equivalent to or higher than the corresponding proportion for some areas in Northern France (40% in Normandy, 38% in Burgundy). Moreover, the other two Laurentian surveys available on the PFC website display higher rates of liaison realization: 44% in Alberta (described in Walker, this volume) and 46% in Quebec City. The source of these differences is not entirely clear but they would not support the claim of a significantly lower usage of liaison in Laurentian French.

Globally, then, Laurentian French appears to behave like the rest of the French-speaking world with respect to liaison. Obligatory liaison remains so in Laurentian French (with the exception of *ils* 'they') and optional liaison generally seems to apply with comparable frequencies. If liaison is marginal with certain items in Laurentian French (e.g., *chez* with words other than *eux* and *elle*), it is actually more frequent than in the rest of PFC in other contexts, as with forms of the present tense of *être*. *Est* and *suis* trigger liaison at rates of 31% and 13%, respectively, in PFC but 87% and 54% in Trois-Rivières. The fact that Trois-Rivières uses liaison in [t] rather than [z] after *suis* and *es* is indicative of a different relationship to the written norm, but not of a reduced usage of liaison. Prenominal adjectives and

numerals possibly also trigger liaison more systematically in Laurentian French than in other varieties (again possibly with non-standard forms of liaison).

Interestingly, the influence of the norm in Laurentian French tends to favor a reduction more than an increase in the realization of liaison. Non-standard liaison consonants are avoided in careful speech, resulting in the omission of liaison. But there is no visible tendency, at least in the Trois-Rivières corpus, to replace non-standard liaison consonants with the "correct" ones, apply optional cases of liaison more systematically, or widen the range of optional liaison.

5. Conclusion

This general study of the Trois-Rivières PFC survey, representative of middle class urban speech, first confirms already well established segmental characteristics of Laurentian French, notably high vowel laxing, diphthongization, assibilation and the loss of the apical rhotic. But it also offers preliminary documentation and analysis of certain underdescribed or previously unnoticed aspects of Laurentian phonology, leading to a more sophisticated understanding of its system, how it compares with other varieties of French and how it evolves in a context of linguistic insecurity with respect to the perceived norm. Specific contributions concern additional vowel contrasts (and neutralizations), affrication at word boundaries, characteristic patterns in the distribution of schwa and liaison consonants, and the avoidance of certain traditional Laurentian features (the vowel [ɒ], non-standard liaisons, word-final [t], [l] deletion in clitics). Such a wide range of issues cannot be treated here in sufficient depth, but it is hoped that this chapter will contribute to more detailed investigations in the future.

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Appendix: Complementary wordlist[27]

1. mettre
2. maître
3. écoeurer
9. juste
11. couple
15. juge
16. court
17. courte
18. boulevard
19. filtrer
20. abusif
21. ministre
22. pilule
28. neige
30. chaude
31. père
32. beurre
33. port
34. part
36. crainte
37. emprunte
38. honte
39. lente
40. équiper
41. député
42. écouter
48. cadenas
63. soirée
71. quinze
73. jungle
76. absent
82. coutume
84. dire
87. tube
88. tuile
89. pas d'idée
92. aveugle
98. pourrie
104. dehors
110. je l'ai vu
117. douze
118. pâté
121. vive
122. enduit
125. douzième
126. tiers
127. couve
128. pâtisserie
130. friser
133. reine
134. douzaine
136. frise
141. vous le fêteriez
143. victoire
144. printemps gris
145. prépare
146. vous sauteriez
147. paire
148. baver
149. mausolée
150. toundra
151. 100 épaves
152. figer
153. doré
154. patient
155. Odette
156. le chapeau vert
157. sultan
158. bingo
159. autruche
160. sommet
161. t'es noir
162. raisin
163. pantalon
164. trop français
165. maudite amie
166. building
167. libérer
168. encastrer
169. poêle
170. bulgare
171. faucon
172. génie
173. fructose
174. génome
175. le printemps gris
176. muscade
177. nage
178. série
179. légo
180. meeting
181. tes poires
182. dévorer
183. sauna
184. grand innocent
185. raison
186. bêta
187. léger
188. ration
189. démarrer
190. chapeau vert
191. minou
192. girafe
193. saumon
194. passant
195. curé
196. Lisbonne
197. grave
198. graver
199. musée
200. forer
201. turban
202. sa peau verdit
203. multi

27. The 40 items numbered between 1 and 110 are taken from Doug Walker's list of 116 items used in other PFC surveys in Canada (and reproduced in Durand & Lyche 2003). Items 117–141 come from Luc Baronian's 29 additional words used in his Saguenay survey (Quebec). In all cases, the original numbering was kept, to facilitate direct comparisons among PFC surveys in Canada.

204. guitare
205. bourru
206. gaz
207. région
208. un temps grisâtre
209. saucisse
210. laver
211. boit-il
212. pourtant
213. c'est ici
214. j'ai vécu
215. trente innocents
216. décorer
217. laiton
218. démarre
219. Maupassant
220. ça t'isolait
221. passion
222. furet
223. sept idées
224. Omer
225. dur
226. maudit ami
227. Victor
228. aussi
229. siéger
230. Audette
231. Néron
232. Linda
233. sirop
234. piger
235. en plein été
236. cadavre
237. nourri
238. pendentif
239. ratio
240. quiz
241. un grand sommet
242. gazette
243. mystère
244. tirer
245. encadrer
246. minuit
247. topaze
248. homard
249. à Sept-Îles
250. la peau brunie
251. Gilbert
252. lézard
253. déchirer
254. un grand sauna
255. thé noir
256. la peau bronzée
257. râteau
258. bureau
259. Bourgogne
260. trop latin
261. gérer
262. un temps gris
263. rôti
264. gare
265. protéger
266. museau
267. Réjean
268. serrer
269. sa peau verte
270. cage
271. vomi
272. Tel Aviv
273. maudit tamis
274. déchet
275. pouding
276. coma
277. seconde
278. péché
279. c'est isolé
280. six étuis
281. multiple
282. souligne
283. Ferme ta boîte!
284. plein d'innocents
285. cuillère
286. tige
287. du bois
288. mitaine
289. les sept îles
290. minet
291. mystique
292. soulier
293. 20 épingles
294. curry
295. cet isolement
296. dieu
297. je boite
298. poil

CHAPTER 11

"Cajun" French in a non-Acadian community

A phonological study of the French of Ville Platte, Louisiana

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1. Introduction

Louisiana is home to the oldest French-speaking communities in the United States. After more than three centuries of existence in the lower Mississippi Valley, however, the survival of French as a vernacular is far from assured. "Cajun" French represents undoubtedly the most widely spoken variety of French in the state, otherwise characterized by a linguistic *gumbo* (Picone & Valdman 2005). It has evolved in a multilingual setting and has miraculously survived the overwhelming advance of English, although it now shows all the signs of an endangered language.

This chapter will focus on the phonology of a single variety, the French of Ville Platte, and will aim at establishing its most salient features. Section 2 will set French in a historical perspective and will sort out the different currents which gave Louisiana such a rich background. Section 3 will present PFC in Ville Platte and, in addition to the profile of our speakers, will discuss how the protocol needed to be adapted in order to accommodate the linguistic situation. The phonemic inventory will be presented in Section 4, followed in Section 5 by schwa, and liaison in Section 6. A short section on prosody (Section 7) will close the phonological presentation before we conclude in Section 8.

2. Historical overview of French in Louisiana

2.1 Colonization and French settlement

French settlement in the vast territory called Louisiana began with the expedition led by the Canadian brothers Bienville and Iberville in 1699. While the French colonial period lasted only until 1762, when Louisiana was ceded to Spain, those sixty-three years of French rule were sufficient to indelibly mark what is today the American state of Louisiana with a French cultural and linguistic imprint, one that would be reinforced by further francophone immigration that continued during the Spanish and, as of 1803, American rule, up until the Civil War (1861). French immigration during the eighteenth century was primarily from Canada and from northern and western France, though other regions of the country were represented, as well. The French population was augmented by the importation of enslaved Africans to Louisiana from 1719 until 1731, with one additional shipment arriving in 1743. In all, 5,500 Africans were brought to Louisiana during the French period, a number that would be dwarfed by the many thousands of African slaves that the Spanish would bring to the colony between 1769 and 1800, the year when Louisiana briefly reverted to French control before its sale to the United States in 1803. An important cultural consequence of slavery in Louisiana was the development of the Louisiana Creole language in the large plantation regions along the Mississippi River and Bayou Teche to the west. This variety continues to be spoken today by small numbers of blacks, whites, and persons of mixed race in several geographically separate regions.[1]

Most of the Frenchmen who settled in Louisiana in the eighteenth century were soldiers, indentured servants, prisoners, or other persons of relatively low social standing. We may suppose, then, that the French spoken in the colony was strongly marked by features of popular French as well as by features of the *oïl* dialects of the northern and western regions of France. During the Spanish period, the French-speaking population, which remained numerically and culturally dominant, was further reinforced by the arrival of some 2,600–3,000 Acadian exiles who had been expelled from Nova Scotia by the British in 1755 during the *Grand Dérangement,* and made their way to Louisiana in several waves between 1764 and 1785 (Brasseaux 1987: 93), settling first along the Mississippi, then later in the prairies of southwestern Louisiana and along Bayou Lafourche, in the southeast.

1. For descriptions of Louisiana Creole, see Neumann (1985), Klingler (2003), and Klingler & Dajko (2006).

2.2 Acadians, Cajuns, Creoles: Ethnicity and language in francophone Louisiana[2]

It is well known that the *Acadiens* lent their name to today's *Cadiens* [kɑʤɛ̃], or Cajuns, of Louisiana; unfortunately, this knowledge has in turn led to the widespread misconception that the Cajuns are mainly the descendants of the original Acadian immigrants to Louisiana, and that "Cajun" French derives from the French that they brought with them from Acadia. A closer look at demographic developments before and after the Acadians' arrival shows why this view is oversimplified. First, it is important to note that when the Acadians began arriving in Louisiana in 1764, they entered a region where French had been the dominant language for over sixty years, and the early Acadian arrivals constituted a small minority of the overall population. As shown in Table 1, in 1788 – three years after the last Acadian arrivals to Louisiana – the total population of the colony was 42,621. While as many as 3,000 Acadians, augmented by their offspring born since 1764, constituted a significant portion of this population, they nevertheless remained very much in the minority.

Moreover, after the sale of Louisiana to the United States in 1803, continued immigration of French-speaking populations served to further dilute the numerical importance of the Acadians as a proportion of the overall population. In 1809–1810 alone, nearly 10,000 slaves, whites, and free persons of color from the former French colony of Saint-Domingue, now the free republic of Haiti, arrived in Louisiana after having been expelled from Cuba, and throughout the first half of the nineteenth century, until the South's economy was destroyed by the Civil War, the wealth of Louisiana's plantation economy continued to attract new immigrants from France. This nineteenth-century influx of French speakers led to a flourishing of francophone culture, helped ensure more regular contact between

Table 1. Free and enslaved population in Louisiana around the time of the Acadians' arrival (Rodríguez 1979: 413, cuadro 1.2 A; 438, cuadro 1.8 A; 440, cuadro 2.2 A; 458, cuadro 2.8 A)

	1766	**1788**
Free	5,611	19,455
Enslaved	5,799	23,166
Total	11,410	42,621

2. This section is based on material originally published in Klingler (2009). See this publication for a more detailed discussion of language and ethnicity, and in particular of the relationship between Acadian and Cajun people and between Acadian and Louisiana French.

Louisiana and France, and was likely responsible for the implantation in Louisiana of a language variety close in structure to *le français de référence*, henceforth FR (see Chapter 1, and Morin 2000).[3]

Thus the Acadians arrived as a minority group of French speakers in a heavily French-speaking region that continued to see its francophone population grow through diverse sources for decades to come. In their main areas of settlement, the Acadians remained a cohesive social group with a high birth rate and a strong tendency to assimilate members of other groups, be they white Creoles – the label that historians of Louisiana traditionally use for settlers who came from France or from a French-speaking region other than Acadia – or settlers of Anglo, Irish, Spanish, or German extraction. When they migrated outside of their core areas of settlement, however, the Acadians found themselves in the minority among the local population and were themselves assimilated. This was the case, for example, in the four parishes shown in Table 2, where according to the 1870 census, only very few residents of Acadian origin lived.

It is clear that, no matter how influential they may have been, the Acadians did not fully replace or absorb the francophone populations whose arrival in Louisiana preceded or followed theirs.

Yet in the course of the nineteenth century, two developments occurred that help to explain why most francophones – or more precisely, most white francophones – in Louisiana today are considered Cajuns. The first was intensive contact between Acadians and white Creoles that led to a blurring of the previously clear boundaries separating these distinct francophone groups. The second was the extension of the word "Cajun" to apply to all poor, white French speakers in south Louisiana, occasioned above all by Anglos arriving from outside Louisiana who had no understanding of its cultural and ethnic complexity. These processes have been described in detail by Brasseaux (1992: 104–105).

Table 2. Residents of Acadian origin in parishes peripheral to the Acadian core, 1870 (Brasseaux 1992: 107)

Parish	Number of residents of Acadian origin in 1870
Pointe Coupee	237 (1.8%)
Avoyelles	220 (1.6%)
St. John	44
St. Charles	20

3. This variety, which Picone & Valdman (2005) call *le français de plantation*, long ago ceased to be transmitted to younger generations and is now spoken by a tiny handful of elderly Louisianans.

> *Cajun* was used by Anglos to refer to all persons of French descent and low economic standing, regardless of their ethnic affiliation. By the end of the nineteenth century, this class alone retained its linguistic heritage. Hence poor Creoles of the prairie and bayou regions came to be permanently identified as Cajun, joining the Acadian ever poor and *nouveau pauvre* […]. The term *Cajun* thus became a socioeconomic classification for the multicultural amalgam of several culturally and linguistically distinct groups.

In the course of the twentieth century, the strong stigmatization from which the Cajuns had long suffered slowly began to weaken, as Louisiana came to witness a growing popularity of all things Cajun, encouraged by the romanticizing of Acadian history and, in the second half of century, the commodification of "Cajun" culture. Taken together, these nineteenth- and twentieth-century developments help to explain why Avoyelles Parish today calls itself the "Cajun Crossroads," and why the parish of which Ville Platte is the capital bears the name of Longfellow's mythic Acadian heroine, even though neither Avoyelles nor Evangeline Parish was ever a site of significant Acadian settlement. Today most white residents of French heritage in these parishes readily identify themselves as Cajuns, though many elderly people still refer to themselves as Creoles, the term they used before "Cajun" became a badge of honor rather than a stigma.[4]

Just as the ethnic group of heterogeneous origin known as Cajuns cannot properly be defined as comprising exclusively or even primarily the descendants of the Acadian exiles, so, too, it is inaccurate to view their French as representing the modern-day form of the French brought to Louisiana by the Acadians. In fact, the French spoken in Louisiana today has sources as diverse as those of the populations who speak it, and, despite interesting regional variation, appears to result from extensive leveling of the different social and dialectal varieties that contributed to it.

The strong historicizing tendency that equates Cajun with Acadian contrasts sharply with the complex and varied history of "Cajun" French, making the label misleading. This problem is compounded by the fact that, as an ethnonym, "Cajun" is most commonly associated with whites. Yet many Indians, blacks, and Creoles of color – groups who typically are not considered, and do not consider themselves, to be Cajun – speak something that is virtually identical to the French

4. As Brasseaux (1992: 111) explains, "Residents of French descent in Evangeline and Avoyelles parishes today still privately concede their Creole background. Yet when northwestern Imperial St. Landry seceded from its mother parish in 1910, it was dubbed Evangeline Parish by the state legislature in honor of the region's correspondingly mythical Acadian heritage".

of their white neighbors.[5] At best, the label "Cajun" French is awkward when used in reference to the French of non-Cajuns; worse still, non-Cajun French speakers tend to be obscured when the label is employed in reference to French in Louisiana in general. For these reasons, we prefer the ethnically neutral label "Louisiana Regional French", or simply "Louisiana French" (henceforth LF), to refer to the regional variety of French spoken in southern Louisiana.[6]

Such a neutral label is particularly appropriate in the case of Ville Platte, which, as we have seen, is situated in a parish that was never a site for Acadian settlement. The earliest European settlers of the area were soldiers from Fort Toulouse, near what it is today Montgomery, Alabama, and some residents of Mobile (Brasseaux 2005: 103–104). In 1870, when present-day Evangeline Parish was still part of the larger Imperial St. Landry Parish, only seven percent of Imperial St. Landry's population was Acadian in origin, compared with 14 percent in St. Martin Parish, 23 percent in Assumption Parish, and 29 percent in both Lafayette and Vermilion parishes (Brasseaux 1992: 167, Table 14); it is likely, moreover, that the vast majority of Acadians in Imperial St. Landry resided in the southern part of the parish, from which Evangeline Parish, to the north would be separated in 1910. Although inhabited by very few persons of Acadian descent, Evangeline Parish is home to a number of black residents who speak LF (we did not encounter speakers of Louisiana Creole in the parish during our fieldwork) but who typically refer to themselves, and often to the French they speak, as Creole.

2.3 Current situation

The growing popularity of "Cajun" culture, focused mainly on music and cuisine, has had little discernible effect on the vitality of the French language, despite the founding of the Council for the Development of French in Louisiana by the state Legislature in 1968. On the whole, Louisiana's French-speaking community has not recovered from the pressures to assimilate linguistically to mainstream American society, pressures that were especially strong in the early twentieth century

5. In an illustration of the strong link between language labels and ethnic labels, blacks and Creoles of color tend to refer to themselves as well as to the French they speak as Creole; in some cases the variety in question is indeed what linguists call Louisiana Creole, but often it is essentially the same as the "Cajun" French of their white neighbors.

6. In recognition of the distinct structural features of Louisiana Creole, we do not include it in this label. This should not, however, be interpreted to mean that we do not consider Louisiana Creole to be "French": It is clear that the majority of its grammatical as well as lexical material comes from French, and considering it to be a variety of French or a separate language is as much an ideological as a linguistic decision.

and indeed were formalized by the introduction of compulsory education in 1916 and, following closely on its heels in 1921, the prohibition of the use of any language but English as the medium of instruction in the public schools. As a result of such legislation, the vast majority of Louisianans who speak French natively today are illiterate in the language. Moreover, difficulties experienced by children who arrived in school speaking no English led eventually to their decision not to pass French on to their own children, and today homes in which children are taught French as a first language are exceedingly rare. Most native speakers are elderly, and it is difficult to identify fluent speakers under the age of sixty. The 2000 census counted just fewer than 200,000 French speakers in the state, and it is all but certain that the 2010 census will show a further substantial drop in those numbers. One bright spot in the situation of French in Louisiana today is the steady growth of French immersion programs in elementary schools. While such programs cannot replace the transmission of French in the home, they help to ensure, if only on a small scale, that Louisiana will continue to have a French-speaking population for generations to come.

2.4 Diatopical variation in LF

As previously noted, LF shows some variation across regions. It is not so great as to seriously impede comprehension and might even be considered insignificant when compared to the overall unity of the variety; nevertheless, it is not without linguistic interest and, when combined with demographic data on settlement patterns, holds important clues to the historical development of French in Louisiana. In this section we note just a few of the more salient features of this diatopical variation.

2.4.1 *Lexical variation*

There is general agreement among linguists that French in Louisiana is characterized by substantial lexical unity, a unity that extends even to Louisiana Creole (see for example Klingler, Picone & Valdman 1997). However, the numerous lexical studies that have been completed to date, as well as our own fieldwork, do point up some regional differences in lexical usage (see Valdman et al. 2009: xxvii–xxix for an inventory of these works). The most common term for "mosquito", for example, is *maringouin*, but *moustique* is attested with this meaning in some regions, while in others *moustique* refers to a gnat (see Read 1931: 92–95 for details). The terms for "tree" show a fairly clear geographical distribution, with *arbre* occurring to the west of the Atchafalaya Basin and *bois* to the east. Some lexical differences are prominent in the consciousness of speakers and are frequently mentioned

when they are asked about dialectal differences. Francophones in Ville Platte, for example, are fond of telling outsiders that the word *caouenne* refers both to a snapping turtle and, in a vulgar usage, to the female genitalia. Dajko (2009: 86) reports only the first meaning in the Lafourche Basin, where speakers are, however, also aware of the other meaning. Dajko also investigated several other examples of lexical variation in the Lafourche Basin, including *galette* ("pancake" in the Lafourche Basin but "female genitalia" elsewhere), the terms for "wall" (*entourage* in the Lafourche Basin but *muraille* in many other parts of Louisiana), for "saw" (*scie* in lower Bayou Lafourche but *égoïne* among some speakers in Terrebonne Parish), and for "bucket" (*sciau* in much of Lafourche Parish but *baquet* in Terrebonne and some parts of Lafourche). A particularly interesting finding of Dajko's research is the frequent mismatch between what speakers believe to be the geographical distribution of lexical variants and the actual distribution revealed by linguistic fieldwork.

2.4.2 *Phonological variation*

The vocalic inventory of LF is similar across regions. However, as explained below, the tendency for /ɑ̃/ to merge with /ɔ̃/, which is mentioned for some regions (see for example Conwell & Juilland 1963: 54–55 for Lafayette and Papen & Rottet 1997: 75 for Terrebonne and Lafourche parishes), appears to be less common in Ville Platte, where the phonemic status of these two vowels remains solid. A second phonological variable linked to region is the realization of [wɑ] as [wɛ]~[we] in words like *boîte* (cf. Chapter 9, on Acadian French spoken in New Brunswick). While the pronunciation [bwɛt] is common in many regions, the [wɛ]~[we] pronunciation of other words in *oi* is not so widespread; it appears to be most extensively used in Vermilion Parish, where it frequently occurs in words like *poisson*, *soixante*, and *voisin*.

Within the consonant system, one of the most salient variables – and the one most clearly linked to region – is the replacement of /ʒ/ and, to a lesser extent, of /ʃ/, /z/, and /s/, by [h], which occurs in Terrebonne and Lafourche parishes but not elsewhere: *jamais* [ʒɑ̃mɛ]~[hɑ̃mɛ], *maison* [mezɔ̃]~[mehɔ̃], *ça* [sa]~[ha] (Papen & Rottet 1997; Rottet 2001; Salmon 2009; Carmichael 2007, 2008; Dajko 2009). A feature that we discuss at length below and that, within Louisiana, has only been reported in Evangline Parish, is the affrication of /t/ and /d/ before /i/ and /y/: *parti* [pɑrtˢi], *dur* [dᶻyr]. We also discuss the variable alveopalatal affrication of /t/ and /d/, and, in somewhat different contexts, of /k/ and /g/ (*moitié* [motʃe], *diable* [ʤɑb], *cul* [tʃy], *gueule* [ʤœl], but this affrication, which tends to be restricted to specific lexical items, is common throughout francophone Louisiana and not so

clearly linked to geographical location.[7] Finally, the liquid /r/, which is realized as an apical tap in almost all of French Louisiana today, has a uvular realization in the "Plantation French" of New Orleans, in the French of upper Plaquemines Parish and Grand Isle (Picone & Valdman 2005: 150), and in the Creole of St. Tammany Parish (fieldwork by Klingler).

2.4.3 *Morphosyntactic variation*

Within the noun phrase, a feature that has received considerable attention in recent years is the use of *qui* versus *quoi* as an inanimate interrogative pronoun, e.g., *Qui tu veux?* vs. *Quoi tu veux?* "What do you want?" *Quoi* is also found in Acadian French, whereas *qui* is not. Byers (1988) showed usage of *qui* to be concentrated in the northern French-speaking parishes of Evangeline, Avoyelles, and St. Landry, as well as in the southeastern parishes of Lafourche, Terrebonne, and St. Mary, with *quoi* predominating in most other parishes (Map 7, p. 196). Rottet (2004), who conducted a more in-depth study of this feature and its geographical distribution, was able to correlate the occurrence of *quoi* with heavy Acadian settlement. Given what we have seen of the demographic history of Evangeline

7. See Dajko (2009: 104–106) for a study of the alveopalatal affrication of /k/ and /g/ in the Lafourche Basin.

Parish, it should come as no surprise that, as Byers' and Rottet's studies show and our own fieldwork confirms, *qui* is used there to the virtual exclusion of *quoi*.

A variable feature of verb morphology that shows a relationship to geography is the use of the 3 pl. ending *-ont* versus no audible ending, as in FR, e.g., *ils parlont* vs. *ils parlent*.[8] Like interrogative *qui*, the ending *-ont* is a feature typical of Acadian French. Byers (1988) found *-ont* to be frequently used in the most heavily Acadian parish of Louisiana, Vermilion, as well as in Assumption and, to a lesser degree, in Lafayette, St. Martin, and Lafourche parishes; he did not find it in Evangeline or Avoyelles. This contrasts with our own data, which show fairly frequent use of *-ont* in Ville Platte when the subject is *ils*.

3. PFC in Ville Platte

3.1 Adaptation of the protocol

The PFC protocol (Durand & Lyche 2003) constitutes a challenge in a Louisiana setting due to the linguistic situation which, as seen in 2.3, defies many of its specified requirements. Among these (same number of speakers for each sex, three age groups, speakers exhibiting little mobility, if possible a certain social diversity among speakers), only the sex variable can be easily integrated, and its adoption is further legitimized by its significance in the Louisiana context. No specific study about its impact has been conducted in Ville Platte or in Evangeline Parish, but Carmichael (2007, 2008) shows that it is significant among Pointe-Au-Chien Indians in Terrebonne and Lafourche parishes.[9] The remaining requirements of the protocol either cannot be satisfied or are insufficient. Fluent speakers of French all belong to older generations, thus preventing a partition into three age groups. Furthermore, if we aim at a certain degree of socioeconomic diversity among our speakers, we must inevitably include educated speakers, who by definition are highly mobile. Finally, the protocol makes no mention of the race factor, so crucial in Louisiana (Klingler 2005). Given our limited resources, we chose to focus on the white francophone community, though we hope eventually to expand our

8. The ending *-ont* occurs today almost exclusively in conjunction with the pronoun *ils*, which competes with other forms such as *ça* and *eux-autres* that nearly always co-occur with a verb conjugated in the 3 sg. (*eux-autres va*, *eux-autres sait*). The incidence of *-ont* is thus closely related to the incidence of *ils* vs. the other forms of the 3 pl. subject pronoun.

9. Older women in Carmichael's studies exhibit a wider register range than men, and younger women tend to maintain a stigmatized variant (use of [h] for [ʒ]) longer than men, in contradistinction to what is usually posited in the literature (Labov 1966).

corpus to include black francophones, as well. The greatest challenge presented by the protocol however, does not stem from the selection of speakers, but from the tasks they are asked to perform.

The reading tasks that are an integral part of the PFC protocol proved to be especially problematic in Louisiana, where most speakers of French cannot read or write the language. It was therefore necessary to devise other tasks that could replace the reading exercises and provide data easily compared with the other PFC investigation points. The new protocol (Klingler & LaFleur 2007) includes a word translation task and the recitation of a prayer, a nursery rhyme, the lyrics to songs, or any other item of memorized, formulaic language. All the words from the PFC wordlist that belong to the LF lexicon were integrated into the translation task: for example the presence or not of an opposition /a/–/ɑ/ (*mal – mâle*) or /e/–/ɛ/ (*piquet – piquer – piquais*) was easily tested. Words not found in LF were replaced by local items involving the same phenomena (*paume* by *baume, rauque* by *drôle, rhinocéros* by *croquesignole*) or eliminated altogether (*nous prendrions*). Nasalization and assibilation were two variables targeted for further study, so that the final list totals 105 items.

During the task, English words were either given in isolation ("How do you say *white* in French?") or in a context ("*little* like *a little child*"; "*male and female*") which could be extended to a whole sentence, for example, the sentence "*They lifted the wounded man into an ambulance*" targets *lifted* (*soulevé*). The translation task fails at times when the speaker does not know or remember the target word, but the results were satisfactory enough to warrant the integration of the list into a PFC-Louisiana protocol. In addition, as we often asked the speaker to repeat the item, we obtained several occurrences of the same token, thus strengthening potential acoustic analyses. The task requiring speakers to recite a prayer, nursery rhyme, or the like did not fare as well and unfortunately provided little comparable data.

The data were transcribed and coded according to the PFC protocol. Writing conventions in LF have been at the heart of numerous debates and authors vary considerably in their practice. We chose to adopt a standard French spelling system whenever possible[10] and to follow closely the conventions established for the *Dictionary of Louisiana French* (Valdman et al. 2010), which represents our main reference work for all regional words.

10. This decision fully accords with the PFC methodology (Durand & Lyche 2003).

3.2 Selection of speakers

The town of Ville Platte was chosen because it is home to a large number of French speakers and because one of our team members, Amanda LaFleur, is from there and could facilitate our work within the community. We made our first trip to Ville Platte for a preliminary survey in November of 2007 and have made several follow-up visits to conduct additional interviews since then. During our first visit we were immediately confronted with the problem of delimiting the geographical area from which we would draw our speaker sample. Since French in Louisiana can show variation across short distances, we did not want to cast too broad a net. Yet at the same time, we soon discovered that most of the French speakers we encountered in Ville Platte actually came from somewhere else, most often a hamlet within a radius of two to ten miles, but sometimes from further away, even from a different parish. We included any otherwise eligible speakers who came from within a reasonable distance of Ville Platte, but we eliminated anyone who was not raised in Evangeline Parish. This slowed our work somewhat, because it was only in the course of interviewing them that we discovered that some speakers who were long-time residents of Ville Platte had actually been born and spent much of their childhood outside of Evangeline Parish; in such cases we completed the interview but did not include it in our PFC corpus.

At present we have nearly completed the twelve interviews for the PFC corpus, but not all have been transcribed and coded. For the purposes of this chapter, we limited our analysis to interviews with four speakers, all of whom were born and raised in or near Ville Platte and learned French as a first language. All speakers except elaca1 were interviewed according to the PFC protocol adapted to the Louisiana context, as described above. Since elaca1 was exceptional in having a good knowledge of written French, however, we took advantage of this rare opportunity by asking her to read aloud the written version of the word list adapted for Louisiana in order to compare her pronunciation with that of speakers who completed this task by translating English words we read aloud to them, without seeing the written French forms.

3.3 Speakers' characteristics

Speaker elafs1, a male, was 69 years old at the time of the interview. Although he was born in the town of Washington, about twelve miles from Ville Platte in St. Landry Parish, he moved to Ville Platte when he was three years old and graduated from the local high school. He is fully fluent in French and speaks with great ease and clarity, having been a radio announcer in addition to the many other

professions he exercised, including farmer, carpenter, record producer, and salesman. He has traveled to France and has had frequent interactions with French speakers from various parts of the francophone world.

Speaker elajs1, also a male, was 64 years old when interviewed. Born and raised in l'Anse Bleue, a few miles outside of Ville Platte, he speaks French fluently. He obtained a Master's degree in school administration and worked as a farmer and a seventh- and eighth-grade teacher. He never studied French but has had a good deal of contact with speakers from France.

Our third speaker, elaem1, is a female who was born and raised near l'Anse Bleue and was aged 75 at the time of the interview in November 2007. She is a widow with six children who completed the eleventh grade and worked as a sales clerk and in a school cafeteria before her retirement. She is fully fluent in French and still speaks the language regularly with friends and relatives.

Our fourth speaker whose interview was used for this study is elaca1, a female born and raised in Ville Platte, across the street from the house where she now lives. She completed a Bachelor's degree and taught elementary school for 38 years before her retirement. Unlike most Louisiana francophones, elaca1 was able to read French because she had minored in it in college. As noted above, we decided to take advantage of this by asking her to read the word list aloud, rather than having her translate from English as we did with the other speakers in the study.

4. The phonemic system

4.1 Vowels

Two classical descriptions of the LF vocalic system (Conwell & Juilland 1963 for dialects around Lafayette, and Papen & Rottet 1997 for Terrebonne and Lafourche parishes) attribute eight oral vowels to LF, /i, y, u, e, ø, ə, o, a/, but differ in the number of nasal vowels, three or four, respectively. Our own data basically agree with this oral vowel inventory and we count three nasal vowels as we will see below.

High vowels may be subject to a variable laxing process, common to varieties of French in North America. In Canadian French (Côté 2005b), laxing affects high vowels in word-final closed syllables, as long as the coda is not a voiced fricative. Before a rhotic, laxing is associated with vowel lengthening. The process, systematic in final syllables, may be observed as well in non-final syllables (see Walker this vol.). Laxing in LF is not as prevalent as in Canadian French, being optional and restricted to final syllables, but it applies to any high vowel in

a final closed syllable, regardless of the nature of the coda: *Evangéline* [evɑ̃ʒelɪn], *servir* [særvɪr], *futur* [fytsʏr] (without lengthening before /r/). High vowel laxing does vary from one speaker to the next and is limited for each speaker to certain lexical items.

In order to get a better grasp of the allophonic realizations of mid and low vowels, we measured F1, F2 and F3 values of 263 vowels taken from the word list recorded by elaem1. The measurements were done manually in Praat. For each vowel, we targeted the center of the steady part of the spectrogram and recorded vowel length as well. The results show a vocalic system where the quality of mid-vowels in final syllables correlates strongly with syllabic structure according to the *Loi de Position* (see Chapter 1). In our data, /e/ is realized as [e] in all open syllables (word final or median) and [ɛ] in closed syllables. Although our word list does not match entirely the standard PFC list, it includes the items *épais* – *piquet* – *piqué* where the final vowel could theoretically show three degrees of aperture (Martinet 1945). For comparison purposes, we chose a female Parisian speaker born in 1935[11] (75cab1) representing FR, who is, in this respect, a good case in point since her F1 values[12] for the three words, as shown in Table 3, could indicate that she maintains a threefold opposition.

F2 values are similar for both subjects, but elaem1's vowels do not show any aperture distinction while maintaining a fairly open realization. The tendency for a relatively open system is confirmed when comparing the overall realizations of /e/ in final open syllables: F1 = 480 Hz (75cab1), 545 Hz (elaem1). In final closed syllables, /e/ is more open for elaem1 than it is for 75cab1 (F1 = 729 Hz vs. 667 Hz),[13] and the vowel shows its maximal aperture before /r/ (F1 = 927 Hz), where its phonetic realization is an open [æ]. /e/ lowering before /r/ is pervasive in LF, but the quality of the vowel is not consistent. For our speaker, we observe

Table 3. F1, F2 values for /e/ in final open syllables (a Parisian and a Cajun female)

Word	75cab1		elaem1	
	F1	F2	F1	F2
épais	624	2412	528	2413
piqué	443	2728	586	2419
piquet	552	2586	514	2436

11. The data on 75cab1 were provided to us by K. A. Østby. See Østby (forthc.) for an analysis of mid vowels among Parisian upper-class speakers.

12. Recall that F1 value increases with aperture, while F2 value increases with frontness.

13. The figures represent the averages for each speaker.

a vowel with a greater aperture than /ɑ/, and more front as the F2 values average 1673 Hz (F2 = 1250 Hz for /a/). The vowel is nevertheless more posterior than all other realizations of /e/, which cluster around 2200 Hz for F2. We will come back to /e/ lowering below.

For our speaker, /e/ in median syllables shows values similar to open final syllables, regardless of syllable type: for example in *respecter,* the three vowels are mid-high, with comparable F1 values, in spite of the different environments. The phoneme /o/ follows the same pattern, although it is not affected by the presence of /r/. Once again, if we compare the formant values of our LF speaker with those of our Parisian speaker, we observe that the LF vowels are slightly more open, and the same is true of /ø/, which, like the other mid vowels, faithfully respects the *Loi de Position*, and like /o/, does not vary in aperture before /r/.[14] Dubois (2003, 2005) argues for the preservation of certain Acadian features in the phonology of LF. In particular, she claims that LF in four parishes (St Landry, Vermillion, Avoyelles and Lafourche) maintains a mid-high round vowel ([ø, o]) in syllables closed by /r/. The absence of the phenomenon in Ville Platte comes as no surprise since the local population is not of Acadian descent; it shows nevertheless the compartmentalization of the different dialects.[15]

We will close our treatment of oral vowels with /a/. The average F1, F2 values of the vowel in all its phonetic contexts differ little as shown in Table 4.

If we compare these results to those of our Parisian speaker, we observe that, while the F1 values converge, the F2 values indicate a generally more posterior vowel in LF. Østby (forthc.) distinguishes for 75cab1 two distinct vowel qualities: [ɑ] F1 = 877 Hz, F2 = 1641 Hz vs. [a] F1 = 794 Hz, F2 = 1723 Hz, i.e., what she considers as a posterior vowel is more anterior than any of elaem1's [a]-like segments. A closer look at the LF data unveils further allophonic distinctions. The vowel is most posterior after /w/ (F2 = 1043 Hz), as already pointed out by Papen & Rottet (1997) for Terrebonne and Lafourche parishes. Nearly as posterior with

Table 4. Average F1 and F2 values for /a/: elaem1, wordlist

Position	F1	F2
Final: a#	800	1314
Final: aC#	798	1188
~~a(median)~~ Internal: (C)Ca.C	837	1267

14. Note the pronunciation of *brune* [brœ̃n] (FR [bʁyn]).

15. Theoretically, we should not expect Acadian features in Avoyelles parish either for exactly the same reasons. This point is however not discussed by Dubois (2003, 2005).

F2 = 1072 Hz, we have the word *pâte* which seems to be more posterior than *patte* (F2 averaging around 1180 Hz when the word is pronounced in isolation), which could indicate the existence of two phonemes. The repetition of the two words cancels this first impression as the F2 values of the vowels vary considerably (*pâte*: F2 = from 1072 Hz to 1241 Hz; *patte*: F2 = from 1170 Hz to 1464 Hz), the most anterior realizations occurring in context (*la patte du chien*). We thus conclude that we are dealing with one phoneme (/ɑ/) with allophonic variation.

We now return to /e/ lowering before /r/ where we asserted that the vowel was realized as [æ] (*pierre* [pjær]). In this context, the F2 value (1673), situates the vowel as anterior in the LF context, but between the FR [a] (F2 = 1723 Hz) and [ɑ] (F2 = 1641 Hz). It then appears more appropriate to posit that /e/ is realized as [æ, a] before /r/.

As a conclusion to our section on oral vowels, we stress the following four characteristics: high vowel laxing occurs variably in word-final closed syllables; mid vowels obey the *Loi de Position* and are generally more open than their FR counterparts; /e/ is lowered to [æ, a] before /r/; /ɑ/ in all its realizations is more posterior than in FR.

In addition to the oral vowels just considered, LF includes three or four nasal vowels and pervasive nasalization. The extent of this nasalization constitutes no doubt the main characteristic of the LF vowel system when considering a large span of varieties of French. In our data, three nasal vowels are easily identified: /ɛ̃, ɑ̃, õ/. /ɛ̃/ is often rounded, but positing a phoneme /œ̃/ seems unjustified, besides accounting for the pair *brun – brin* ([brœ̃] – [brɛ̃]). This opposition is extremely stable, while all other words where /œ̃/ could be expected are realized with either vowel (*quelqu'un* [kɛkɛ̃] – [kɛkœ̃]) or with the unrounded variant (*lundi* [lɛ̃dᶻi], *un* [ɛ̃n]). While the contrast /ɛ̃/–/œ̃/ seems lost in our data, another contrast persists but shows signs of receding in LF. Papen & Rottet (1997:75) mention free alternation between /õ/ and /ɑ̃/, /ɑ̃/ replacing /õ/ more often than the contrary. Although our speakers do not systematically differentiate between the two phonemes and sometimes pronounce a vowel whose degree of rounding is difficult to determine, the existence of two distinct categories cannot be questioned. elaem1 was extensively tested for oppositions like *plan – plomb, rang – rond, blanc – blond*, and she insists on a difference, although after a certain number of repetitions, the distinctions fade out.[16] The impression of LF as a highly nasalized system is reinforced by extensive contextual nasalization in the corpus. Contextual nasalization of mid and low vowels applies more or less systematically throughout the data: a vowel in direct contact with a nasal consonant may be nasalized as in *liane* [lijɑ̃n],

16. The psycholinguistic reality of the distinction is enhanced by the lack of literacy in French of the speaker. Her comments cannot therefore be attributed to a spelling influence.

Table 5. The consonant inventory

		Labial	Labio-dental	Dental	Alveo-palatal	Palatal	Velar	Glottal
stop	unvoiced	p		t			k	
	voiced	b		d			g	
fricative	unvoiced		f	s	ʃ			h
	voiced		v	z	ʒ			
affricate	unvoiced				ʧ			
	voiced				ʤ			
Approximant						j		
Liquid				l, r				
Nasal		m		n		(ɲ)	(ŋ)	

pomme [pɔ̃m], *baignoire* [bɛ̃nwɑ]. Finally, notice that the clitic *lui*¸ usually realized [i], may merge completely with the nasal, giving it a palatal feature: *des fois on lui donnait douze* [ɔ̃ɲdone].

4.2 Consonants

The inventory of LF consonants, summarized in Table 5, is somewhat larger than that of FR, comprising, in addition to all of the phonemes of this variety, three that it does not include: the affricates /ʧ/ and /ʤ/ and the voiceless glottal fricative /h/. The status of the palatal and velar nasals /ɲ/ and /ŋ/ is marginal, however, as will be explained below.

The consonants of LF tend to be realized with less articulatory tension than those of FR. One consequence of this is that voiceless stops are typically aspirated, a phenomenon that Phillips (1936: 19) attributed to influence from English. This view has recently received support from Russell (2009), who based his study on our Ville Platte corpus.

4.2.1 *Affrication of stops*

The dental and velar stops are subject to affrication in certain contexts. We will first examine alveopalatal affrication before turning to dental affrication, which, as we shall see, has a somewhat different status.

4.2.1.1 *Alveopalatal affrication*. Before the glides [j] and [ɥ], the dental stops tend to undergo affrication (*cadien* [kɑʤɛ̃], *bon Dieu* [bɔ̃ʤø], *tiens* [ʧɛ̃], *tuer* [ʧɥe]) (cf. Chapter 9, Section 2.5.3). For most speakers these are the usual pronunciations, though they typically show awareness of the non-affricated variants, as can be seen in this exchange with elaem1 concerning the pronunciation of *tuer*,

in which she compares her own pronunciation to that of two local radio announcers – referred to as *eux-autres* here – who used more "educated" pronunciations on the radio:

elaem1:	On disait [ʧwe],[17] eux-autres ça disait [tsɥe].[18]
Interviewer:	Mais vous-autres disait?
elaem1:	[ʧɥe]. Comme ça on a été élevés, c'est tout ça nous on a appris.

Similarly, elaca1, who, as previously explained, had studied French and was able to read the word list aloud rather than translate from English cues delivered orally, read *diable* as [djɑb] but then immediately commented in an embarrassed whisper, as if saying something vulgar, "Of course, we say [lødʤɑb]!" This incident concisely demonstrates (1) the speaker's awareness of a non-affricated prestige variant, (2) the power of the written form to elicit this variant in her pronunciation, and, (3) in her commentary, the fact that the affricated variant is the commonly used one in Ville Platte.

The contexts for affrication of the velar stops are somewhat different; moreover, this type of affrication is less widespread, and its effects are limited to certain lexical items (cf. Chapter 9, Section 2.5.3). For example, /k/ > [ʧ] occurs before /y/ and [ɥ], as well as before the high mid front vowels /e/ and /ø/ (*cul* [ʧy], *queue* [ʧø]), but many items showing /k/ in this context appear to be excluded from the process (e.g., *calculer*, *que* [conjunction or pronoun], *piqué*). Affrication of /g/ is only attested before the mid front vowels, and only in certain words. Thus *gueule* and *guêpe* are typically realized as [ʤœl] and [ʤɛp],[19] while words like *guérir*, *bégayer*, *blaguer*, and *blagueur* are not attested with affrication anywhere in LF.[20] For this feature, too, there is a keen awareness among speakers who use the affricated variants of the existence of non-affricated forms that are considered to be the original and more correct ones. This is illustrated in these comments made by elajs1 regarding the pronunciation of *queue*, which he initially pronounced [lakø]:

17. The glide /ɥ/ often alternates with /w/.

18. Note that this second pronunciation, attributed to *eux-autres*, is also affricated, but with a different point of articulation. Dental affrication is discussed below.

19. One of our speakers, however, pronounces *guêpe* with no palatalization (1aajs1).

20. We might posit that affrication of /g/ is limited to monosyllables and to word-initial position in a few isolated polysyllables. However, the attestation of forms like *braguette* [braʤɛt] and *dégaine* [deʤɛ̃n] in Valdman et al. (2009) argues against such an analysis.

elajs1: Mais là ça dit [latʃø] aussi des fois.
Interviewer: Qui ça toi tu dis?
elajs1: Ah, dis proche tout le temps [latʃø]. Les plus vieux disaient [lakø], là c'est venu à [latʃø] ça asteur.[21]

While the examples of alveopalatal affrication we have seen are clearly the result of assimilation, there is nevertheless some justification for according phonemic status to alveopalatal affricates in LF. One reason for doing so is the lexicalized nature of affrication in words of French origin, which suggests that it is no longer an active process and that words like *queue* and *gueule* might best be analyzed as having two lexical entries, one with an initial velar stop and the other with an initial alveopalatal affricate, rather than as having a single entry whose initial segment may variably undergo affrication. Positing a single lexical entry to which palatalization applies would require us to mark items like *que*, *piqué* and *blaguer* as exceptional because they are not subject to the process. A second reason for according phonemic status to /tʃ/ and /ʤ/ is that they are widely present in LF in loanwords that are otherwise fully integrated phonologically, and in these words they may occur before any vowel and are thus not linked to phonetic context: *jug* [ʤɔg], *tchac* [tʃɑk] 'drunk', *tchoc* [tʃɔk] 'blackbird', *tchaurisse* [tʃoris] 'spicy sausage'. While we believe that /tʃ/ and /ʤ/ should be considered phonemes in this variety, their phonemic status appears to be marginal in that they occur only in loanwords or, in words of French origin, as the result of a process of affrication that is no longer active.

4.2.1.2 *Dental assibilation*. When they appear before the high front vowels /i/ and /y/, the dental stops /t/ and /d/ most frequently undergo affrication while retaining their dental point of articulation, a process commonly referred to as assibilation: *petit* [pt^{s}i], *tu* [t^{s}y], *dis* [d^{z}i], *du* [d^{z}y]. This feature, which was not part of eighteenth-century Acadian French (although cf. Chapter 9, Section 2.5.2) and therefore cannot have been brought to Louisiana by settlers exiled during the *Grand Dérangement*, is rare outside of Evangeline Parish and thus serves to set it apart from the other French-speaking regions of the state.[22] It also raises the intriguing possibility of an early but enduring influence of Laurentian French on the French of Evangeline Parish, which did receive settlers from Quebec. However, based on the historical record showing that many of the earliest settlers of

21. But people say [latʃø] sometimes. –What do you say? –Ah, most of the time I say [latʃø]. The older people said [lakø], it's become [latʃø] now.

22. It does, however, occur in the French creoles, including that of Louisiana (Neumann 1985: 90).

Evangeline Parish were French soldiers who arrived via Fort Toulouse in Alabama (Brasseaux 2005: 103–104), in combination with Poirier's (2009) demonstration that assibilation must have existed in seventeenth-century France, Russell (2009: 26–30) suggests that the feature owes its existence in Louisiana at least in part to settlers who came from France rather than from Quebec.

Assibilation is very much an active process in the French of Ville Platte, and unlike their alveopalatal counterparts, the dental affricates [tˢ] and [dᶻ] do not have phonemic status but are properly considered allophones of /t/ and /d/.

4.2.2 *Other features of stops*

Before we close this discussion of stops, we note a few additional phenomena of interest. First, as in many parts of the francophone world, LF features a final /t/ in words that do not have it in FR: *icitte, aussitte, juillet* [ʒyljɛt]. Second, in a few words /k/ may alternate with /t/. Thus the relative subject pronoun (but not the interrogative) *qui* is often realized as [ti], and *quelque* is sometimes realized as [kɛt]: *dans les soixante et quelques* [swɑsɑ̃tekɛt], *quelque chose* [kɛtʃɔz]. Finally, the word *septembre* frequently takes the form [sɛktɑ̃m], in which [p] is replaced by [k].

4.2.3 *Fricatives*

Certain words feature an alveopalatal fricative in FR but occur in Ville Platte French with the corresponding dental fricative, and vice-versa: *chez* [se], *juste* [zys] ~ [ʒys] ~ [ʒyʃ], *sécher* [ʃese], *sauvage* [ʃovɑʒ], *chemise* [ʃmiʒ]. While the last four examples are common throughout francophone Louisiana, *chez* [se] is a hallmark pronunciation of Evangeline Parish and not widely attested elsewhere. In rapid speech the consonant of the 1 sg. subject pronoun becomes dental and assimilates in voicing to the following consonant: *je dis* [əzdi], *je crois* [skrwɑ]. The voiceless alveopalatal fricative of the forms of *acheter* where it occurs intervocalically (*achète*, *achètera*, etc.) is voiced in LF: *j'achète* [ʒaʒɛt].

The glottal fricative /h/, which is an inheritance from the varieties of French brought to Louisiana during the colonial period and is not attributable to influence from English, occurs in words that have 'aspirate' *h* in FR: *hâche* [hɑʃ], *haut* [ho], *honte* [hɔ̃t] (but: *haricots* [zɑriko]).

4.2.4 *Glides*

LF has the same glides as FR: [j], [ɥ], and [w]. All three can be derived from their corresponding high vowel when it appears before another vowel: *hier* /iɛr/ > [jɛr], *huit* /yit/ > [ɥit], *croire* /kruɑr/ > [krwɑr]. Unlike [ɥ] and [w], however, [j] can also occur in the coda of a syllable: *paille* [paj]. In this position, it cannot plausibly be derived from /i/ and is therefore best recognized as a distinct phoneme.

4.2.5 *Liquids*

The /r/ of Ville Platte French, as in most of francophone Louisiana, is an apicoalveolar tap.[23] It is often weakened and sometimes dropped in syllable codas, either medially before a consonant or word-finally: *arbre* [ɑrb] ~ [ɑb], *pour* [pur] ~ [pu], *toujours* [tuʒur] ~ [tuʒu]. As noted in Section 4.1, when maintained, it has a marked opening effect on a preceding /e/ or /ɛ/, which is typically realized as [æ] in this context: *hier* [jær], *frère* [frær].

The lateral liquid /l/ is usually dropped in the word *quelque* [kɛk] and the adverb *plus* [py] used negatively, and it is also absent from the name of the month *avril* [avri]. Note, however, its realization in *juillet* [ʒyljɛt].

As explained in Section 4.2.7 below, the liquids /r/ and /l/ are nearly always deleted word-finally when part of a consonant cluster.

4.2.6 *Nasals*

The palatal nasal /ɲ/ is not attested in this form in our corpus. In most instances it is realized as [j], with strong nasalization of the preceding vowel, and sometimes of [j] and even of the following vowel, as well: *espagnol* [ɛspɑ̃jɔl] (elaem1), *baignoire* [bɛ̃jwɑr] (elaca1), *compagnie* [kɑ̃pɔ̃je/ɛ̃] (with slight nasalization of the final vowel) (elaca1), *campagne* [kɔ̃pɔ̃j] (elaca1). Other realizations of etymological /ɲ/ include [nj], [n], and [ŋ], the latter being limited to word-final position: *espagnol* [ɛspɑ̃njɔl] (elaca1), *magnifique* [mɑ̃nifik] (elafs1), *ligne* [liŋ] (elafs1). While [j̃] or [j̃] are possible realizations of /ɲ/ word-finally, [n] and [ŋ] are more common.

In addition to being a possible reflex of /ɲ/, the velar nasal [ŋ] results from assimilation of a word-final /g/ preceded by a nasal vowel (*langue* [lɑ̃ŋ]). This sound is also present in English loanwords.

Note that in the verb *venir*, /v/ in contact with /n/ assimilates to [m]: [mnir].

4.2.7 *Final consonants*

The simplification of what in FR are word-final consonant clusters comprising an obstruent followed by a liquid is systematic in LF, except when the following word begins with a vowel: *quatre* [kɑt], *imaginable* [imɑʒinɑb], *simple* [sɛ̃p], *cercle* [særk], but *quatre ans* [kɑtrɑ̃], *quatre arbres* [kɑtrɑb]. The presence of the liquid in prevocalic contexts like [kɑtrɑ̃] as well as in derivationally related words like *quatrième* shows that speakers have knowledge of the variation. It is unclear, however, whether they interpret the [r] as belonging to the first word or the second,

23. See Section 2.4.2 for uvular [ʁ] in some parts of Louisiana.

for which they may in fact have two lexical representations (*arbre, rarbre*),[24] the second one originating from the presence of a linking /r/. This ambiguity is evident in the results of an exercise that we have integrated into the PFC protocol for Louisiana, in which we ask participants to count to ten using a variety of vowel-initial words, including *ans, année, arbre, enfant, école*, and several others, in order to elicit sequences like *un arbre, deux arbres, trois arbres, quatre arbres*, etc. In the case of elaem1 counting with the noun *arbre*, she produced the following sequence: [ɛ̃nɑrb], [døzarb], [trwazarb], [katrab], [sɛ̃kab], [sisab], [sɛtab], [ɥitrab], [nœfab], [disrab], the form [rarb] being clearly triggered by the context *quatre* (and also *huit*, probably through hypercorrection based on the mistaken assumption that the final /t/ resulted from simplification of what was originally a /tr/ cluster; it is less clear what may have triggered her pronunciation of [disrab]). Then, apparently uncertain of the forms she had used, she immediately asked, "[rab] ou [ab], tu veux"? When we answered, "[arb]," she then produced the series as follows: [ɛ̃nab], [døab], [trwaab], [katab], [sɛ̃kab], [sisab], [sɛtab], [ɥitab], [nœfab], [disab]. While the initial series she produced suggests she has more than one lexical representation of *quatre* (and possibly of *huit*, as well), her question, as well as her ability to reproduce the series without any [r] before [ab], suggests that she treats [rab] and [arb] as distinct forms.

When a word-final voiced stop follows a nasal vowel, it is replaced by a homorganic nasal consonant: *langue* [lɑ̃ŋ], *blonde* [blɔ̃n], *jambe* [ʒɑ̃m]. This occurs most frequently when the stop becomes word-final through deletion of a following liquid: *fondre* [fɔ̃n], *prendre* [prɑ̃n], *novembre* [novɑ̃m], *chambre* [ʃɑ̃m].

The three words in the Louisiana protocol featuring a potential final /kt/ cluster systematically show simplification through deletion of the /t/, except in the speech of elaca1, the only speaker to read the word list: *exact* [egzak], *correct* [korɛk], *(il) infecte* [ɛ̃fɛk].[25] As in the case of words like *quatre*, however, the deleted consonant is present in derivationally or inflectionally related words: *exactement* [ɛgzaktəmɑ̃], *infecter* [ɛ̃fɛkte].

24. See Section 6 where the same phenomenon appears in liaison context and where it seems legitimate to posit lexical entries with an initial [z].

25. It is instructive to contrast elaca1's pronunciation of these items with her pronunciation of *quatre* in all the numbers in which it appeared on the word list (4, 24, 34, etc.): in these instances the items were not written out, and she never pronounced the /r/ in final position. When she was done reading the list, we used verbal cues to elicit *exact* and *correct* from her again, this time without the written words in front of her; although she once again pronounced [ɛgzakt], she did not realize the final consonant of *correct*: [korɛk].

5. Schwa in LF

Leaving aside the representation of the vowel, there remain two general domains which need to be addressed in any description of schwa, namely its phonetic quality and its behavior in an utterance. While the quality of schwa in FR is most often assimilated to that of [ø] or [œ] (*inter alii* Dell 1973 in his classic work), recent studies (e.g., Bürki et al. 2008) show that schwa may be endowed with a specific vowel quality. This is certainly true of LF where schwa alternates with [i] and [e] when stressed[26] (Lyche 1995a). (1) provides a few typical examples:

(1) Allophonic variation for schwa

chemise	[ʃəmiz]	[ʃimiz]
petit	[pəti]	[piti]
venir	[vənir]	[vinir]
venait	[vəne]	[vene]

When stressed, schwa is affected by an assimilation process, and the vowel is realized as either [i] or [e], with [ø] appearing as well, for example in [dødɑ̃] in *ça, ça tient dedans*. The general distribution of schwa brings forth a further particularity in LF, shared with Québec French (Auger & Villeneuve 2007), but absent from FR: a schwa may be present syllable initially in the clitics *le, je* or in words whose initial syllables include the prefix *re* (see 5.2 for a discussion).

(2) Initial schwa
Va voir dessus le [el] *gros CEDAR CHEST*
Le [ɛl] *monde allait chez quelqu'un d'autre*
Je [əʒ] *me rappelle plus*
Mais je [əʒ] *trouvais ça drôle*

Apart from this specific phenomenon, the distribution of schwa reflects what is observed in other varieties of French: schwa appears in clitics and in word-initial and medial syllables. It is not present word-finally, however, even when the following word contains a realized onset. This comes as no surprise given the massive dropping of final consonants in clusters that we described in 4.2.4.

Regarding schwa alternation with Ø, LF follows the general pattern. The presence of schwa depends on the phonotactic context: when schwa is preceded by two consonants (either CC_ or C#C_) where the first C is not a rhotic (*pour l(e) faire*), it surfaces regularly (*autre̲ment, quinz(e) de̲ décembre*). It is variable when

26. See Section 7 for stress in LF.

preceded by a single consonant, although it is mostly absent in this environment. The following sub-sections will be devoted to contexts where schwa is variable.

5.1 Schwa in monosyllables

In most varieties of French, nine monosyllabic words may contain a schwa: *je, te, me, se, le, ce, que, de, ne*. In LF, with the absence of the particle *ne,* eight clitics are used with a somewhat lower degree of frequency from what is observed in FR: *que* as a relative and as a complementizer is often omitted (*je pense 'A.' était pas là*) and the determiner, usually present, is not systematically required (*et vieux docteur A.V.; ça faisait récolte*). In addition to these simple omissions which reduce the sheer number of clitics found in the data, other syntactic peculiarities strengthen this tendency. LF generally limits to two the number of contiguous clitics (*là, je le mets dedans*). Strings of three clitics, common in FR (*je te le demande*), are not attested. Moreover, schwa has been eliminated from a number of adverbial locutions of quantity. For example *beaucoup de*, *un tas de, trop de,* and *assez de* are realized as *beaucoup des, un tas des, trop des,* and *assez des* when followed by a plural (*un tas des gens*). Finally, LF sometimes uses compounds where FR would need a prepositional phrase (LF *farine maïs* vs. FR *farine de maïs*). The determiner *ce* rarely occurs, which is probably equally true of other varieties of French and cannot be regarded as a peculiarity of LF.

These restrictions on the distribution of clitics aside, little differentiates schwa behavior in LF from FR. Schwa is overwhelmingly absent in the corpus as illustrated in (3).

(3) Clitic pronouns
J(e) crois pas j'ai compris
C'est m(e) donner
Si eux-autres s(e) rappelleraient, j(e) pense pas
Ça s(e) faisait de l'argent
Il faut tu l(e) fais quelque sorte de manière
Tu as personne icitte pour l(e) faire
Là j(e) commence à l(e) décoller

The striking element here is not the phonetic context allowing the absence of schwa, but rather the regularity of the process. Schwa is for example (quasi) systematically absent when the subject pronoun stands alone or precedes another clitic as in (4).

(4) Contiguous clitics
J(e) le mets dedans
Il cuit, j(e) le brasse
J(e) me rappelle pas d(e) ça,[27] *j(e) m(e) rappelle pas d(e) ça*

As mentioned above, contiguous clitics do not exceed two tokens in LF and when the first one is *je,* by far the most common case, the pronoun is systematically reduced to [ʒ] (*j(e) le couvre* [ʒløkuv]).[28] Clitic doubling is frequent in LF, but it does not always indicate emphasis or contrast, as illustrated by this example from Rottet (2001: 145): "*…**lui il** était iné sus Terrebone et **mon j'**ai ité inée sus Lafourche. Et **j'**ai tout le temps resté dans la Paroisse Terrebone do. […] Drette après que **mon j'**sutais inée, ma mame et mon pape a délogé au Bayou du Large.*" As Rottet observes, there is a clear contrast in the first two instances of doubling, but not in *après que mon j'sutais inée* 'after I was born' where *mon* does not seem to express emphasis or contrast. Our data concur with this observation. We notice moreover that, in this context as well, the subject clitic, when realized, is reduced to the onset consonant: *mon, j(e) l'amenais chez le docteur.* In FR, after the dislocated pronoun *moi*, the clitic *je* easily maintains its schwa, as a quick search of the PFC database confirms: schwa surfaces in nearly 50 percent of the occurrences in this context in the northern regions of France (69 tokens with schwa and 85 without schwa). We can hypothesize from our data that the clitic subject pronoun *je* is eminently weak in LF, partially due to the quasi systematic absence of the vowel, and that this lack of salience may account as well for the possible omission of the pronoun: *mon rappelle pas.* The intrinsic prosodic weakness of the clitic would also explain why *mon je* does not always signal emphasis or contrast, and tends to overtake the default functions of *je.*[29]

Due to prosodic and informational factors, clitic pronouns exhibit much less variation than other grammatical clitics. We start in (5) with determiners where schwa is usually absent.

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27. Auger & Villeneuve (2007) contrast Quebec French and FR (as detailed in Delattre 1966) for the string *je me.* They point out that in Quebec French and similarly to our own observations for LF, the schwa in *je* is absent while Delattre posits the opposite (*je m(e)*, but also *je l(e)*). We searched the PFC database for Paris (upper-class speakers) and found for the string *je me* results that totally concur with the Louisiana (and therefore Quebec) data and thereby contradict Delattre's observations.

28. In Quebec French on the other hand, *je l(e)* appears as the default form (Auger & Villeneuve 2007).

29. Although this phenomenon deserves further attention, it seems that the emphatic form is best expressed as *je VERB PHRASE mon*: *je rappelle pas de ça, mon* [ʒərapɛlpadsa mõ].

(5) Determiners

a. *En bas c(e) pont ça*
A la maison l(e) soir
Et l(e) lendemain matin

b. *dans l(e) clos*
dans l(e) gym ça nous faisait rentrer
j'étais tout l(e) temps la main droite

c. *C'est l(e) cinq de septembre*
L(e) premier décembre dans 48

d. *Lui, il a né l̲e̲ sept, octobre l̲e̲ sept*
Il a fait 52, l̲e̲ vingt-deux de décembre
Peut-être, peut-être l̲e̲ premier [pøtɛləprømje]

e. *je l'ai ramené ici dans l/ dans l̲e̲ ALBUM-là*
Tu as pas besoin d'user l̲e̲ POTATO MASHER

(5a) shows quite standard examples where schwa is not present in the context V#C_. In (5b), the determiner is located within a prosodic unit and schwa is typically absent. The only factor that could induce a schwa in contexts similar to (5a) or (5b) would be hesitation or emphasis. Following usage grammar (Bybee 2001), we consider that the locution *tout le temps* in (5b) is internalized by the speaker as a chunk [tultɑ̃] where *le* has lost its autonomous grammatical constituency. (5c) and (5d) show different behaviors in similar contexts, and we suspect that the differences may be explained by the interplay of prosodic and functional effects. From a functional perspective, the introduction of numerals, more specifically in dates, favors the presence of schwa when new information is given at the outset of a rheme, as exemplified in (5d). In these examples, the presence of schwa is reinforced by the prosodic structure, since the determiner appears at the left edge of a larger prosodic unit where faithfulness constraints usually intervene (Smith 2005). The two factors combined are instrumental in requiring the presence of the vowel (Lacheret & Lyche 2008). In (5c), *c'est l(e) cinq de septembre*, the determiner is nested within a phonological phrase[30] and therefore prosodically weaker; in this instance, prosodic weakness appears to override the functional factor. Such is not the case in the following example, *L(e) premier décembre dans 48* [lprømje], where phonotactics (the heavy initial [lpr] cluster created by the absence of schwa), prosody (the sentence-initial position of the determiner), and functional considerations (the introduction of a date) would all lead us to predict the realization of schwa. Its non-realization in this context suggests that the behavior of schwa, while influenced by these factors, is not fully determined by

30. The phonological phrase (Nespor & Vogel 1986) is the domain of primary stress in French.

them and in fact displays a certain degree of variability.[31] Finally, the presence of schwa in (5e) can be fully attributed to prosodic factors: the words *album* and *potato masher* are clearly inserted into the conversation as foreign words. They are preceded by a slight pause as in a quotation, in which case the realization of schwa is entirely predictable.

We will now conclude our section on schwa in monosyllables with the clitic *de*, quite frequent in the corpus, and which shows a similar behavior to what we have outlined for the determiner. The clitic *de* in French fulfills two functions, that of a determiner and that of a preposition. In the partitive determiner, schwa is not realized (*je mets d(e) la farine maïs*), regardless of the left context as in *faire d(e) l'argent*, or even utterance initially: *c'était peut-être …d(e) l'air fallait pomper* [stɛptɛt] … [dlærfalepõpe]. On the other hand, it is variable in the preposition as in (6).

(6) The preposition *de*
  a. *Je rappelle pas d(e) ça*
     Un bon bout d(e) temps
     Je fais un pain d(e) maïs [pẽnmai][32]
     Je l'ai quitté finir d(e) crever
  b. *et je mets un peu d<u>e</u> sucre, un peu d(e) sel*
     sont venus au bout d<u>e</u>, d<u>e</u> tout mourir

(6a) corresponds to what we observed in (5b) (*tout l(e) temps*) where, due to frequency factors, schwa is systematically omitted. When the preposition introduces an argument of the verb as in *finir de crever*, the vowel does not usually surface either. (6b) shows an instance of true variation within identical phonetic contexts, but we suspect that the nouns do not carry a heavy functional load in opposition to (5d), where the schwa surfaces. Finally, the last example in (6b) reflects the impact of speech rate, and hesitation caused by discourse planning, on schwa retention.

Summing up this section on schwa in monosyllables, we underline the high level of schwa absence compared to FR. We see similar forces at work (impact of the functional load, frequency effect), but it seems that the structure of the prosodic unit within which the schwa is not realized is much more stable in LF than it is in FR. As Auger & Villeneuve (2007) point out for Quebec French, personal pronouns and other grammatical clitics vary in their behavior and do not

31. From a functional perspective, we might argue that the absence of schwa in (5c) is attributable to a lower functional load associated with the introduction of dates in these contexts than in those illustrated in (5d), but the evidence for such an analysis is not compelling.

32. The nasal vowel triggers a nasal assimilation (see Section 4.1)

constitute a single class. We saw that a tight prosodic connection to the host (as in pronouns and the determiner) favors the absence of schwa, which culminates in the first person pronoun *je*. Other grammatical clitics on the other hand, carry functional loads that contribute to the observed retention of schwa. This dichotomy deserves further attention and should be the topic of a separate study.

5.2 Schwa in polysyllables

Three word positions should be considered: word-initial, word-internal and word-final. Word-internal and word-final schwas do not show a specific behavior in LF; they are absent from the corpus. Word-final schwas do not appear in the context CC_#C since final cluster simplification takes place overwhelmingly, thus eliminating a possible insertion site. We will then concentrate on word-initial schwas, which seem to follow the same principles as in most varieties of French. The question of schwa in polysyllables is, however, a tricky one, as close examination of the data reveals a large number of schwas not always perceptible to an untrained ear, thus requiring an acoustic analysis. After considering these schwas that we will call for the time being intrusive schwas, we will turn to the most classical case.

When we examine our speaker elaem1, we notice that she regularly breaks up obstruent + liquid clusters with the help of a schwa (*creuse* [kərøz], *blanc* [bəlɑ̃). This vowel is clearly a phonetic schwa with nearly prototypical formant values: F1 590 Hz, F2 1669 Hz and F3 2539 Hz. Blainey (2009) shows that the phenomenon is widespread in the Ville Platte corpus, but it remains to be seen whether this vowel is a bona fide schwa or whether it stems from the articulation of /r/, a dental tap in LF. A complete acoustic analysis, beyond the scope of this chapter, might prove helpful as we can hypothesize that if the epenthetic vowel is to be analyzed as a bona fide schwa, it should show a wide range of phonetic values as in (1). The acoustic values that we have measured closely cluster around typical schwa values, but they are too few to be conclusive. The short duration of the vowel (2 ms) is equally inconclusive since a realized schwa can be very short. It should be noted however that these epenthetic schwas are *consistently* short, their duration being about a third of what we observe for surrounding vowels, while the length of normal schwa varies a lot in our data. To sum up, both the formant values and vowel duration point to an autonomous segment, although further analyses need to be carried out.

Spanish is well known for hosting a similar phenomenon already described by Malmberg (1963). In certain varieties of Spanish, an intrusive schwa appears between an obstruent and an alveolar liquid flap (/ɾ/) (*tigre*) and sometimes be-

tween an obstruent and a lateral alveolar (*Inglaterra*).[33] The phonological nature of the vowel is contested as some studies (Massone 1988; Guiaro & Garcia 1991) argue that the vowel is the result of co-articulation. Navarro (1963), on the other hand, sees an epenthetic vowel which can develop into a full vowel, and he describes the phenomenon as unconscious. Ramirez (2006) presents an in-depth acoustic and perceptual study that shows that listeners react to manipulation of the vowel (shortening or deletion), thus suggesting that it is perceived by native speakers. Interestingly, in his description of the Spanish svarabatic vowel, Ramirez points out that the vowel length is about a third of the surrounding vowels, and that the dental /t, d/ exhibit the highest insertion rate. These two observations concur with our data: we already mentioned that in LF the intrusive vowel was much shorter than the surrounding vowels, and Blainey (2009) gives the highest insertion rate (74 percent and 100 percent) for /t/ and /d/, respectively. We might be dealing here with a similar phenomenon.

In order to pursue our reflection on the theoretical status of the vowel, we considered three speakers from Douzens who show a conservative Midi French variety,[34] where the rhotic is either an alveolar flap or an alveolar trill, and speakers in Domfront (Normandy), where similarly to the Douzens corpus, older speakers maintain an alveolar tap, completely eliminated in the speech of younger generations. The realizations of the obstruent + liquid clusters are equally prone to intrusive schwa among these speakers, although the phenomenon is limited in scope. The figures below (copied from Praat) illustrate an intrusive schwa in Douzens (Figure 1) and LF (Figures 2 and 3).

The acoustic data thus converge in the varieties of French that maintain a (dento-)alveolar tap.[35] The LF variety differs however from hexagonal varieties in that the intrusive schwa may develop into a full vowel (as suggested for Spanish by Navarro 1963) in LF, mostly word-initially as in *ertouner* where an initial vowel is pronounced. Lyche (1995b) argues in those cases against a metathesis process and proposes to account both for intrusive and word-initial schwas as epenthesis triggered by the acoustic properties of /r/ and more specifically its high sonority. The data under consideration support this analysis, but lead us to distinguish

33. There are many fewer instances of insertion with a fricative (Ramirez 2006).

34. The speakers are: 11ajp1, 11aal1 and 11aml1. We are grateful to Julien Eychenne for suggesting which speakers should be analyzed.

35. Colantoni & Steele (2005) find intrusive schwas in similar contexts among speakers of Quebec French who show a uvular /ʁ/. It seems however much more restricted than what can be observed in Spanish. The question of the relationship between the phonetic characteristics of the rhotic and the presence of intrusive schwa deserves further attention. The PFC database should provide an excellent testing ground for in-depth studies.

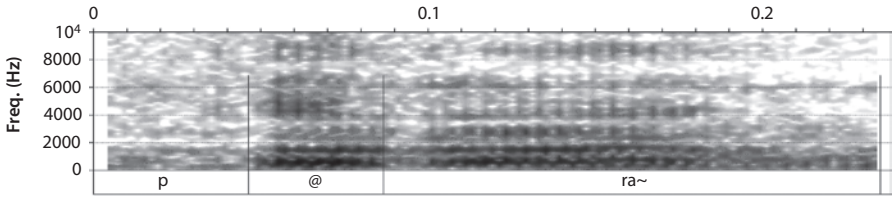

Figure 1. *prend (contact)* 11ajp1, PFC-text

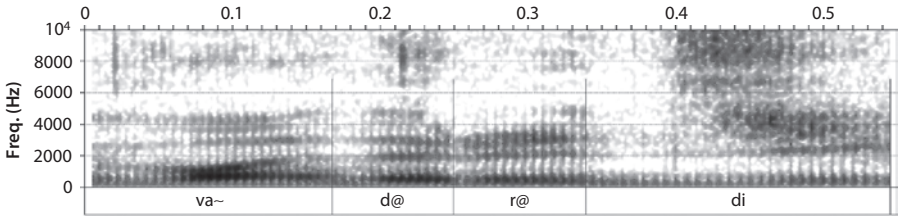

Figure 2. *vendredi,* elaem1

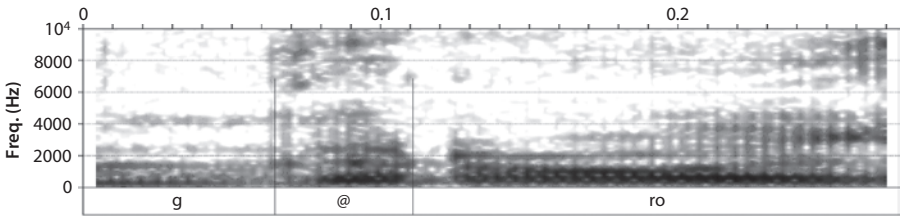

Figure 3. *gros,* elaem1 (*trois gros hommes*)

between a phonetic process where the presence of schwa is part and parcel of the realization of /r/ (and therefore not consciously uttered by the speaker) and a phonological process where a vowel is clearly uttered and may stabilize as in *erpasser* (FR *repasser*), which is the only form appearing in the corpus regardless of the phonetic environment.[36]

Intrusive schwa aside, initial syllables of polysyllables do not display any specific behavior. Schwa is nearly systematically absent after /r/ (prefix or not) (*quand je suis r(e)venue, des r(e)passages*), but not otherwise (*qu' c'est qu'est dev(e)nu d'elle*). Within certain phonetic contexts, an initial schwa may drop even when

36. Note that intrusive schwa cannot be used as an argument for a CVCV approach (Scheer 2004) since it does not affect all clusters in the same way, and since epenthesis creates VC syllables. The phonetic approach is strengthened by the behavior of /r/ in creoles (Nikiema 2002) and in varieties of French in regular contact with creoles (Bordal 2006). In Reunion French, /r/ in coda position is often reduced to a schwa if it does not drop altogether (Bordal 2006).

preceded by two consonants as in *et j(e) m(e)sure pas rien* [ɛʒmzyrparjɛ̃]. Similarly to monosyllables, polysyllables are sensitive to prosodic structure, and a schwa may appear when a constituent bears focus stress, as in *j'ai mis ça dedans un livre* where the preposition *dans* would have sufficed, or in instances of hesitation, discourse planning: *j'ai travaillé dedans euh…, ah elle a né dedans, dans 48. Dedans,* as a preposition or adverb, is frequent in our corpus and its pronunciation subject to substantial variation. A closer study of the data reveals that when *dedans* is an argument of the verb, and therefore has close syntactic ties to its head, the syllable is schwa-less, otherwise schwa tends to be realized: *là je le mets d(e)dans, mets du lait d(e)dans aussi* vs. *ça, ça tient dedans.*

6. Liaison

Recent studies on liaison (e.g., Durand & Lyche 2008) have unveiled its limited use in daily exchanges in France, where categorical liaisons are restricted to Det + Noun and clitic + Verb, although liaison is nearly categorical between Adj + Noun and between certain monosyllabic prepositions + X. All other contexts trigger optional liaison which is statistically modest in scope, varying from item to item: for example, in the northern part of France, Durand & Lyche (2008), for a similar number of tokens, count no liaison after *avait* and 5.35 percent after (*c'*)*était.* Their study points to receding liaison usage in FR, and similar tendencies are observed in European varieties of French. When we leave Europe for other continents, these tendencies intensify (see Bordal & Lyche 2008, for four African countries), an observation confirmed by our data. Liaison in LF is mostly confined to its function as a plural marker: Det + Noun (*il est mort il y a pas trop des* [z]*années*), clitic + Verb (*un soir Mam nous* [z]*a dit; comment elle les* [z]*appelle asteur*). This particular role is enhanced by two facts: (i) there is no liaison between an adjective and a contiguous noun unless the noun is plural (*des petites* [z]*affaires* vs. *c'était un bon* | *éduqueur; un gros, gros* | *homme*); (ii) numbers are followed by liaison when they indicate a plural but not otherwise. As noted in Section 4.2.6, we asked our speakers to count from one to ten (*une école, deux écoles, etc.*), and numbers overwhelmingly trigger liaison (*cinq* [z]*écoles, sept* [z]*écoles*, but not with *heures* or *ans* (*il a cinq ans* [sɛ̃kɑ̃], *il est cinq heures* [sɛ̃kœr]). With *heures*, we record both forms, with forward linking (*enchaînement*), and with liaison: with standard forward linking when the speaker gives the time, with plural liaison when the speaker indicates a length of time (*la fait ça en cinq* [z]*heures de temps*).

In certain nouns, commonly used in their plural form, the fricative has become agglutinated to the noun, a common process in Creole (Klingler 2003): *venir*

avec un zoie dedans un sac. A number of such nouns are recorded in the *Dictionary of Louisiana Creole* (Valdman et al. 2010) under the letter *z*. From a theoretical point of view these forms are interesting because they support the claim that the liaison consonant is not part of word 1, as for example a floating consonant (see Encrevé 1988 among others), but part of word 2. Whether we are dealing with a prefix (Morin 1983) or an insertion (Côté 2005a), the plural marker is liable to fuse with the noun, giving rise to a new entry.

Aside from [z], the most frequent liaison consonant is [n]: *en* [n]*hiver, on* [n]*a été à l'école, j'en* [n]*attrapais un, y a jamais un* [n]*œuf.* In all these cases, liaison is categorical. Variable liaison is quasi inexistent, appearing only after the auxiliary *est* (*est* | *arrivé* vs. *est* [t]*arrivé*). In the progressive locution *est après* on the other hand, liaison is systematic [ɛtapɛ] (*le soleil qui est après se coucher* [ɛtapɛskuʃe] elafs1) when the copula is realized. LF seems to have eliminated variable liaison while categorical liaison does not show any sign of weakening.

7. Prosody

Prosody plays a major role in the perception of foreign accent (e.g., Boula de Mareüil & Vieru-Dimulescu 2006), and a number of studies demonstrate how it is permeable to contact-induced change (see for example Bullock 2009 and references therein). Recall that all our speakers acquired French as a first language, but that French has long surrendered most of its social functions to English, which is now the dominant language for our subjects. The segmental level does not display signs of transfer from English,[37] but the stress and intonation patterns of our speakers differ considerably from the FR patterns and therefore may originate from the impact of lasting contact with English. FR is characterized by group stress with a demarcative function (the final prominence signaling the right edge of the prosodic group), while English is a typical lexical stress language where stress plays a contrastive role (e.g., Lacheret-Dujour & Beaugendre 1999). In our data, all our speakers produce lexical stress, and if a sharp increase in the F0 is a reliable correlate to stress,[38] stress falls mostly on the last syllable of a lexical word, as in Figure 4.

37. French, on the other hand, directly impacts the pronunciation of certain sounds, and especially the dental fricatives, which are often realized as dental plosives.

38. For the correlation of stress perception and acoustic realizations, see Cutler (2005). French stress is usually associated with the combination of several factors: rise in F0, vowel length and to a lesser extent increase in intensity (Lacheret-Dujour & Beaugendre 1999).

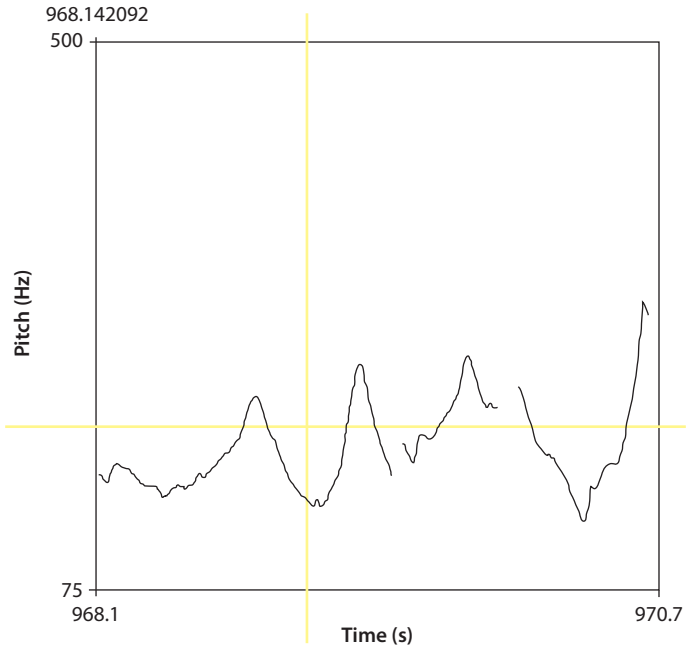

Figure 4. (*ai resté*) *ailleurs avant en premier j'étais mariée* (elamv1)

In the pitch contour displayed in Figure 4, every sharp rise of the F0 corresponds to the last syllable of a word (*ailleurs, avant, premier, mariée*). A final rise very often indicates the end of a prosodic group where in FR we would have expected a fall (cf. Delattre's (1966) finality contour). Figure 5 illustrates the same phenomenon.

In addition to this recurrent prosodic contour associated with final lexical stress, initial stress occurs regularly in the data. Conwell & Juilland (1963) observe that the position of stress is more unstable in LF than in FR. Non final stress is common, usually for expressing emphasis, but also in normal discourse: *je m'ai mariée* [ʒmaˈmarije]. As seen in (1), one effect of initial stress is to modify the quality of schwa (*petit* [ˈpiti]). Both strategies converge in insuring that the domain of stress in LF is the lexical word and not a concatenation of words as in FR, and that stress clash is a characteristic of this variety as exemplified by the common Cajun phrase *laissez les ˈbonsˈtemps rouler.*

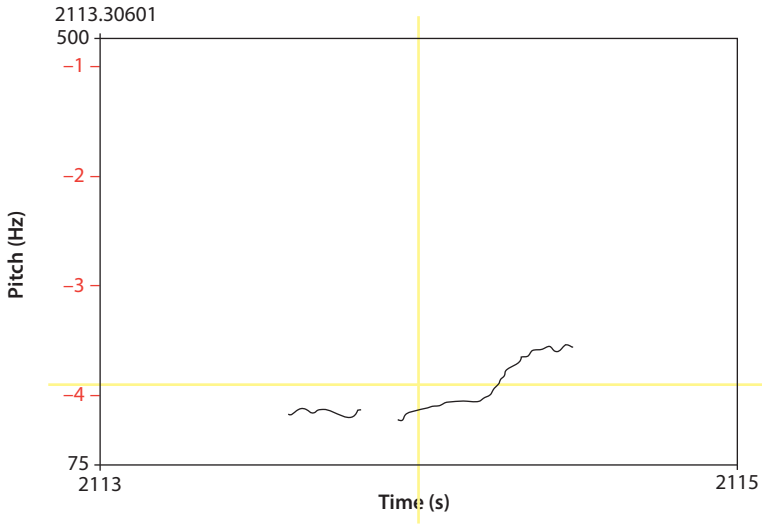

Figure 5. *et on lavait* (elaem1)

8. Conclusion

As described here, the phonological system of the French of Ville Platte bears the marks of its origins in popular and regional varieties of French (metropolitan and possibly Laurentian, with less clear influence from Acadian than some other Louisiana varieties) and of more recent historical developments that have shaped its trajectory, including intensive contact with English and a decline in its number of speakers and domains of use. Like other peripheral varieties of French, it is conservative in the sense that it retains a number of features, such as the glottal fricative /h/ and an apical /r/, that were once widespread in France but have long since been eliminated from FR. Other features, such as the front rounded nasal vowel [œ̃] and the low back vowel [ɑ], appear at first to conserve distinctions that are increasingly unstable in FR, but upon closer examination we see that these vowels are in fact allophones and do not contrast with [ɛ̃] (except in the pair *brin* ~ *brun*) or [a], respectively. In other respects, far from being conservative, the French of Ville Platte presents characteristics of *français avancé* in that it has regularized, or nearly so, evolutionary tendencies apparent in colloquial metropolitan French, such as the simplification of word-final obstruent + liquid clusters and the reanalysis of the /z/ of liaison as a plural marker on vowel-initial nouns. Influence from English, though pervasive, is most notable in the prosodic domain, clearly influencing stress patterns and intonation.

Our corpus-based study of the French of Ville Platte provides a more detailed description of the phonology of LF than has previously been available and, we hope, paves the way for further research on LF using PFC data. It is important to emphasize, however, that what we have presented here is a snapshot of the phonology of one francophone group whose membership is narrowly circumscribed, both geographically and socially: older white speakers raised in and around the town of Ville Platte, Louisiana. Because it does not seek to observe phonological behavior in real or apparent time, our study is also static in nature and can only hint at the dynamic processes currently underway.[39] Part and parcel of ongoing language decline, the dearth of younger speakers makes intergenerational studies that could track change through apparent time increasingly difficult to conduct, while the limited availability of phonological data on earlier generations of speakers poses an obstacle to studies of change in real time.[40] Expanding the PFC in Louisiana to include other ethnic groups (African Americans and Indians) and other regions is very much within our reach, however, and promises to give us a fuller panorama of the phonology of French in this unusual corner of the francophone world.[41]

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39. Rottet (2001), Dubois (2005), and Salmon (2009) examine the evolution of several features of Louisiana French over time. None of these studies includes Evangeline Parish.

40. Some data from earlier generations do exist, however, and as illustrated by the studies cited in footnote 37, they can indeed shed some light on linguistic change in LF. For the French of Evangeline Parish, two early studies exist: Phillips (1936) for the early twentieth century and Hamlett (1954) for the French of African Americans in the mid-twentieth century.

41. Darcie Blainey recently completed a set of PFC interviews in Lafourche Parish as part of her PhD research at Tulane University.

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CHAPTER 12

Laurentian French phonology in a majority setting outside Québec

Observations from the PFC Hearst Ontario Study*

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1. Introduction

A large portion of present-day Ontario, Canada's most populous province, was part of New France at the time of the British Conquest of Québec on the Plains of Abraham in 1759, a decade and a half prior to the arrival of the first English-speaking settlers, United Empire Loyalists who were fleeing the American Revolution. While the region's French-speaking population in the 18th century was small, it grew rapidly due to migration from Quebec starting in the 1830s, at the same time as the English-speaking population expanded with new immigration, notably from Ireland. According to the 2006 Canadian Census (Statistics Canada 2006), francophones (Ontarians who report French as their mother tongue or one of their mother tongues) currently constitute 4.4% of the population. With few exceptions, including the case studied here, they are a minority in the localities in which they reside. As a result of this contact situation with the majority language, for almost 40% of these 532,855 French mother-tongue speakers in Ontario, French is not the primary language of communication in the home.

Two surveys have thus far been carried out in Ontario applying the *Phonologie du Français Contemporain* (PFC) protocol. For details on the PFC project, see Durand, Laks & Lyche (2002, 2005) and other chapters in this volume, especially Chapter 1. In this chapter, I draw on data from the most recent of these surveys (Tennant, Poiré & Scott 2009) to present a description of the main phonological characteristics of the French spoken in the predominantly francophone

* I gratefully acknowledge here the work of my Research Assistant, Alexandra Scott, without whose hard work and local contacts the PFC Hearst project would not have been possible.

Northeastern Ontario town of Hearst. The sample consists of 12 speakers, six women and six men, representing three generations, and including three cases of parent and daughter or son, as well as one case of brothers in the middle generation. All but the oldest speaker (a 78-year-old man who migrated from Quebec as a child) were born in Hearst or in nearby villages, and all have lived in Hearst since early childhood, although some studied and/or worked elsewhere in the province before returning to settle in Hearst.

The initial focus will be on describing the phonemic inventory of Hearst French, using the reading of the word list. I then describe the realization of schwa and liaison in the reading of the text "Le Premier Ministre ira-t-il à Beaulieu?" and finally, I give some observations from an ongoing research project on prosodic rhythm.

The overall impression one gets from the study of the PFC Hearst corpus is of a variety of Laurentian French that has not been greatly influenced in its phonology by the contact situation. This lack of a strong English influence can be attributed to the exceptional position of Hearst in Ontario, where we see the majority status of French and regular contact with (as well as migration from) Québec reinforcing the ethnolinguistic vitality of the Franco-Ontarian community.

2. PFC Ontario

Ontario French is generally considered to be a variety of Laurentian French,[1] so it can be expected to share phonological characteristics with the Québec variety from which it descended. However, given its minority status in most localities in the province, we can also expect it to show some differences with respect to the French currently spoken in Québec, differences that would be the result of restriction in French language use and the influence of the majority language, English.

The first PFC survey in Ontario was carried out by François Poiré and Stephanie Kelly (Poiré & Kelly 2005) in the region of Windsor, which has the longest-standing francophone community in the province, dating back to the early 18th century, a community that has been reduced to a small minority in recent decades, leading to an intense contact situation with English whose effects are evident particularly in the speech of the youngest generation. The rationale for the choice of Hearst as the location to carry out the second Ontario PFC study was based on its exceptional demographic profile that makes it an ideal point of comparison and contrast to Windsor on the majority/minority dimension. With a population of

1. See Côté (2010a: 1288, and this volume) for a discussion of this term and why it is preferred to the terms "Canadian French" and "Quebec French".

5510 of whom 89% have French as their mother tongue, Hearst provides an excellent example of Ontario French in a majority setting. In addition, while the lexical characteristics of Hearst French have been subjected to scrutiny by a handful of researchers (Germain 1976; Golembeski 1999, 2000), to my knowledge no studies have yet examined its phonetic and phonological aspects.

The fieldwork was carried out over a one-week period in August 2009, with the author of this chapter working with a research assistant who had lived in the community from age 2 to age 18. In the weeks leading up to the trip to Hearst, once ethics approval for the study had been obtained, the research assistant made a selection of potential subjects among her friends and acquaintances and contacted them by phone and e-mail to invite them to participate. During the recording sessions in Hearst, she led the free conversation part and the other interviewer, who was external to the community and previously unknown to the speakers, conducted the formal interviews. Recordings were done using a Marantz Professional 600 digital recorder with Shure microphones, generating 22.5 KHz stereo wav files, with the fieldworker on one channel and the participant on the other, or, in the case of conversations between two participants, each participant on a separate channel. Demographic information about the speakers is given in Table 1.

All speakers are bilingual, and all but one use French as their primary or sole language of everyday communication. Their levels of English proficiency vary and many speak English with at least a slight francophone accent. An important difference between our sampling of speakers and the sampling in the Windsor PFC survey is the lack of a significant number of "restricted" speakers (Mougeon &

Table 1. Demographic information on PFC Hearst speakers

Age	Sex	Age	Family relations
16–30 (5)			
cobrp1	F	19	daughter of cobal1
cobvf1	F	26	
cobjc1	M	18	son of cobnc1
cobfb1	M	23	
cobjc2	M	25	
31–60 (4)			
cobal1	F	55	mother of cobrp1
cobrl1	F	42	daughter of cobjl1
cobnc1	M	47	father of cobjc1
coboc1	M	58	brother of cobnc1
60+ (3)			
cobrg1	F	65	
cobhb1	F	60	
cobjl1	M	78	father of cobrl1

Beniak 1991, see below), who use English in most communication situations outside of the school. The only participant from our sample who might not be classified as unrestricted is the youngest, cobjc1, whose mother is Anglophone. This speaker, qualified by his father, cobnc1, as "le petit Anglais de la gang," despite his frequent recourse to code switching and the difficulty he appears to have with the reading aloud task, has a French that is fluent and doesn't show any strong trace of an Anglophone learner accent. His language use profile corresponds to the "semi-restricted" category according to Mougeon & Beniak's classification.

3. Ontario French

A considerable amount of research has been carried out on Ontario French, with a large proportion of it focusing on variation in morphology, syntax and lexicon (Beniak & Mougeon 1989; Mougeon & Beniak 1991; Mougeon & Nadasdi 1998; Mougeon 2005; Nadasdi 2005; Barysevich 2009; among others). The majority of studies are based on corpora gathered in French-medium schools, with subject sampling limited to the 15–18 age range.

A considerable number of studies have examined the effects of the minority situation, and particularly of the consequences of this situation: linguistic restriction (or reduced frequency in use of French) and influence of English. Cross-linguistic influence from the majority language, English, is the most obvious starting point when one seeks to characterize Ontario French and identify particularities that distinguish it from Quebec French. Mougeon, Brent-Palmer, Bélanger & Cichocki (1982) show that English borrowings are less frequent than stereotypes might lead one to believe and that, predictably, their frequency is inversely proportional to the demographic concentration of francophones in the community. Mougeon & Beniak (1991) demonstrate that use of the core lexical borrowing of the connector *so* (alternating with non-borrowed equivalents *alors* and *ça fait que*) is more frequent in minority than majority settings, and also more frequent among balanced bilinguals and restricted speakers, a tendency also attested in Hearst by Golembeski (1999) (see below).

French language use restriction has been shown to result in grammatical simplification among restricted speakers who exhibit the highest use of leveled third-person plural forms in verbs such as *savoir*: *eux-aut' i' sait* (vs. *ils savent*). Restricted speakers, who make little use of French outside of the French-medium school, have also been shown to underuse vernacular variants such as possessive *à* (*la maison à / de Marie*), a phenomenon termed 'sociolectal reduction' (Mougeon & Beniak 1991) or 'devernacularization' (Mougeon 2005). Tennant (1995, 1996) illustrates a similar tendency in a case of morphophonological variation: the

deletion of /l/ in pronouns and articles, a phenomenon also studied in Ottawa-Hull by Poplack & Walker (1986).

Léon & Cichocki (1989) survey the early research on phonetic and phonological characteristics of Ontario French: Opitz (1968) on unstressed /a/ and /ɑ/, Séguinot (1968) and Léon (1983) on nasal vowels, Cichocki & Lepetit (1981) on /h/, and Baligand & Cichocki (1985) on /e/ and /ɛ/. These latter two studies take language dominance of speakers into account, but do not find any systematic effect of that factor on the dependent variables under study.

A few studies have examined the French spoken in Northern regions of Ontario. Léon, James & Sévigny (1968) observe a duration difference in /a/ that underlies the contrast between present *il est après faire* 'he is doing' and imperfect *il était après faire* 'he was doing', in which a the /ɛ/ of *était* lowers and combines with the /a/ of *après*. Holder's (1972) study based on three speakers from the Sudbury-North Bay region is more general in focus, and confirms that all phonetic and phonological characteristics observed in his corpus are attested elsewhere in Quebec and Acadia. Thomas (1986) examines seven phonetic variables in the French of adolescents in Sudbury: pronunciation of /ʀ/, assibilation of dental consonants, deletion of /ʀ/, laxing of high vowels, fronting of /ɑ̃/, raising of back /ɑ/, and raising of /wa/. He demonstrates that the last four variables listed here, those relating to the vowel system, are socially stratified, while the consonant ones are not. Thomas' data reveal few effects of language dominance on speakers' use of these variables, but raised variants of /ɑ̃/ do tend to be less frequent in the speech of English-dominant speakers, a trend Thomas attributes to the possible standardizing effect of the French-medium school.

A number of studies carried out at the Experimental Phonetics Laboratory at the University of Toronto in the 1970s focused on the prosody of Ontario French: Nemni (1973) comparing the intonation of the incise in Ontario and Standard French, Wrenn (1974) on intonation of the declarative sentence in the village of Lafontaine, Maury & Wrenn (1973) on question intonation, Baligand & James (1973) as well as Ginsberg (1976) on intonation in Wh-questions, Szmidt (1976) on yes/no question intonation in Lafontaine, and Baligand & James (1979) on vowel duration. Cichocki & Lepetit (1986) is the first study to show the effects of language dominance on a prosodic pattern in Ontario French, through an examination of F_0 declination in the speech of young Franco-Ontarians from Welland. Tennant (2000) and Tremblay (2007) look at rising intonation in declarative sentences, and identify probable cases of prosodic influence of English in Southwestern Ontario localities with intense language contact, London and Windsor.

Finally, we can note the contribution of studies by François Poiré and his collaborators on the PFC Windsor corpus: Poiré, Kelly & Williams (2006) on the

realization of a nasal appendix with nasal vowels, Poiré, Gurski & Kelly (2007) on glides, and Poiré, Kaminskaïa & Tremblay (2010): on liaison and schwa.

4. Hearst French

As can be seen from the map in Figure 1, Hearst is located in the northernmost part of Ontario where towns of significant size can be found. The origins of the region's Franco-Ontarian communities date back to the "third wave" of migration, according to Mougeon & Beniak's (1991) overview of the history of francophone settlement in Ontario, which began in the 1880s. The main economic activities in the early days of francophone settlements in the Northeastern region of the province were mining, forestry, and, to a lesser extent, agriculture. Farming was the main occupation of francophones who settled earlier in the Eastern region of the province, the other region where Franco-Ontarians can be found in significant local majorities, but the latitude of Hearst makes the growing season much shorter, so agriculture was a less viable economic activity there than elsewhere. While the opening of the North to francophone settlement from various regions of Quebec and Ontario began in the 1880s in the region of North Bay and Sudbury, in the case of Hearst, and neighboring towns of Timmins and Kapuskasing, it was mostly in the early decades of the 20th century that francophone communities were established.

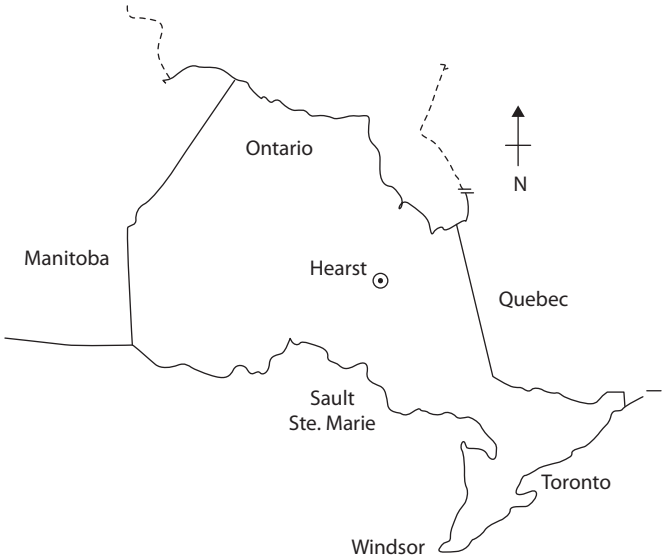

Figure 1. Location of Hearst, Ontario, from Golembeski (1999) (used by permission)

The forest industry has recently been hard-hit by the economic crisis, and Hearst is feeling the effects acutely. During the interviews I conducted with local residents, they did however express optimism that, thanks to efforts to diversify its economy, Hearst will be resilient. Hearst enjoys considerable prestige among Northern Ontario francophone communities and is indeed a significant cultural centre. It has the main campus of the Université de Hearst, a small undergraduate degree-granting institution with two satellite campuses within a radius of 250 km. It also has one of the few French-language bookstores in Ontario, and it hosts an annual French book fair that brings prominent authors. People with whom I spoke in Hearst, as well as in Timmins and Kapuskasing, where the satellite campuses of the Université de Hearst are located, were unanimous in their expression of the attitude that the French of Hearst is the least affected by English interference, an evaluation that tends to be synonymous with high quality of language in the linguistic imaginary of Franco-Ontarians.

Data from the 2006 Census (Statistics Canada 2006) allow us to appreciate the exceptional demographic status of French in Hearst. The Canadian Census asks respondents to report both their mother tongue (first language learned in childhood and still understood) and their home language (the language most often used in the home). Multiple responses are possible, but here we use only the single-response data. For the entire province of Ontario, 488,815 or 4.06% of 12,028,900 inhabitants report French as their only mother tongue, while 289,035 or 2.40% report it as their only home language. Taking the difference between these figures, we can calculate the proportion of French mother tongue speakers who do not use French as their primary language of communication in the home, 40.87%. This can be taken as the assimilation or French abandonment index (*taux d'assimilation, taux d'abandon du français*) (Beniak & Mougeon 1989: 73). Hearst, in contrast, out of a population of 5510, has 4905 inhabitants, or 89.02% who declare French to be their only mother tongue, and 4855 or 88.11%, who report it as their only home language, giving a low French abandonment index of 1.02%. Hearst and its surrounding region have important First Nations communities as well, for example in Constance Lake, with some speakers of Ojibwa and Cree, although use of these Algonkian languages is in decline. Golembeski (1999: 36) notes that, in the 1940s, "the proportion of French speakers to English speakers was roughly equal." Now, with nine inhabitants out of ten being francophone, Hearst is truly exceptional in Ontario.

Golembeski (1999) presents the most thorough and systematic study of lexical variation in Hearst French, distinguishing in his corpus among English-origin words attested in Quebec sources before 1950, those attested in Quebec sources after 1950, words attested only in Ontario sources, and words that have not been attested in any lexicographic source for Quebec or Ontario French. Among these

latter categories, Golembeski (1999: 301) notes that the following are attested in Ontario sources, but not Quebec sources: *because, but, good!, garbage, maybe, moose, remote control, right, slow, so, whatever*, while the following words found in his corpus are not attested in any previous Ontario source: *by-law, bear, chip, jack, nursing, polite, roommate, treefarmer, trend, windshield.* Participants in the PFC Hearst survey have told me that the latter word has a distinctive pronunciation in Hearst French: [wɪnʃiːʀ]. In his sociolinguistic analysis of the use of loanwords from all of these categories in Hearst, Golembeski (1999) observes that restricted speakers (those who use English in the majority of communication situations) use more English-origin words than unrestricted speakers, and working class speakers use them more than middle class speakers. He notes that, while young speakers, and particularly young men, use more English loanwords than older speakers, this may not necessarily be the sign of a change in progress, but rather a case of age grading reflecting a stable difference between generations. Finally, he notes that borrowings are more frequent among speakers who learned both languages in childhood than among those who learned English later in life. Focusing on those borrowings that were previously unattested in Quebec or Ontario French, he notes a different pattern, with language dominance and age being the statistically significant conditioning factors. Balanced bilinguals use more of these loanwords than French dominant speakers, a finding consistent with Mougeon et al.'s (1982) results. He also notes that younger speakers use fewer such loanwords than older speakers, a trend that, according to Golembeski, could reflect a change in progress towards greater standardization, as a result of greater institutional support for French, including increased access to French-language education.

Golembeski (2000) examines variable usage of the discourse connector *so* (which alternates with non-borrowed forms *alors, donc, ça fait que*). He notices an overall frequency of the borrowed form of 2.9%, similar to that observed by Mougeon & Beniak (1991) in another majority Franco-Ontarian community, Hawkesbury, and which can be compared to rates of *so* usage exceeding 50% in interviews with semi-restricted speakers in minority communities such as North Bay, Cornwall, and Pembroke. In Hearst, usage of *so* is found at a rate of 10.8% among restricted speakers, and is very rare among other speakers. Golembeski notes a correlation with age, with *so* usage being more frequent among older speakers than younger speakers, and the middle group showing the lowest use of *so*, a trend he postulates might be attributable to standardization resulting from increased institutional support for French, as noted above for other loanwords.

Golembeski is also interested in the attitudes of Hearst francophones towards English borrowings. He notes that many speakers say that English borrowings do not bother them, and that some express rather positive attitudes: "C'est plus court en anglais les mots j'trouve, hein, fait que ça vient plus court que dire tout

en français" 'Words are shorter in English I find, eh, so it's shorter that saying everything in French' (1999: 314). Golembeski points out that it is not clear that a positive attitude towards anglicisms would necessarily have a negative impact on French language maintenance, and he notes that it would be reasonable to think that knowledge and acceptance of informal anglicized French could reduce pressure to shift entirely to English.

In sum, previous work on Ontario French and Hearst French in particular gives us a solid basis on which to formulate hypotheses regarding the phonetics and phonology, as well as the sociophonetics, of Hearst French, using data from the PFC survey.

5. Vowels

5.1 Vowel inventory

Hearst French exhibits the full vowel inventory of Canadian French as described in Walker (1984: 5), Séguin (2010: 4) and Côté (2010b: 53): /i y u e ø o ɛ ɜ œ ɔ a ɑ ɛ̃ ɑ̃ ɔ̃ œ̃/, in addition to schwa /ə/. /ɜ/, the vowel found in *fête* (see Côté, this volume), will be represented in this paper as /ɛː/, following Walker (1984: 27).

Particularly notable in comparison to Standard French (or *français de référence*, FR) is the maintenance of contrasts between front /a/ and back /ɑ/, long /ɛː/ and short /ɛ/, nasals /œ̃/ and /ɛ̃/. All speakers show these distinctions in their reading of the word lists in at least some occurrences, and a number of speakers exhibit variable pronunciation, to be described below.

Hearst French also, unsurprisingly, shows abundant examples of well-documented processes that characterize the vowel system of Laurentian French: diphthongization of long vowels in closed syllables, laxing of short high vowels in closed syllables, as well as devoicing and deletion of unstressed high vowels.

That being said, we find a similar phonological patterning of mid-low and mid-high vowel pairs /ɛ, e/, /ɔ, o/, and /œ, ø/ to non-Southern European French.

5.2 Front /a/ back /ɑ/

Analysis of the reading of the minimal pairs *mâle* ~ *mal* and *pâte* ~ *pate* shows that the contrast is maintained by almost all speakers. *patte* is pronounced [pat] by all, and *pâte* is pronounced [pɑt] by all when first read in the random list, and one female speaker, cobrl1, neutralized the opposition in reading the minimal pair at the end of the list by pronouncing [pat] for *pâte*. *mal* is consistently pronounced

as expected with [a] while *mâle* is pronounced with [ɑ] by all speakers but one, cobrg1 a female speaker, 65 years old, who reads in a very careful speech style and may be exercising hypercorrection here when she pronounces [mal]. We do not find a clear [a–ɑ] opposition in the *rat* ~ *ras* minimal pair, a result likely attributable to the fact that the phonemic contrast tends to be neutralized in stressed open syllables in Laurentian French, in favor of the back [ɑ] vowel. We thus find for *rat* six occurrences of [ʀa] and five of [ʀɑ], the latter all by male speakers. In *ras*, the front vowel [a] predominates, being used by seven speakers, while we find [ɑ] in the reading of four speakers, again all of them male.[2]

Along with widespread use of the back vowel [ɑ], there would appear to be a convergence toward a European standard in this careful reading style, particularly among female speakers. The absence of raised back variants such as [ɔ] in open syllable, and of diphthongs such as [ɑw] in the closed syllable of *pâte* may also be attributable to the careful word list style.

5.3 Mid vowels

5.3.1 *Mid-high /e/ and mid-low /ɛ/, and long /ɛː/ (/ɜ/)*

Readings of the following words show categorical use of the expected phoneme in final (stressed) position, for [e]: *épée, épier, piqué, piquer, étrier, étriller*; and for [ɛ]: *épais*. In *piquais,* we find a single occurrence of [e], in the reading of the oldest speaker, cobjl1, and this is likely due to an error, since this speaker appeared to have some difficulty with the reading task. In *piquet*, we find eight occurrences of [ɛ] in open syllable, and two cases in closed syllable, with pronunciation of a final [t], a common characteristic of Laurentian French (Walker 1984: 95). There is one occurrence of [æ], a common vernacular allophone of /ɛ/ in a stressed open syllable.

In final closed syllables, we find short /ɛ/ categorically realized as [ɛ] in the word *faites*. The differing pronunciations observed for the word *fête* (one occurrence of [ɛː] and ten diphthongs [aj] or [ɛj]) attest to the fact that these two words form a minimal pair pointing to the existence of a distinct phoneme /ɛː/, often represented as /ɜ/ in the literature on Quebec French, as noted above. In addition to such cases where diphthongs appear in the pronunciation of an /ɛː/ that is long by nature, we also find diphthong allophones of /ɛ/ when it is long by position in a

2. Where the total number of occurrences does not add up to 12, it means there was a missing reading, either due to an error by the speaker or a short gap in the recording caused by an equipment setting that was not discovered until after fieldwork had been completed.

word ending with a lengthening consonant, as in the words *lierre* (four occurrences of [aj] and eight of [ɛː]) and *liège* (four occurrences of [aj] and seven of [ɛː]).

In unstressed open position, alongside a tendency toward mid-high [e] in *épée* and *épier* (but with two pronunciations of [ɛpe] that run counter to this trend), we also find a tendency toward vowel harmony (Léon 1992: 85) in *épais*, with six occurrences of [ɛpɛ] as well as six occurrences of [epɛ]. The words *pécheur* and *pêcheur* would appear to form a minimal pair for some speakers but not for others, with *pécheur* being pronounced [peʃœːʀ] by 11 speakers and [pɛʃœːʀ] by one speaker, and *pêcheur* pronounced [peʃœːʀ] or by five speakers, [pɛːʃœːʀ] by six speakers, and [pajʃœːʀ] by one speaker, with the diphthong attesting to the existence in the vowel system of at least some speakers of an underlying long /ɛː/ phoneme. This diphthong allophone is found in seven occurrences in the first syllable of *fêter* ([fajte]), alongside four occurrences of [ɛː] ([fɛːte]). *Fêtard* shows 11 occurrences of [fɛːtɑʀ] and one of [fetɑʀ], again by the older speaker cobjl1.

In unstressed closed position, we find considerable variation in the pronunciation of *bêtement*, with three occurrences of [ɛː], seven of diphthongs [ɛj] or [ej], and two occurrences of [e].

In short, for these mid front unrounded vowels, Hearst French shows three phonemes where Standard French has two.

5.3.2 *Mid-high /ø/ and mid-low /œ/*

In a final open syllable in the word *creux*, we find categorical use of the mid-high vowel [ø] by Hearst speakers, a result that is not surprising since no exception to the *loi de position* (LdP – see Chapter 1) has previously been attested in this environment in Laurentian French.

In non-final (unstressed) open syllable, considering occurrences of these vowels along with those of schwa, we find more variation:

- *des jeunets*: 4 occurrences of [œ], 7 occurrences of [ø] and 1 occurrence of [ə]
- *déjeuner:* 8 occurrences of [œ] and 2 occurrences of [ø]
- *des genets*: 7 occurrences of [ə], 3 occurrences of [œ] and 2 occurrences of [ø]
- *dégeler*: 2 occurrences of [ə], and 8 with deletion of the vowel

These results suggest a phonemic distinction between schwa on the one hand, and /ø/ and /œ/ on the other, since only schwa is subject to deletion. Formant analysis such as that presented in Séguin (2010) would allow for a more precise characterization of the nature of these vowels.

In final closed syllables, we find the contrast between /ø/ and /œ/ manifested variably, with the expected categorical [œ] in both readings of *jeune*. We find eight occurrences of [ø] and four of [œ] in *jeûne* in the randomized list, and only one when it occurs as a minimal pair with *jeune*. The mid-low vowel in *jeune* of course

follows the LdP, while the mid-high vowel in *jeûne* is an exception of the kind observed in non-Southern European French. [œ] predominates in *peuple* (11 occurrences and one of [ø]) and *meurtre* (ten occurrences and one of [ø]), while [ø] predominates in *feutre* (ten occurrences and two of [œ]) and *creuse* (11 occurrences and one of [œ]).

5.3.3 *Mid-high /o/ and mid-low /ɔ/*

As expected, in stressed open syllables, the LdP applies systematically to back mid vowels, which are realized as [o] without exception in Hearst French. In stressed closed syllables, however, minimal pairs such as *roc* [ʀɔk] ~ *rauque* [ʀok] and *pomme* [pɔm] ~ *paume* [pom] confirm the potential for contrast between these two phonemes, the first item of each pair representing a graphic exception (due to the <au> spelling) to the LdP. In stressed closed syllables, however, minimal pairs such as *roc* [ʀɔk] ~ *rauque* [ʀok] and *pomme* [pɔm] ~ *paume* [pom] confirm the potential for contrast between these two phonemes, the first item of each pair representing a graphic exception (due to the <au> spelling) to the LdP. The only divergences from these expected pronunciations are an open [ɔ] for one speaker in *paume*, and an erroneous pronunciation [ʀak] for *rauque*. We find [ʀɔs] categorically for the final syllable of *rhinocéros*.

In unstressed (non-final) open syllable, the opposition between /o/ and /ɔ/ is, unsurprisingly, clearly maintained in the minimal pair reading at the end of the list of *beauté* ~ *botté*. We also find [o] for all speakers when *beauté* is pronounced in the random section of the list, and for *botté*, ten occurrences of the expected open [ɔ], and two of [o].

5.4 Nasal vowels

For nasal vowels, Hearst French, like other varieties of Laurentian French, exhibits a system of four phonemes, with the /œ̃–ɛ̃/ contrast systematically retained in the *brun* ~ *brin* pair, both when they are read together in the minimal pair section of the list, and when read in the randomized part of the list. /ɑ̃/ and /ɔ̃/ are also clearly distinct, with no overlap in *blanc* and *blond*. The pronunciation of *blanc* reflects Laurentian French forms of the phoneme /ɑ̃/: nine occurrences of [ɑ̃], two of [æ̃], and one of [ɛ̃], this latter form illustrating the perennial point of interdialectal misunderstanding of the words for wind (*vent*) and wine (*vin*) for speakers of European French whose ears are not accustomed to the surface phonetics of Laurentian French.

5.5 High vowel laxing

When the high vowels /i y u/ are in a stressed closed syllable whose coda is not filled by a lengthening consonant (/z ʒ ʀ v vʀ/) in Laurentian French, the lax allophones of these vowels commonly appear (Walker 1984: 51–53; Côté 2010b: 53): [ɪ ʏ ʊ]. The fact that only four speakers in the Hearst corpus representing different age groups (cobjl1, cobal1, cobvf1, coboc1) lax the /i/ in the final syllable in *islamique* may be attributable to the formal reading style.

This laxing can also occur in unstressed closed syllables, or in unstressed open syllables due to vowel harmony (Walker 1984: 54–55). Six of our Hearst speakers lax the initial /i/ in *islamique*, and six have a lax vowel [ʊ] in the first syllable of *bouleverser*.

Many more examples of laxing can be found through a cursory listening of the supplementary reading list and spontaneous speech parts of the corpus, and they will be analyzed in detail in a subsequent study.

5.6 Devoicing of high vowels

Walker (1984: 65–69) notes that high vowels /i y u/ are commonly devoiced or deleted in unstressed position. The PFC wordlist contains a number of words with [i] between two stops, and devoiced pronunciations of the vowel are quite frequent: *piquer* (6 devoiced), *piquet* (7 devoiced), *piqué* (7 devoiced), *piquais* (7 devoiced), *extraordinaire* (9 devoiced). This kind of devoicing, as well as deletion of unstressed high vowels (for example between two fricatives), appear from informal observations to be quite common in the spontaneous speech part of the Hearst corpus, and in the reading of the supplementary word list, and will be analyzed in depth in an upcoming study.

The data we have analyzed here from the PFC wordlist show that the vowel system of Hearst French presents no great surprises in that it exhibits the system of Laurentian French vowels. It maintains distinct phonemes /ɑ/, /ɛː/ and /œ̃/ that, in *français de référence,* have undergone more or less complete merger with neighboring vowels in the system. Finally, processes that have been shown elsewhere (Walker 1984) to be widespread in Laurentian French vernacular speech also show up with considerable frequency here in formal reading style.

6. Consonants

6.1 Consonant inventory

Not much needs to be said here about particularities of the inventory of consonant phonemes in Hearst French, since it matches that of Laurentian French in general, which itself differs little from FR. For obstruents, we find the FR stops /p t k b d g/ and fricatives /f v s z ʃ ʒ/. We will discuss below the assibilation of /t/ and /d/. As for sonorants, we find the nasals /m n ɲ/ and /ŋ/, as well as /ʀ/. Variation observed in the realization of some of these phonemes will be discussed below.

6.2 Palatal nasal /ɲ/

The palatal nasal [ɲ] predominates in the reading of the words *compagnie* (10 occurrences of [ɲ] and 1 of [nj]) and *agneau* (nine occurrences of [ɲ] and two of [nj]). In addition, as Walker (1984: 98) notes, /ɲ/ in Laurentian French undergoes an obligatory velarization process in syllable-final position, changing to [ŋ]. In *compagne*, seven speakers use velar [ŋ] and five use palatal [ɲ]. This suggests that Walker's obligatory rule may only be obligatory in spontaneous vernacular speech, and that style shifting towards the standard in reading aloud introduce variation. The word *baignoire* in our reading corpus exhibits categorical use of velar [ŋ], possible due to assimilation with the following velar glide. Finally, many Hearst speakers seem to be unfamiliar with /ɲ/ in word-initial position and with the PFC wordlist lexical item that contains it, *gnôle*. Indeed, several speakers hesitated on that word and asked what it meant, four of them pronouncing [ɲ], four of them [n] and three pronouncing [nj].

6.3 Assibilation of coronal stops

A well-known characteristic that distinguishes Laurentian French from European as well as traditional Acadian varieties is the affrication or assibilation of coronal stops /t/ and /d/ before high front vowels and glides [i y j ɥ] (Poirier 2009). In the Hearst corpus for the PFC reading list, this process applies almost categorically, with 11 speakers pronouncing [tˢ] in *petit*, and [dᶻ] in *extraordinaire*. The only speaker not to assibilate in these two words is cobrg1, who does use assibilation in spontaneous speech, but appears to be paying careful attention to enunciating sounds according to the prescriptive norm in reading style, as will be noted below in the discussion of schwa.

6.4 /ʀ/

The variation between front [r] and back [ʀ] or [ʁ] in Laurentian French is well known (Clermont & Cedergren 1979; Walker 1984: 86). As Thomas (1986) observes, front and back variants were in an approximately 50/50 distribution in his corpus gathered among Sudbury adolescents in the 1970s. In the Hearst corpus, back [ʀ] (we have not yet done a fine-grained analysis to distinguish uvular and velar variants) is almost categorically used. In the reading list, we find only one occurrence of apical [r] in the word *étriller*, pronounced by an older speaker, cobrg1.

6.5 Final /t/ retained

As noted above in the discussion of /e–ɛ/, in the word *piquet*, two speakers pronounce a final /t/. Both of these speakers are in the younger generation, one of them, cobjc1, being the most English dominant, while the other, cobvf1, is very French dominant. As Walker (1984: 96) notes, the orthography may play a role in the presence of these final consonants that are absent in FR, but it should be noted that it is a common phenomenon in Laurentian French, particularly in frequent words such as *tout*, *bout*, and *prêt*.

6.6 Consonant clusters

Deletion of final consonants and simplification of final consonant clusters are common phenomena in many varieties of French and, as Walker (1984: 93) points out, Laurentian French "has carried forward [deletion of final consonants] to a greater degree than is found even in colloquial [Standard French]." The PFC wordlist includes a number of diagnostic items for consonant clusters in internal and in final positions. In internal clusters, we find almost categorical pronunciation of all consonants in the words *ex-femme, explosion, ex-mari,* and *extraordinaire*. The only exception is one speaker, cobjl1, who pronounces the latter word [stʀɔʀdᶻi̥nɛʀ]. In final position, we have one occurrence of deletion of the final /t/ in *intact*, and two such occurrences in *infect*. In final Cʀ clusters, we find deletion of [ʀ] for five speakers in *titre* and four in *autre*.

7. Glides

Hearst French has all three glides found in FR and other varieties of Laurentian French: [j w ɥ]. Glide-vowel sequences following a consonant in the reading of the PFC wordlist by Hearst speakers show variation between syneresis, pronunciation of just the glide and the following vowel, and dieresis, with insertion of a vowel before the glide (or simply a sequence of two vowels).

The following words show categorical syneresis: *millionnaire, reliure, million, cinquième*, while the following show syneresis in nine or more cases (number of cases indicated in parentheses): *niece* (11), *miette* (10), *relier* (10), *fou à lier* (9). We observe a considerable degree of competition between the two categories of glide formation in: *scier* (7 syneresis), *mouette* (6 syneresis), *muette* (5 syneresis), *niais* (4 syneresis), *influence* (4 syneresis), and *nier* (1 syneresis). In all of the above cases, the glide is preceded by a single consonant. In the following words, where the glide is preceded by two consonants, dieresis is categorical: *quatrième, vous prendriez, nous prendrions, trouer*.

8. Liaison

For most cases in the PFC reading list that represent contexts traditionally classified as obligatory liaison (although the obligatory nature of liaison in many of these cases is debatable), we predictably find categorical pronunciation of the liaison consonant: *très_inquiet, les_élections, les_opposants, en_effet, son_usine, d'un_autre côté, on_en_a vu, on_est, nous_avons, quelques_articles, des_activistes, dans_une*. For the following cases, however, we observe some degree of variation: *grand_émoi* (4 non liaisons), *jeux_olympiques* (7 non liaisons), *grand_honneur* (2 non liaisons), *tout_est* (2 non liaisons). As regards the cases in the PFC list belonging to the traditional category of forbidden liaisons (*liaisons interdites*), we find categorical non pronunciation of the liaison consonant for Hearst speakers: *Berlin// en, Comment// en plus, le coin// on, vraiment// une étape*.

Variable liaisons traditionally classified as "*liaisons facultatives*" predictably show variation in Hearst French, but the variation is confined within a rather narrow range. Only two of these liaisons are made frequently: *est_en* (*grand émoi*) (8 liaisons) and *est_en* (*revanche*) (10 liaisons). In *visites_officielles, pâtes_italiennes,* and *préparent_une*, cobhb1 (a French instructor who appears to be quite aware of the formal French norm) is the only speaker to make the liaison. In *chemises_en* and *circuits_habituels*, two speakers make the liaison. Finally, the following optional liaisons are not made by any of the Hearst speakers: *plus// à quel, toujours// au, toujours// autour, provoquer// une, fanatiques// auraient, s'est// en,* and *trouver// au*.

9. Schwa

9.1 Analysis of schwa

For this preliminary analysis of schwa in Hearst French, I noted the presence or absence of schwa in speakers' pronunciations for the following contexts of schwa represented in the passage "Le Premier Minstre ira-t-il à Beaulieu": initial position of utterance, initial syllable of polysyllabic word, word-internal position, word-final position between consonants, monosyllabic word, sequence of schwas, insertion site. Other contexts where schwa is coded in the PFC to reflect variation in Midi French varieties are not considered here, because they show categorical deletion of schwa in Laurentian French: word-final after a single consonant, or with no consonant at the beginning of the following word, and word-final following a vowel.

9.2 Initial position of utterance

The PFC reading passage contains four occurrences of schwa in the initial syllable of the utterance in the definite article *le*. In all of these cases in the Hearst corpus, the schwa is pronounced.

9.3 Initial syllable of polysyllabic word

For schwa in the initial syllable of a polysyllabic word, we find categorical pronunciation of schwa in *depuis* and *seraient*, and some variation in *revanche* (schwa deleted by two speakers) and *chemises* (deleted by two speakers).

9.4 Word-internal position

Schwa in word-internal position in Hearst speakers' reading of the passage follows closely the rules of FR described in Léon & Bhatt (2005), among other sources, with categorical deletion of schwa when preceded by a single consonant in *bêtement* and *détachement*, and pronounced by two speakers in *indiqueraient*. With two consonants preceding, the schwa is pronounced by all speakers in *gouvernement*, in spite of the potential interference one might expect from the trisyllabic English word *government*.

9.5 Word-final position between consonants

A similar observation to that made for the word *gouvernement* can be made for word-final schwa preceded by two consonants and with a single consonant at the beginning of the following word. In the seven occurrences of *titre* where [R] is maintained and the eight occurrences of *autre* where [R] is maintained, the schwa is pronounced. In the remaining occurrences where [R] is deleted, schwa is predictably also deleted.

9.6 Monosyllabic word

Schwa in monosyllabic words in the reading of the passage by Hearst speakers shows some degree of variation, but schwa retention is the dominant realization.

For the following monosyllabic words, schwa is categorically maintained (words are shown with the preceding and the following word): *décidé de faire, titres de gloire, gloire de Beaulieu, olympiques de Berlin, usine de pâtes, Beaulieu ce grand, car le Premier, Ministre ne cesse, cesse de baisser, à se multiplier, opposants de tous, assure que tout, pour le protéger, risquent de provoquer, membre de l'opposition, jaloux de notre, nous ne répondons, maire de Beaulieu, Beaulieu ne sait, saint se vouer, désespoir de cause*.

For each of the following monosyllabic words, we find schwa deletion in the reading of only one speaker: *village de Beaulieu, cours de sa, local de course, découvrir ce qu'il, fois que les, église de Saint-Martinville.*

Two speakers delete schwa in *de* in *maire de Beaulieu*, and four speakers delete schwa in the monosyllabic words in the following: *tournée de la, détachement de police, dans le coin, avons le soutien, a le sentiment.*

These data reflect, as for other PFC survey points, the high level of stability of schwa in reading style for this distribution.

9.7 Sequence of schwas

The reading passage has two sequences of more than one monosyllabic word with schwa. In the first, *de se*, both schwas are pronounced by all speakers except for one, who deletes the schwa in *se*. In the other sequence, *que de se*, nine speakers pronounce all three schwas and one deletes the schwa of *de*.

9.8 Schwa insertion sites

Epenthetic schwa is not frequent in the Hearst speakers' rendering of the reading passage. In *Marc Blanc*, one speaker inserts schwa, while in *Ouest Liberté*, three speakers insert a schwa.

9.9 General observations

The tendency observed here to retain schwa could be attributed to the formal reading passage style or it could be symptomatic of a tendency for Franco-Ontarian speakers to maintain schwa in monosyllables. Poiré et al. (2010) observe a tendency for Windsor French speakers in intense contact with English to have lower rates of schwa deletion. Future studies comparing schwa in Windsor and Hearst French could shed further light on this question.

It is interesting to note that one speaker, cobrg1, is very careful to pronounce schwa, but there are a considerable number of liaisons that she does not make, including obligatory ones such as *grand_émoi*, while another speaker in the same age group, cobhb1, pronounces several optional liaisons (*pâtes italiennes, circuits habituelles, visites officielles*) but drops schwa quite frequently in contexts where other speakers pronounce it (*tournée de la région, détachement de police, dans le coin*). A future analysis of the interview and conversation parts of the corpus will allow us to shed more light on this stylistic variation in liaison and schwa.

10. Prosody: Rhythm and language contact

One of the initial focuses of work on the PFC Hearst corpus is prosodic rhythm and how it might vary on the minority/majority dimension as a result of differing levels of influence from English. In this section, after situating this research in the context of previous work on rhythm, I briefly describe some initial results from Kaminskaïa, Tennant & Russell (2010) drawing on the Hearst, Windsor and Quebec City PFC corpora.

The classification of languages according to their overall rhythm patterns, attributed first to Pike (1945) and further developed by Abercrombie (1967), is well known. According to the traditional dichotomy (Abercrombie 1967: 98), languages like French and Spanish are termed syllable-timed, since there is regularity in the duration of intervals between syllables, while English and German are considered stress-timed languages due to the fact that intervals between stresses are thought to be regularly distributed across the utterance. Abercrombie adds a

third category, mora timing, for Japanese. It is also well known that this categorization of languages on the basis of isochronic spacing of syllables or stresses, is not universally accepted, and has been questioned by several researchers, for example Dauer (1983), Nolan & Asu (2009).

Wenk & Wioland (1982) call into question the classification of French as a syllable-timed language, and propose a different label for its rhythm pattern: "trailer timed," due to the status of the final syllable of the rhythm group. Léon (1992) joins other phoneticians and phonologists in defining the French rhythm group as a sequence of unaccented syllables of more or less equal duration followed by an accented syllable that is twice the duration of an unaccented syllable. This description of the basic "Standard French" rhythm pattern does of course set aside group-initial stress (with emphatic or other functions), and when we look at regional variation, we see that not all varieties, not even all Hexagonal varieties, conform to the pattern. Tables 2 and 3 illustrate the phenomenon for four-syllable rhythm groups (or accent phrases), the first table giving average durations in centiseconds and the second table representing durations as a percentage of the duration of the group-final syllable. For Standard European French, we can see that unstressed syllables preceding the final are of more or less equal duration, and the duration of the final stressed syllable is at least double that of an unstressed syllable. In the Ontario French studied by Robinson (1968), a corpus drawn from speakers recorded during a radio broadcast and speaking a fairly standardized variety of Canadian French, we see that the duration difference between the penult and final syllable is lower, while in Nova Scotia and PEI Acadian varieties, the length of the penult approaches that of the final syllable. The findings of Tennant & King (2007) suggest that the rhythm pattern of Newfoundland French resembles that of the Ontario variety studied by Robinson.

Over the past decade, one of the most notable developments in research on prosodic rhythm has been the application of rhythm indices designed to situate

Table 2. Average syllable durations (in centiseconds) in 4-syllable rhythm groups in six varieties of French

	4th to last position	**3rd to last position**	**Penult**	**Final**
Standard (European) (Léon 1992: 111)	13.2	14.5	16.3	25.7
Midi (Léon 1992: 111)	17.4	13.9	19.7	18.4
Ontario (Robinson 1968: 166)	12.7	14.9	15.0	20.3
Acadian, Nova Scotia (Cichocki 1997: 66)	16.1	17.4	20.7	22.7
Acadian, Prince Edward Island (Tennant & King 2007)	13.2	14.0	17.1	21.5
Acadian, Newfoundland (Tennant & King 2007)	14.9	16.7	17.7	24.2

Table 3. Average syllable durations (as proportion of final syllable duration) in 4-syllable rhythm groups in six varieties of French

	4th to last position	3rd to last position	Penult	Final
Standard (European) (Léon 1992: 111)	51.4%	56.4%	63.4%	100.0%
Midi (Léon 1992: 111)	94.6%	75.5%	107.1%	100.0%
Ontario (Robinson 1968: 166)	62.6%	73.4%	73.9%	100.0%
Acadian Nova Scotia (Cichocki 1997: 66)	70.9%	76.7%	91.2%	100.0%
Acadian Prince Edward Island (Tennant & King 2007)	61.4%	65.1%	79.5%	100.0%
Acadian Newfoundland (Tennant & King 2007)	61.6%	69.0%	73.1%	100.0%

languages and varieties along a continuum between the two poles of syllable timing and stress timing, based on the degree of syllable-to-syllable duration fluctuations. Ramus, Nespor & Mehler (1999: 272) propose a number of interval measures: the proportion of vocalic intervals within the sentence, that is, the sum of vocalic intervals divided by the total duration of the sentence, noted as %V, the standard deviation of the duration of vocalic intervals within each sentence, noted as ΔV, and the standard deviation of the duration of consonantal intervals within each sentence, noted as ΔC. Another approach, developed by Low, Grabe & Nolan (2000), represents rhythm patterns in terms of durational variability between pairs of contiguous segments. This Pairwise Variability Index (or PVI) "captures the degree of durational variability in a set of acoustic data, measured sequentially, and it allows us to express numerically a tendency towards stress- or syllable-timing in one language or variety relative to another" (Low et al. 2000: 378). The version of the PVI adopted for the study of rhythm in the Ontario PFC project, nPVI-V, measures duration variability between pairs of contiguous segments on the vowel tier. The nPVI-V would appear to be the PVI index most used in recent rhythm research in a variationist framework (Carter 2005; Thomas & Carter 2006) and according to White & Mattys (2007), it is an effective metric for distinguishing languages by rhythm class. It is obtained by taking the absolute value of the duration difference between each pair of contiguous vowels and dividing this absolute value by half of the total duration of the two vowels. The central tendency of these PVI quotients (and the median tends to be used rather than the mean) is the nPVI-V for the speech sample.

Table 4 gives PVI values from Grabe & Low (2002) for a selection of language varieties, by descending order of PVI value, that is, going from more syllable-timed to more stress-timed varieties. We can note the location of British English and French, presumably Standard European French, in this table, which in the

Table 4. PVI values for a range of languages (Grabe & Low 2002)

Language	nPVI-V
Thai	65.8
Dutch	65.5
German	59.7
British English	**57.2**
Tamil	55.8
Malay	53.6
Singapore English	52.3
Greek	48.7
Welsh	48.2
Romanian	46.9
Polish	46.6
Estonian	45.4
Catalan	44.6
French	**43.5**
Japanese	40.9
Luxembourg	37.7
Spanish	29.7
Mandarin	27.0

absence of data for Canadian English and Quebec French, will serve as provisional benchmarks for comparing the PVI values of our Ontario French speakers.

For our initial study of rhythm in the PFC corpus, we selected three Windsor speakers, four Hearst speakers and two Quebec City speakers. Their sex and age information are given along with median nPVI-V values measured on the basis of a minimum of 200 PVI quotients in Table 5. Our working hypothesis was that the Ontario speakers would show PVI values closer to those of English than Quebec speakers (i.e., higher PVI values), and that the Windsor speakers, due to their minority situation in intense contact with English, would have the highest PVI values.

These results show some individual variation, but all PVI values are clearly in the syllable-timed range. We can observe small differences in PVI values between speakers from the minority setting (Windsor) and the majority settings (Hearst, Quebec City), but the differences are not large and would not likely be statistically significant. Bearing in mind the reference values of 57.2 for British English and 43.5 for Standard French given in Table 4 from Low & Grabe (2002), it is clear that all of these PVI values are much closer to those for French than those for English, and indeed, it may well be the case that the overall rhythm pattern of Ontario French is not subject to English influence. Future studies applying the

Table 5. nPVI-V values for ten speakers from three PFC surveys on Laurentian French

		Sex and age		Median nPVI-V
Windsor	coarc1	M	66	44.5
	coahc1	F	65	45.6
	coamc1	M	33	45.9
	AVG			**45.5**
Hearst	cobjl1	M	78	42.8
	cobrl1	F	44	37.6
	cobnc1	M	45	46.2
	cobjc1	M	18	46.4
	AVG			**43.9**
Québec	cqamg1	F	26	42.4
	cqams1	F	25	45.5
	AVG			**44.5**

other rhythm indices mentioned above, as well as more fine-grained analyses of timing within prosodic units, will explore this question further.

11. Conclusion

The goal of this chapter has been to present the Hearst Ontario PFC study and describe the main phonological characteristics of this variety of Laurentian French that finds itself in an exceptional situation of being the local majority language in a Canadian location outside of Quebec.

The analysis of the reading portion of the corpus shows that it follows expected trends of Laurentian French in its segmental inventory and realization of liaison and schwa, as well as in the application of rules such as assibilation of coronal stops, laxing and devoicing of high vowels, and diphthongization. These tendencies will be verified in future studies on the interview and conversation parts of the corpus.

Our initial study of rhythm (Kaminskaïa et al. 2010) suggests that some aspects of the prosody of French such as its rhythmic pattern might be impervious to significant English influence in minority situations such as in Windsor, Ontario. The Hearst PFC corpus, which represents Laurentian French outside Quebec in a situation of low intensity contact with English, provides an essential reference point for further research into such questions.

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CHAPTER 13

Albertan French phonology

French in an anglophone context*

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1. Introduction

French was the first European language spoken in Alberta and, to the surprise of many, the majority of the province's population as well as that of Edmonton, the capital city, was francophone until the beginning of the 20th century.[1] The language was originally brought into the territory in the 18th century by explorers and traders, and subsequently implanted in a number of Métis[2] communities as the Métis moved westward as a result of pressure on their settlements and their way of life. Many of these communities were established in proximity to Catholic missions, and the Catholic Church continued to play a significant role in encouraging Catholic and francophone immigration into the Canadian west well into the early decades of the 20th century. This immigration was seen as a counterbalance to the waves of additional immigrants, from Europe in particular, who were encouraged to populate the vast and empty territories, settlers who in the majority were neither Catholic nor francophone. There are literally hundreds of French

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1. Alberta is the westernmost of Canada's prairie provinces. It covers an area of some 661,818 square kilometers, and has a current population of approximately 3,800,000 inhabitants. In 1900, by contrast, the population was just over 73,000, so the number of French speakers could hardly have exceeded 40,000 at that time.

2. In this context, 'Métis' refers to a person or a family of mixed origin, French and Indian, French-speaking and Catholic. In the middle of the nineteenth century, the Métis were sufficiently numerous to form a distinct society on the Prairies and a recognizably different dialect of French is still heard. See Papen (1984) for an excellent discussion of this population.

names present in Alberta history – reflecting the influential citizens who left their mark in place names or in their impact on the development of the province.

If the early years had a distinctly French "flavor," the twentieth century saw a steady reduction in the francophone proportion of the populace. At the onset of the 21st century, roughly 60,000 French speakers, or markedly less than 2% of the total population, are to be found, and the sociolinguistic composition of the French community has become increasingly heterogeneous. The early population had very largely Quebec roots, and their speech is easily recognizable as a popular variety of what may be called general Canadian French ("le français laurentien"). More recently, these original French speakers have been reinforced by immigration from a range of additional communities: European, African, Caribbean, as well as large numbers of immersion graduates who, if not strictly comparable to native speakers, certainly buttress support for the French language and culture in the province.

Returning to the earlier and traditional sources, however, the French communities can largely be seen in three clusters: villages in the centre of the province surrounding Edmonton (Beaumont, St-Albert, Legal, Morinville, Villeneuve…), and two further groupings. The first of these is in the center-eastern region and includes Bonnyville, St-Paul, Lac La Biche, Plamondon, Thérien and others; the second in the north west, in the general Peace River region: Guy, Falher, Donnelly, Girouxville, Nampa, St-Isidore and others. The Peace River region still contains the highest proportion of francophones in Alberta, although recent changes have drastically modified the demography of the region.[3] It is here that the fieldwork for the *Phonologie du français contemporain* (PFC) project was carried out, and this report on Albertan French (AF) is based on data from those interviews.

2. The speakers

Interviews were conducted in the summer of 2001 with twelve speakers residing in villages in the heavily agricultural area south east of the city of Peace River: seven women; five men. Three age groups are represented: five "seniors" over 65 years of age (three women, two men), four "moyens" between 25 and 64 (two women, two men), and three "juniors" under 25 (two women, one man). With one exception (a senior born in Vivian, South Dakota who moved to the area at a

3. For example, in the 1971 census, 60% of the population of the region was identified as of French origin, compared to 50% in 2001. In 1981 (the first year this question was asked) 44% of the households had French as "la seule langue du foyer." By 2001, this number had fallen drastically to only 11%, although 37% of homes reported use of both French and English.

pre-school age), all speakers were born in Alberta, and all are bilingual in French and English. The oldest speaker was 82 at the time of the interviews, the youngest 14. Recordings follow the PFC protocol: reading of word lists (both the general list and one developed specifically to test for widespread Canadian French characteristics such as vowel laxing or diphthongization, traits which do not emerge from the general list) and the diagnostic text plus recording of informal spontaneous conversations.[4] The structure of the phonological system of AF may easily be determined from the diagnostic word lists, and is confirmed by speaker behavior in the conversations. As will be seen below, it reflects to a highly significant degree the system of the Canadian French vernacular (popular Canadian French or PCF). More detailed discussion of liaison and schwa behavior depends directly on longer texts: the diagnostic reading passage and the spontaneous conversations. Two of the reading passages proved to be unusable, however, and four additional speakers manifested significant difficulties in reading. The reading by the latter four is very hesitant (one does not read at all, either in English or French), to the degree that evaluation of the behavior of schwa and liaison, behavior which is heavily determined by phonological phrasing, would not be valid. Consequently, analysis of the latter phenomena will deal with all conversations but with diagnostic passages from only six informants. Details concerning the speakers follow in Table 1.

Table 1. Speakers in the PFC Canada Albertan French corpus

Speaker (PFC code, caa---)	Age	Sex	Home	Profession	Diagnostic reading passage
pm1	82	M	Guy	Retired (farmer, civil servant)	N
ca1	80	F	Guy	Retired (teacher)	Y
mg1	75	F	McLennan	Retired (teacher, librarian)	N
dl1	72	M	McLennan	Retired	N
al1	68	F	McLennan	Housewife	N (hesitations)
lm1	56	F	Guy	Secretary-Treasurer	Y
ag2	51	M	McLennan	Farmer	N (hesitations)
rl1	45	M	Donnelly	Self-employed	N (hesitations)
ag3	45	F	Donnelly	Teacher	Y
ca2	19	F	Guy	Student	Y
vg1	17	F	McLennan	Student	Y
lg1	14	M	McLennan	Student	Y

4. Interviews were conducted by two young women, Mélanie Boudreaux and Doris LaChance, both in-group members of the community who interviewed close friends or relatives. Because of the specific circumstances of the interviews, no guided conversations were obtained.

3. The phonological system

The phonological inventory of AF, in comparison to that of "le français de référence" (henceforth referred to as FR), presents a number of conservative properties, i.e., elements that are stable in Alberta but that have disappeared or are disappearing from FR (although not, clearly, from other varieties of French), especially in the vocalic domain. Both vocalic and consonantal inventories are presented in the tables below.[5]

Table 2. Oral vowels (and glides) in AF

Oral	Front		Back	
	unrounded	rounded	unrounded	rounded
high	i / j	y / ɥ		u / w
mid-high	e	ø		o
		ə		
mid-low	ɛ ɛː	œ		ɔ
low	a		ɑ	

Table 3. Nasal vowels in AF

Nasal	Front		Back	
	unrounded	rounded	unrounded	rounded
high				
mid-high				
mid-low	ɛ̃	œ̃		ɔ̃
low			ɑ̃	

Table 4. Consonants AF

	Bilabial	Labio-dental	Alveolar	Alveo-palatal	Palatal	Velar	Uvular	Glottal
stops	p / b		t / d			k / g		
fricatives		f / v	s / z	ʃ / ʒ				h
nasals	m		n		ɲ	ŋ		
lateral			l					
rhotic						ʀ*		

* As well as [r ɾ] and others.

5. This analysis also reflects data from a conversation between two young women (both 19 at the time and both native to the region).

Among the vowels, we may first note the preservation of long /ɛː/ (*fenêtre*), of /œ̃/ (*un*), of back /ɑ/, and the opposition between /a/ and /ɑ/ (*Non je pense pas*; *Puis qu'est-ce qui se passait*). The PFC word lists (both the general list and that adapted for Canadian French) also contain items that test for each of these segments: *évêque*, *fête*, *brun – brin*, *pâte – patte*. In the case of the mid vowels /e/, /ɛ/, the distinction is clearly preserved in word-final open syllables (*épée – épais*) and, in fact, reinforced, as we will see below. Finally, in contrast to FR, schwa in AF has resisted the pressure to merge with one of the two mid front-rounded vowels: *des genêts* with /ə/ vs. *déjeuner* with /ø/, *jeune* with /œ/. As to the consonantal inventory, few comments are needed. Velar [ŋ] is regularly present, both in loan words and through a velarization process to be discussed below. Rhotics vary widely, impacted no doubt by the presence of numerous unassimilated English imports. Finally, /h/ is heard both in loans (e.g., *hitch*, *highway*) and in native forms (*honte*, *dehors*).

The phonological inventories, then, present few surprises in comparison with well-known continental varieties. It is much more in the often disparate realizations of these segments that the most characteristic and intricate traits of AF (and PCF) are to be found. The consonants present no doubt the least complex of these variations. We see the assibilation of /t/ and /d/ to [ts] and [dz] preceding high front vowels and glides: *éventuellement*; *Tu veux-tu m'en parler*; *pour dix jours*, as well as the diagnostic words *dire*, *diète*, *duel*, *tube*. Aspiration of voiceless stops, especially /p/, is also present: *à moins que*; *dans les fenêtres puis*; *avec Madame Pauline*; *quoi d'autre* [dot^{h}], plus, among other diagnostic words, *poutine*, *quinze*. As previously indicated, palatal /ɲ/ backs to /ŋ/ word-finally or preconsonantally: *baignoire*, *compagne*, *champagne* vs. *enseigner*. Further, the rhotics (for which we will use /R/ as a general cover symbol) are realized in diverse ways ([r ɾ ʁ ʀ ɚ]) in numerous diagnostic items, both by different speakers and variably in the speech of individuals, no doubt linked as well to the presence of many English loans: *Amsterdam*, *Red Light District*, *nurse*. Finally, word-final consonant clusters, including consonant + liquid, /s/ + consonant and stop + stop groups, are consistently simplified: *autres* /ot/, *notre* /nɔt/, *ensemble* /ãsãm/ (with assimilation of /b/ to the preceding nasal vowel), *triste* /tʀɪs/, *correct* /kɔʀɛk/, plus the diagnostic words *sab(le)*, *lib(re)*, *jus(te)*, *coup(le)*, *minis(tre)*, *touris(te)*, *neut(re)*, *jung(le)*, *prêt(re)*, *aveug(le)*, *convainc(re)*, *orches(tre)* (Canadian list); *intac(t)*, *peup(le)*, *meurt(re)* (general PFC list), among others.[6]

6. In contrast to the word-final simplification of consonant clusters, we may also note the insertion (or preservation) of final /t/ in various forms: *ici* (*icitte*), *tout*, *tous* /tʊt/, *fait* /fɛt/, plus numerous proper names ending in <-et> or <-ot>: *Chabo**t***, *Pâque**t***, *Morisse**t***, etc.

It is, however, in the vocalic domain that the greatest variability is found in the allophonic realizations. No doubt the best known is the laxing of short high vowels in closed syllables: [ɪ] *Belgique*, *triste*, *huit*, *musique*; [ʏ] *autobus*, *ducs*, *capsule*, *juste*; [ʊ] *toutes*, etc. The Canadian diagnostic list targets this laxing explicitly: *vite*, *plume*, *couple*, extending the test to pretonic syllables (both open and closed, where optional laxing is also found: *abusif*, *ministre*, *pilule*, *cuisine*, *boulevard*, *coutume*, *filtrer*, etc. Unstressed high vowels in voiceless contexts may also undergo devoicing, as in the PCF diagnostic words *équiper*, *député*, *écouter*, all with a voiceless vowel in the second syllable for several of the speakers. As a contrast to the laxing and devoicing of short (high) vowels, AF also shows, as do other PCF varieties, the diphthongization of long vowels, a very frequent process in word-final syllables, with long vowels developing an off-glide sharing features of rounding and frontness/backness with the nucleus. The text includes the following examples: [ej] *mère*, *infirmière*, *neige*; [œɥ] *soeur*; [ɑw] *lâches*; [ɑ̃w̃] *étrange*, *ensemble*; [ɔw] *fort*, etc. and once again the word list presents confirming evidence: *pur*, *neutre*, *chaude*, *père*, *beurre*, *pâte*, *port*, *Jacques*, *crainte*, *honte*, *lente*, *emprunte*, as well as long /ɛ:/: *évêque*, *prêtre*.

Other characteristics of PCF are clearly present in AF. The rotational shift of the (non-diphthongized) nasal vowels /ɛ̃/ and /ɑ̃/ respectively towards [ẽ] (*trains*; *loin*) and [ã] or [æ̃] (*parents*; *passant*) is seen both in the conversations and the word lists (*brin*, *bain*, *vent*). The backing of /a/ to /ɑ/ in final open syllables is fully regular, as seen in the alternation in *éclater* – *éclat* (/eklate/ – /eklɑ/) or in the omnipresent discourse particle *là* /lɑ/: *… il me voyait là*; *… comme des femmes là*; *c'est pas loin là*; *Puis là on met tous, tous les billets…* and many others. Lower-mid /ɛ/ in final open syllables also opens to [æ] or occasionally [a], as in *met* [mæ]; *parce qu'on avait* [avæ] *appris*, while /ɛ/ preceding /ʀ/ opens to /a/, at least sporadically: *faire* [faʀ]; *personne* [paʀsɔn]. Both speakers in the conversation have an idiosyncratic pronunciation of *Europe* as /y(:)ʀɔp/, perhaps influenced by the realisation of the past participle *eu* (/y/), while all speakers show the "regular" compression of a number of characteristic frequent words or sequences in PCF: *(ça) fait que…* (/fak/), *tu sais* (/tsɛ/), *c'était* (/stɛ/), *ce/cet/cette* (/st(ə)/), *puis* (/pi/) used to mean both 'alors' and 'et', *bien* (/bɛ̃/) and numerous others. Not present in the conversation but clearly heard among other AF speakers are examples of metathesis involving schwa in the prefix *re-*: *ergarder* /əʀgaʀde/, *ervenir* /əʀvəniʀ/, among others.

In the pronominal domain, we may note the general vernacular reanalysis of *il* as /i/ preconsonantally, /j/ prevocalically: *il* /i/ *me voyait là*; *ils* /i/ *travaillent fort là*. *elle* is heard frequently enough as /al/; *elles* can merge on occasion with *ils* and be realized /i/ – /j/ (even without liaison: *ils* | *ont* | *acheté* /jɔ̃aʃte/); *tu* is regularly /t/ prevocalically (*t'es*, *t'as*, *t'aimes*; just as *je suis* is heard as /ʃt/ in the

same context: … *que je suis assez bonne* /kəʃtasebɔn/.[7] Subject or object pronouns reinforced with *-autres* are also frequent: *nous-autres*, *vous-autres*, *eux-autres* (… *qui sont après eux-autres* (fem.) *là*), and are also heard in a truncated form /zot/. Finally, pronominal *la* and *les*, and the homophonous articles *la*, *les*, show the characteristic deletion of /l/ (and occasional vowel fusion), although, at least on an impressionistic basis, not as frequently as the vernacular speech heard in Quebec: *célébrer les francophones dans la région* [fʀɑ̃kofɔndɑ̃ːʀeʒjɔ̃].

4. The behavior of schwa

Schwa in AF, like that in Canadian French in general, remains phonetically distinct from the front rounded vowels /ø/ and /œ/. Various words may also show metathesis or insertion involving schwa (*brouette* /bəʀwɛt/, *mercredi* /mɛʀkəʀdi/, *février* /fɛvəʀje/, *rien* /əʀjɛ̃/, *reculez* /əʀkyle/ (*c'était pas là pour erien*; *erculez-vous là, je m'en vas là*, both from speaker dl1, are typical), but the rare examples from AF in this corpus involve the prefix *re-*: *regarder* /əʀgaʀde/, *qu'il revient* /kiləʀvjɛ̃/. However, it is for study of the retention or deletion of schwa that the PFC project provides the most useful diagnostic tools and the most significant information, and it is to this area that we now turn, based both on diagnostic reading passages and on free conversations. In general terms, there are approximately 3850 potential schwas coded in the study if both reading passages and conversations are considered. Globally, only 19% of these were pronounced, with 81% not being realized. The contrast between reading and conversation is interesting but not surprising given the differing degrees of formality between the two: in reading, schwa is pronounced 31% of the time; in free conversation, only 12%. A more specific breakdown of global schwa pronunciation by individual speakers is shown in Table 5.

It might be, however, in the finer distinctions encompassing both social variables (age and sex) as well as linguistic context that greater differentiations emerge. We will now examine schwas (or potential schwas) in final position in polysyllables, in internal position, in the initial syllable of polysyllabic forms, and in monosyllables. We begin with polysyllabic forms.

7. One can see in this form the presence of an analogical /t/ derived from the /t/ of liaison in *il est*. It is also heard in second singular forms: *t'es*/t/ *allée*: *t'es*/t/ *un pas bon!*

Table 5. Schwa in the PFC AF corpus

	Age	Sex	Reading	Conversation	Global
pm1	82	M	n/a	9%	n/a
ca1	80	F	42%	15%	27%
mg1	75	F	n/a	13%	n/a
dl1	72	M	n/a	12%	n/a
al1	68	F	n/a	13%	n/a
lm1	56	F	35%	13%	21%
ag2	51	M	n/a	16%	n/a
rl1	45	M	n/a	8%	n/a
ag3	45	F	33%	8%	19%
ca2	19	F	35%	12%	22%
vg1	17	F	30%	8%	20%
lg1	14	M	35%	10%	27%

4.1 Schwa in polysyllables

As is well known, the key factors influencing deletion or retention of schwa include the number of consonants preceding the schwa and its occurrence either preconsonantally or in phrase-final position.[8] In simplified schematic terms, these contexts may be indicated as -VCə#C, -VCCə#C for word-final schwas, and -VCə||, -VCCə|| for those in phrase-final position (where '||' indicates an intonational break, either major or minor[9]). Data for final schwas (number of schwas pronounced; number of potential schwas not pronounced) are found below in Tables 6 and 7, the first for reading passages (all speakers), the second for the conversations.[10]

These tables call for a number of additional comments. First, the results are generally unsurprising. Schwa in AF is widely and freely deleted, even in contexts which, in other varieties, favor its retention. Also not remarkable is the greater rate of retention or pronunciation of schwa in the reading passage over the free conversations. A more detailed examination does, however, reveal further

8. With only minor exceptions involving the so-called aspirate-h, schwa is excluded from prevocalic contexts.

9. PFC data is coded for both major and minor intonational breaks ("frontières intonatives forte et faible"). Our AF data indicate no differences in schwa behavior resulting from this distinction.

10. In these tables, and those to follow, deleted schwas are enclosed in parentheses. Schwa deletion often leads to further consonantal deletion, and deleted consonants in these examples are also enclosed in parentheses.

Table 6. Schwa in polysyllables: word-final position; reading passage

Context	VCə#C	VCCə#C	VCə||	VCCə||
Schwa present	2	41	2	12
Examples	la cot***e*** du Premier…; impass***e*** stupide	Marc[ə] Blanc; titr***e*** de gloire	barrag***e***, chaqu***e***; revanch***e***, très	Centr***e***; Ministr***e***; risqu***e***nt; quelqu***e***
Schwa absent	342	19	257	18
Examples		d'un aut(r)(*e*) coté		manifes(t)(*e*)nt; Minis(tr)(*e*); Cent(r)(*e*)

Table 7. Schwa in polysyllables: word-final position; conversations

Context	VCə#C	VCCə#C	VCə||	VCCə||
Schwa present	1	9	1	7
Examples	quelqu***e*** chose là /kɛkəʃozlɑ/	n'import***e*** quoi; notr***e*** cathédrale	parce qu***e*** (followed by change of speaker)	parce qu***e*** (6 times); comprendr***e***, là
Schwa absent	629	20	613	38
Examples		en charg(*e*) de; n'import(*e*) quel		onc(l)(*e*); êt(r)(*e*); organis(t)(*e*); sort(*e*)

matters of interest. If we consider the two cases in the reading passage where schwa is retained in the context VCə#C (*la cot**e** du Premier…*; *impass**e** stupide*), the identity in position of articulation of the surrounding consonants (/t + d/; /s + s/) may have provided pressure or support for an intervening vowel. Secondly, it is striking that in the 58 conversational contexts VCCə#C and VCCə|| where schwa is absent, only two instances of …CL(ə) occur (*oncl'*; *êtr'*); one would have expected a greater effect of CL_# in this domain in helping to preserve the schwa. Thirdly, it is interesting to point out a distinction between items ending in a "bare" consonant and one followed by schwa (*net* versus *nette*, for example) in order to test for a contrast between /…C#/ and /…Cə#/, orthographically <…C> and <…Ce>). There are only four instances in the corpus of a "phantom" schwa appearing without orthographic support: three cases of *Marc Blanc* in the reading passage (/mɑʀkəblɑ̃/) and one of *pour rien* (/pɥʀəʀjɛ̃/) in conversations. In the latter, the conjunction of identical consonants may again be a factor, as well as the frequent independent occurrence of /əʀjɛ̃/ with inserted /ə/ in PCF. In general terms, then, the very small numbers of schwa that occur word-finally argue for the quasi neutralization of a /…C#/ – /…Cə#/ opposition in AF. Finally, the social distinctions of sex and age are not relevant to a discussion of schwa behavior, at

least in this category: men and women show virtually the same rates of retention or deletion, as do the three age groupings "senior," "moyen," and "junior."[11] Let us now turn to word-internal behavior.

The relevant contexts for schwa in word-internal position are obviously …VCəC and …VCCəC, the former favoring deletion, the latter retention. There is, however, little to say here. For the deletion context …VCəC, there are 112 examples in the combined reading and conversation components: 106 deletions (e.g., *acheté*, *déroulement bêtement*, *détachement*, *aimerais*, *finalement, lendemain, demanderas, emmenaient, acheté*…) and six retentions (*qu'est-ce qui*… and three instances of *indiqueraient*) in the reading passage plus *dangereux* twice from the same speaker in a conversation. In the retention context …VCCəC, examples are even more rare: one deletion (*garde-malade*, where deletion in this type of compound structure is normal; see Léon 1966: 73) and eleven retentions (*par-dessus*, *justement*, *département*, *revenu* (/əʀvəny/) and *gouvernement*, the latter occurring seven times). Again, no distinctions involving sex or age are evident. The behavior of word-internal schwas, in other words, corresponds to the typical patterns found elsewhere in PCF and, more generally, FR. Much the same can be said for schwas in the initial syllable of polysyllabic words.

As is well known, the behavior of schwa in word-initial syllables is conditioned by their occurring in phrase-initial position (||Cə…) or by the structure of the preceding word – whether it ends in a vowel or a consonant: …V#CəC… or …C#CəC…[12] For initial schwas, Tables 8 and 9 reveal some interesting distinctions.

Table 8. Schwa in polysyllables: initial syllable; reading passage

Context	V#CəC…	C#CəC…	‖CəC…
Schwa present	21	0	7
Examples	ses chemises; en revanche; baisser depuis		la télévision, seraient
Schwa absent	0	0	0
Examples	n/a	n/a	n/a

11. There may be a very slight tendency among the seniors to pronounce schwa more frequently in the contexts VCCə#C and VCCə||, but the numbers are too small to allow for further analysis.

12. Words of the form #CCə… are excluded from the analysis since schwa is uniformly retained here in all varieties of French. Items of the form #CəV are likewise absent since schwa does not occur prevocalically, other than in rare cases involving the so-called aspirate-h. Here, as elsewhere, the small number of examples does not permit analysis of distinctions based on age or sex.

Table 9. Schwa in polysyllables: initial syllable; conversations

Context	V#CəC…	C#CəC…	‖CəC…
Schwa present	17	13	9
Examples	avait pas b*e*soin; mes n*e*veux; sont r*e*tirés	écol(e) s*e*condaire; sort(e) d*e* soupe; embarqu(e)nt d*e*ssus	les…r*e*pas; ouais, visiter, r*e*cevoir; une euh s*e*meuse
Schwa absent	51	10	1
Examples	trois p(e)tits; j'ai g(e)lé; doit s(e)mer	pèr(e) v(e)nait; jus(te) g(e)lé; not(re) ch(e)val; not(re) p(e)tit frère	comme un…p(e)tit show là

Of initial interest is the observation that these data demonstrate a clear distinction between reading and conversation. In the reading passage, no schwa deletion occurs in initial syllables, perhaps a not surprising result in phrase-initial contexts, but striking in the case of V#CəC… where one would at least expect some variation. (The diagnostic reading passage provides no examples of a C#CəC… context.) These results confirm the distinct nature of the reading task.

The conversations, obviously, are more variable. V#CəC…, as is well known, favors deletion, so the preponderance of absent schwas is not unusual. An examination of the 17 cases of retention in a potential deletion context reveals that 11 of them involve the prefix *re-* while the rest involve the stops /b d m n/ (*besoin*, *dessus*, *deviennent*, *devenu*, *menait*, *neveu*), both conditions which in general terms are known to support schwa retention. The converse case, deletion in a retention context, is equally interesting. The majority of the cases (both C#CəC… and ‖CəC…) involves the frequent word *petit* and invites the conclusion that this form has been relexicalized as /pti(t)/, phonetically [pt^{s}i] or [pt^{s}ɪt], a variant widely available in PCF. Also of interest, in contrast to the unexpected retention cases where stops are involved, is the observation that the unexpected deletions (excluding *petit*) all involve the fricatives /v ʒ ʃ/, permitting the conclusion that strength or sonority effects are involved in the phonotactics of schwa behavior in AF.

4.2 Schwa in monosyllables

The final category of items to examine is that of the monosyllables: *je*, *me*, *te se*, *le*, *ce*, *ne*, *de*, *que* and *une*. To give some idea of the extent of the data, Table 10 gives totals for the reading passages and conversations.

We may first note that the diagnostic passage contains no instances of the pronominal clitics *je*, *te*, *me*. Conversely, the conversations, as one might expect

Table 10. Schwa in monosyllables

Form	Reading	Conversations
je	0	204
te	0	17
me	0	19
se	10	25
le	32	145
ce	6	14
ne	9	0
que	10	239
de	70	259

Table 11. Schwa in phrase-initial monosyllables

Context	‖Cə#V…	‖Cə#C…
Schwa present: reading	8	98
Examples	l*e* hasard (8 times) [ləazaʀ]	L*e* Ministre; d*e* plus; n*e* cesse
Schwa absent: reading	0	1
Examples	n/a	le gouvern(*e*)ment
Schwa present: conversations	0	45
Examples	n/a	L*e* gars m'a…; j*e* sais; qu*e* si tu prends; n*e* traîne…
Schwa absent: conversations	0	105
Examples	n/a	j(*e*) dis; d(*e*) toute manière

in an informal context, show a virtually complete absence of negative *ne*.[13] Finally, again not unusual in conversations, the first person pronoun *je* is widespread. Let us now consider the behavior of schwa in these forms. As previously, the relevant contexts will include phrase-initial position, then monosyllables preceded by a vowel or a consonant, including those in both phrase-internal and phrase-final positions (where, in the latter case, they precede an utterance-internal pause). Finally, we will examine the behavior of sequences of monosyllables, a combination that has generated significant discussion (see Dell 1985; Picard 1974). We begin with phrase-initial monosyllables.

Again, one clear generalization emerges: schwa-final monosyllables never appear in prevocalic position (in keeping with the general French constraint blocking ə + V sequences). The single exception here involves the so-called aspirate-h

13. The two exceptions: *qui ne traîne pas les enfants…*; *qui ne peuvent pas conduire*.

of *hazard* in the reading passage, which consistently requires /lə/.[14] With respect to the preconsonantal monosyllables, schwa is deleted more than it is preserved (105 versus 45 cases), with the great majority of deletions involving *je*, while the retentions involve not only *je*, but as expected the "harder", i.e., orally closed consonants of *de*, *que*, *le* and *me*. The phrase-internal monosyllables present analogous patterns.[15]

Let us then turn to phrase internal monosyllables (excluding for now sequences of these forms, e.g., *je me*, *de se*, etc.). The relevant contexts, here as elsewhere, are …V#Cə#C… and …C#Cə#C…, i.e., whether the form is preceded by a vowel or a consonant, as well as …V#Cə#V… and …C#CəV…, where the forms precede a vowel. The latter cases are easily disposed of: as we have repeatedly seen, schwa does not precede vowels (aspirate-h cases excepted), so such cases are absent from consideration in this series, as in others. One over-riding comment is necessary here with respect to the …C#Cə#C… context. The PFC coding conventions require that the word-final consonant preceding any of the monosyllabic forms be coded for the presence or absence of schwa whether or not an orthographic <e> occurs. Thus, one would indicate whether the <e> of *fille* is realized as schwa, and also whether such a vowel occurs after *voir*, *hiver*, *carnaval*, *tank* and other consonant-final words. That is, a …C#Cə#C… sequence is treated as if it were a potential …Cə#Cə#C… sequence. This requirement allows for general comparisons within the entire PFC set of corpora, particularly those involving Southern French varieties where the behavior of schwa is highly distinctive. In our case however, **no** schwas are heard preceding the clitics, even in cases of words ending in consonant-liquid sequences. The following examples are typical: *troisièm(e) de nos enfants*; *trouv(e) que les jeunes*; *écol(e) de campagne*; *peut-êt(re) le jeu*; *liv(re) de recettes; sort(e) de papier*. With this in mind, we can now proceed to an examination of the data in Table 12.

This table reveals some interesting contrasts and confirms as well patterns we have already seen. It is striking, for example, that in a context which heavily favors deletion (…V#Cə#C…), schwa is retained in the reading passage far more than it is deleted: 112 cases of retention versus only three of deletion. Possible

14. Note that *hasard* is pronounced [azaʀ], not [hazaʀ], despite other native words in the corpus with [h]: *honte*, *hache*, *hockey*, etc. Elsewhere in the corpus, we find pronunciations such as /ləhajwe/ for *le highway*, but given the presence of [h] this is not a pre-vocalic issue.

15. There will be no category of utterance-final monosyllables since, as an obvious consequence of their grammatical functions, these clitic forms do not appear utterance finally. They do, however, appear preceding utterance-internal intonational boundaries, exclusively in hesitation contexts, where the schwa is uniformly pronounced: *un de, mes favoris*; *c'était le, carnaval…*; *c'est là que, un de nos oncles…*

Table 12. Schwa in phrase-internal monosyllables

Context	**…V#Cə#C…**	**…C#Cə#C…**
Schwa present: reading	112	100
Examples	décidé d*e* faire; détachement d*e* police; avons l*e* soutien	
Schwa absent: reading	3	0
Examples	en fin d(*e*) l'année; pas d(*e*) la réaction; qu'est-c(*e*) qui…	n/a
Schwa present: conversations	34	80
Examples	au lieu d*e* voir; qui devient l*e* roi; avait oublié d*e* mettre; il fallait qu*e* les…	troisième d*e* nos enfants; je trouve qu*e* les jeunes; pour l*e* travail
Schwa absent: conversations	190	13
Examples	au mois d(*e*) novembre; on prenait l(*e*) tracteur; quand j(*e*) vais en convention	dur d(*e*) parker; toujours qu(*e*) la jument; capab(le) d(*e*) la contrôler; au bord d(*e*) la tank

explanations include the formality of the reading task, coupled with the speakers' general lack of familiarity with reading aloud and the concomitant tendency to read slowly and deliberately. Conversations show a more typical …V#CəC… pattern: deletion in roughly 85% of the cases (190 out of 224 possibilities) although even here the degree of retention in a spontaneous vernacular setting is surprising. The retention context provided by a consonant preceding the clitic (…C#Cə#C…, with two consonants preceding the schwa) shows the usual behavior. No deletion occurs in the reading passage, while 13 deletions (versus 80 retentions) are found in the conversations. In these deletion cases, phonological factors are evident: deletion is most frequent either when the forms follow /ʀ/ (/ʀC/ sequences being phonotactically "congenial") or with the fricative-initial forms *je* and *ce* which combine easily with the following consonant.

The final category of schwa behavior to occupy us involves sequences of monosyllables, a domain that again provides interesting data. The forms potentially involved, once again, are *je*, *me*, *te*, *se*, *le*, *ce*, *ne*, *de* and *que*. The case of *ne* is easily dispensed with: It is found virtually exclusively in the reading passage, only twice in all the conversations, and never in combination with another of these monosyllables. In the same fashion, *ce* is heavily restricted. By far the great majority of sequential occurrences are in the complex forms *est-ce que* / *qu'est-ce que*, where the *ce* is exclusively /s/. Only two other sequences occur: *de ce temps-ci* and *parce que ce serait*, pronounced /dəstɑ̃si/, /paʀskəsəsʀɛ/, and no generalizations are possible.

Table 13. Schwa in sequences of *que je*

V#que je…	**VkəʒC**
que tu voulais pas que je fasse	pakəʒfas
c'est pas ça que je veux entendre	pasakəʒvø
s'il faudrait que je vive, proche là	fodʀɛkəʒviv
mais que je vais te faire parler	mɛkəʒvɛ
il y en a que je vois pas	jɑ̃nakəʒvwɑpɑ
l'année que je suis à…	anekəʒsɥia
pendant que je travaille	pɑ̃dɑ̃kəʃtʀavaj
après ça, ce que je te disais	skəʃtədizɛ
C#que…	**CkəʒC**
parce que je suis pas une personne	paʀskəʒsɥipa
parce que je reste chez mes parents	paʀskəʒʀɛs
parce que je lisais dans le journal	paʀskəʒlizɛ
fait que là tu s/ que je sais pas	latyskəʒsɛpɑ

The preposition *de* and conjunction *que* provide somewhat greater room for discussion. *de* is found in two combinations: *de se* and *de le*. The former occurs five times in the reading passage in *façon de se débarrasser*, uniformly /dəsə/, undoubtedly because of the slow and hesitant efforts these speakers make in reading generally. In conversation, the single example *pas besoin de le dépenser* is also, perhaps unexpectedly, /dələ/. *que* shows more variation. In the reading text, *plutôt que de se trouver*, again read slowly, is /kədəsə/ with no deletion. The three examples of *que le* are perplexing in that they are inconsistent: *parc(e) que le prisonnier était* /kələpʀizɔnje/ (no deletion); *aut(re) que le bénévolat* /otkəlbenevɔlɑ/ (deletion in *le*); *je pense que le plus loin* /ʃpɑ̃skləplylwɛ̃/ (deletion in *que*). The thirteen cases of *que je*, on the other hand, behave almost exclusively as expected. Apart from the utterance-initial and emphatically pronounced *Que je me rappelle de…* with no deletion, the others all show schwa deletion in *je*, even if the general context would allow deletion in *que*.

Striking here is the retention of schwa in *que* even when preceded by a vowel – the prototypical context for schwa deletion given by the context …V(#)Cə… One is led to the conclusion that the sequence *que je* has been lexicalized as /kəʒ/, irrespective of the environment. One final example here is also worthy of comment: *après ça, ce que je te disais*. Here we find four potential schwas in sequence and the alternating pattern of deletion (no two adjacent schwas delete) that leads to the next segment of our discussion, that involving the monosyllabic pronominal clitics *je*, *me*, *te*, *se* and *le*, all of which are found only in the conversations.

Table 14. Schwa in pronominal clitic sequences[16]

je le	
c'est la première fois je le mets	fwaʒəlmɛ
je te	
ils ont ben raison parce que, je te dis que…	ʃtədi
pas trop de bonne humeur, je te dis qu'ils…	ʃtədi
en tous les cas, je te dis que…	ʃtədi
anyway, je te dis que…	ʃtədi
pas trop creux, je crois ben, mais je te dis que…	ʃtədi
après ça, ce que je te disais	skəʃtədizɛ
je me	
Que je me rappelle pas de…	kəʒəmərapɛlpɑdə
moi, je me rappelle, le père Bouchard…	mwaʒmərapɛlE
sont comme "ah moi je me rappelle de de ça"	amwaʒmərapɛlE
moi je me rappelle de…	mwaʒmərapɛlE
est comme "oh oui, je me rappelle de de ça"	owi mwaʒmərapɛlE
pis elle est comme "oh je me rappelle, j'en avais une…"	o ʒmərapɛl ʒɑ̃navɛE
on allait ram/, je me souviens…	ɔ̃nalɛram ʒməsuvjɛ̃
je me suis fait des petits coins	ʒməsɥifɛE
ensuite je me suis mariée	ɑ̃sɥitʒməsiɥmarje
disons je me demandais…	dizɔ̃ʒmədmɑ̃dɛ

Potentially, given the syntactic constraints, the pronominal combinations to be examined would include *je me*, *je te*, *je le*, *me le*, *te le*, and *se le*. In fact, only the first three occur, in the following proportions: *je me*: 10; *je te*: 6; *je le*: 1.

In these cases, there is a mixture of what might be called free expressions with more fixed patterns. With *je le*, we find the only instance of /ʒəl/ with schwa retained in the subject pronoun and deletion in the *le*. *je te* occurs exclusively with *dire*: /ʃtədi/, /ʃtədizɛ/, and it is evident that these forms have been lexicalized with /ʃtə/, even when a consonant precedes the subject pronoun. With *je me*, there is more structural variation syntactically, but phonological consistency. With a single exception, *je me* is exclusively /ʒmə/ whether it occurs phrase-initially, following a consonant or following a vowel. Again, phonological fusion and lexicalization of the sequence appears to be the most reasonable explanation.

16. This table provides additional examples of properties of colloquial AF (and PCF in general): dropping of the complementizer *que*: *c'est la première fois je le mets*…; the discourse particle *anyway* (= 'en tout cas'): *anyway, je te dis que*…, and the quotative *comme*, calqued on the ubiquitous 'like' that characterizes the surrounding English vernacular: *sont comme "ah moi je me rappelle de de ça"*; *est comme "oh oui, je me rappelle de de ça"*.

This concludes our survey of the behavior of schwa in AF. Among the general conclusions we may draw are the following. All data reflects a significant difference in behavior between the reading passages and the spontaneous conversations, with far greater schwa retention in the diagnostic texts. This may be attributed both to the greater inherent formality of the reading task and to the lack of familiarity among the AF speakers with such tasks, a lack which causes significant hesitations for most of them. In phonological terms, word-final schwa is virtually absent, an absence that is in accord with patterns in all non-southern dialects, but which extends systematically to words ending in consonant groups in words such as *res(te), jus(te)*, *quat(re)*, *tab(le)* and so on. In non-final position, we also see the effects of the standard constraints which yield widespread deletion in the context V(#)Cə(#)C… versus retention in C(#)Cə(#)C… Against this patterning, we must also note the effects of the lexicalization of a number of frequent words or word combinations. *petit(e)*, for example, is usually /pti(t)/, *que je* is realized as /kəʒ/, and the discourse marker *je te dis* is uniformly /ʃtədi/, where /pti(t)/ and /ʃtədi/ both occur post-consonantally despite the complex C#CC clusters that arise. Finally *je me* is exclusively reduced to /ʒmə/ (the alternative reduced realization /ʒəm/ does not occur), a testament to the ease with which the pronoun *je* combines with the following consonant independent of context. As might be expected, then, the behavior of schwa in AF, as in other varieties, is a mixture of phonological, morphological, lexical and social constraints, a patterning manifested as well in liaison, a domain to which we now turn.

5. Liaison in AF

Liaison in French involves the pronunciation of a word-final consonant, normally silent, when that word is in a close syntactic link with a following vowel-initial form. In normal circumstances, the liaison consonant will also resyllabify to initial position in the following word. Liaison is traditionally subdivided into three types: those which are obligatory, those which are optional, and those which, despite the presence of the appropriate conditions, are prohibited.[17] In general terms, the tendency in colloquial French is for optional liaisons to be reduced or eliminated, for some obligatory liaisons to become optional, and, paradoxically, for some prohibited liaisons to begin to occur. The PFC diagnostic text allows for an analysis of liaison in a more formal setting, while the coding procedures apply, needless to say, both to the text and to the spontaneous conversations. This

17. For a survey of liaison patterning in FR see Tranel (1987: 168–190) or Walker 2001: 160–169).

Table 15. Liaison in the texts: monosyllables

	Present	Absent	Examples
a. Liaison in /t/			
est	14	9	est en grand émoi; est en revanche; est, en désespoir de…
ont	0	9	ont eu
grand	6	8	grand honneur; grand émoi
tout	4	3	tout est fait
b. Liaison in /n/			
en effet	11	0	a, en effet, décidé
son usine	6	0	son usine de pâtes
un autre	7	0	d'un autre côté
on est	6	0	on est jaloux de
on a	1	0	comme on a vu
on en	5	0	comme on en a vu
en a	4	2	comme on en a vu
grand	1	0	grand honneur /gʀɑ̃nɔnœʀ/
c. Liaison in /z/			
les	14	0	les élections; les opposants; les activistes
des	6	0	des activistes
nous	6	1	nous avons le soutien
dans	5	2	dans une impasse stupide
très	5	2	très inquiet
plus	0	7	ne sait plus à quel saint se vouer
jeux	2	8	jeux olympiques de Berlin
pâtes	0	7	usine de pâtes italiennes

permits us to gain a detailed picture of liaison behavior in the AF corpus. We begin with liaison in the reading passage, where higher rates are expected, followed by the conversations, where greater variability and less correspondence to the norm occur. We should note first that, both in the reading passages and in the conversations, the only liaison consonants in play are /t n z/; possible occurrences involving /ʀ/, /p/ or /g/,[18] rare in other varieties, are completely absent in AF.

Few surprising elements are to be found in this behavior which, since it involves monosyllables, implies significant amounts of obligatory liaison. The most consistent behavior is with /n/, where the only break (two of six cases) involves

18. For liaison in /ʀ/, *premier* provides a typical example: *au premier étage* /opʀəmjeʀetaʒ/. For /p/, *trop* and *beaucoup* are the only candidates (*trop aimable* /tʀopemablə/); /g/ may rarely appear with *long* (*long été* /lɔ̃gete/); liaison with /k/, as in *sang impur* from *La Marseillaise*, is absent from the contemporary language except in that one fixed expression. As stated, none of this is found in AF.

en a. The other anomalous instance is found in a single occurrence where *grand* links in /n/ rather than /t/, a resurfacing of a putative underlying nasal consonant that is of potential theoretical interest. Liaison with /z/ provides greater variation, but there is a distinct division between the first four elements in the table, *des*, *nous*, *dans* and *très*, where liaison is the norm, versus negative *plus* and the two nouns. In the former, the obligatory liaison is frequent, and the anomalous lapses are attributable to the reading task. In the latter, negative *plus* is variable in any case, as is liaison with the plural nouns. Hence, liaison with /z/ also corresponds to what one would expect to occur in a more formal task. When we turn to cases involving /t/, we see the greatest variation, even though liaison is considered categorical with *grand* and either categorical or strongly favored with singular *est* and *ont*, at least in FR, although not seen as such in the PFC data base.[19] The widespread absence here, particularly with *grand*, provides a strong indication of the widespread weakening of the liaison process in AF. This weakening is further evident when we turn briefly to the polysyllabic contexts in the reading text. Here, the story of liaison is quickly told: it is exceedingly rare. Potential linkable words in the text include *chemises en soie*, *circuits habituels*, *toujours autour*, *visites officielles*, *provoquer une explosion* and *quelques articles*. In all but the last, liaison is completely absent, while *quelques articles* is pronounced /kɛlkəzaʀtik/ on five of seven occasions. Other than with the frequent adjective *quelques*, in other words, we may observe that liaison is restricted to monosyllables in the reading passage, despite the more formal nature of the reading task.

The spontaneous conversations provide a somewhat different picture. Before a discussion of the details emerging from both monosyllables and polysyllables, we note again that the only consonants involved are /t/, /z/ and /n/. Potential cases of liaison involving /ʀ/, /g/ or /p/ provide no examples. (The one occurrence of *beaucoup* in a liaison context, *beaucoup aidé*, is /bokuede/.) Let us begin with monosyllables terminating in /n/, which present the most consistent case. Here, there are just over 200 potential liaison contexts, and liaison occurs in 195 of them. The relevant forms are *on*, *en* (pronoun), *en* (preposition), *un*, *mon*, *ton* and *son*.

Absence of potential liaison is restricted to just eight cases, where three of them constitute optional environments: *un* | *ou l'autre*; *un an* | *en Colombie*; *bon* | *à combiner*. The remainder all involve the subject pronoun *on*: *on* | *avait attaché ça après la…*; *on* | *avait du plaisir*; *on* | *était, euh, à l'ouest*; *on* | *était jamais…*; *on* | *était à peu près un mile…* We may conclude that obligatory liaison with /n/ is stable in monosyllables in AF, and that the very few exceptions are not indicative of

19. For discussion, see Durand and Lyche (2008).

Table 16. Liaison in conversations: monosyllables in /n/

Liaison in /n/	Examples
on +	y, en, est, a, avait, aura, aimait, attend, emmenait
en (pronoun) +	ai, a (including *il y en a*), ait, aura, avoir
en (preposition) +	allant, avant, arrière, Angleterre, Europe, études sociales
un +	an, autre, accident, emploi
mon +	oncle, ami
ton +	oncle
son +	enfant, office, uniforme

Table 17. Liaison in conversations: monosyllables in /t/

Liaison in /t/	Examples
est +	allé, arrivé, en charge, une ville, un fermier, une nurse, à la maison, agréable
c'est +	un gaz, une pas mal grosse cour, à Saint-Isidore, en Saskatchewan, intéressant, aussi important
sont +	installés, accrochés, encore, en train de sécher, après eux-autres
fait +	une fois, à mon gilet, une grimace, (on s'avait) fait une sleigh[20]
tout +	un, un déroulement, était beau

incipient weakening of the phenomenon or of variation in this case.[21] The same may not be said for either /t/ or /z/. With /t/, the absence of liaison occurs in over three dozen cases, both traditionally optional and obligatory, compared to some 50 examples of its occurrence. We see liaison with /t/ in Table 17.

To complete this picture, we should note that, technically, liaison with /t/ also occurs in fixed expressions such as *Saint-Isidore*, *vingt et un*, *tout à l'heure* and (if *petit* is lexicalized as the monosyllable /pti(t)/) *petit à petit*. Interestingly, we also find many examples of the absence of liaison in identical or similar contexts.

The preceding table gives a good indication of the weakening of the constraints on obligatory liaison, that with *est* and *ont* in particular, extending to the semi-auxiliaries such as *devoir* and *pouvoir* and to "full" verbs such as *vivre* and *savoir* before affecting adjectives or nouns (*prêt*, *droit*) where optional liaison is scarcely present in colloquial speech in any case. Similar data are to be found in a discussion of the most frequent liaison consonant, /z/.

20. Note the use of *avoir* as the auxiliary, here and with non-prepositional verbs such as *aller* as well.

21. For completeness, we may note that liaison /n/ is blocked by hesitation (…*rien, eux-autres*) and by aspirate-h (*en haut*, *ton hockey*). Further, the denasalization present in some other varieties (*mon ami* /mɔnami/ instead of /mɔ̃nami/) is absent in AF.

Table 18. Non liaison in conversations: monosyllables in /t/

Non liaison in /t/	Examples
est +	il est | été voir, on est | en même cour que mon père
c'est +	un team, une femme, en neuvième année, après, à peu près
soit +	en dehors
ont +	embarqué, enseigné, acheté
vont +	avoir
peut +	aller
doit +	être, avoir, en avoir
fait +	une bouteille, une entrevue, un couple, en famille
vient +	un peu
savent +	avant de partir
vit +	à Westlock
prêt +	pas prêt encore
droit +	il a droit à une…

Table 19. Liaison in conversations: monosyllables in /z/

Liaison in /z/	Examples
nous +	avons, a été, autres, envoyait
vous +	êtes
ils +	ont, appellent (three cases in total)
mes +	amis, enfants, oncles
tes +	enfants
ses +	affaires
nos +	enfants, oncles
leurs +	enfants
les (article) +	oncles, autres, hommes, affaires, enfants, heures, écoles, évêques, autobus, anglophones, oiseaux
les (pronoun) +	a appris, arroser, envoyer, emmener, à fait bâtir, a élevés
des +	antiques, affaires, animaux, années, oncles, hommes, études, anglophones, histoires
ces +	années
dans +	un bodyshop, un crate
plus +	intéressante, en plus avec, de plus en plus
très +	isolés, important
trois +	ans, ans et demi
bonnes +	écoles
cents +	acres (vingt-trois cents acres)
chez +	eux

Table 20. Non liaison in conversations: monosyllables in /z/

Non liaison in /z/	Examples
ils +	ont, avaient, étaient, aiment, aimeraient, embarquaient, emmenaient, ouvraient, en mangeaient (39 cases in total)
les (pronoun) +	ils les appellent
des +	inconnus
dans +	un (4 cases), une, Edmonton
plus +	en trouble, à l'hôpital
très +	heureux, en vie
trois +	ou quatre
chez +	untel

The most striking case of non liaison involving /z/ occurs with *ils*, where absence is the norm (39 of 42 possibilities). In prevocalic position, the third plural subject pronoun (both masculine and feminine) is realized as /j/ not just in AF, but more generally in PCF as well. When other clear cases of putative obligatory liaison are added (e.g., *les*, *des*, *dans*, *très*), the overall weakening of liaison in AF is clear.[22] This tendency is reinforced by a consideration of liaison in polysyllables.

A discussion of liaison involving polysyllabic forms will be less extensive than the previous section for two straightforward reasons: the number of eligible cases (both type and token) is smaller and liaison with such forms is uniformly optional. It should not be surprising, therefore, that the absence of liaison far exceeds its presence. It is easiest to begin with the occurrence of liaison, which is found only six times with /z/, examples shown in Table 21.[23] Absence of potential liaison, liaison which would normally occur only in more formal circumstances, is therefore not the least exceptional in the examples in Table 22.

This concludes our brief review of liaison in AF. In general terms, we have found major differences of two types: between the reading task and the spontaneous conversations, and between monosyllables and polysyllables. Even in the sequences where the highest rate of liaison is expected, in monosyllables in the texts, we begin to see the breakdown of the system, where obligatory liaison following *est* and *ont* is reduced (only 14 of 23 possibilities with *est*) or absent (no liaison with *ont*). With polysyllables, the only liaison in the texts involves *quelques* (five of seven realizations). When we turn to the conversations, the absence of linking consonants is even more noticeable. It is virtually absent in all polysyllables, the only exceptions involving occasional linking with *était* and *petit*. In

22. Note the following examples from the extract discussed in the phonology section: *ils* | *ont* | *acheté* /jɔ̃aʃte/; *participé dans* | *un festival*; *c'est* | *eux-autres*; *c'est* | *un carnaval*.

23. To which we may add liaison in the compound form *arrière-petits-enfants*.

Table 21. Liaison in conversations: polysyllables in /z/

Liaison in /z/	Examples
petits +	enfants
petites +	écoles
plusieurs +	années

Table 22. Non liaison in conversations: polysyllables in /n/, /t/ and /z/

Non liaison in /n/, /t/ and /z/	Examples
Non liaison in /n/	camion | avec; chacun | un rang; chacun | un fouet; le jardin | encore aujourd'hui; occupation | à (5 cases)
Non liaison in /t/	no liaison with *avait, était, étaient, devait, devraient, fallait, voulait, faisait; comment, tellement, souvent, vraiment* and some 80 additional cases
Non liaison in /z/	no liaison with *avais, aurais, étais, devais, voulais, pensais; toujours, jamais, assez, après*; plural noun subjects (*les petits en mangent, les enfants aidaient, les chemins étaient*); plural past participles (*arrivés en, retirés à, rendus assez*) and some 30 additional cases

the monosyllables, only /n/ is consistently produced (over 98% of the time), no doubt because of the clitic status of the relevant forms (*on*, *en*, *un*, *mon*, *ton*, *son*). With forms ending in /t/ or /z/, the results are mixed, with absence of linking in a third or more of the possibilities. Most striking of these cases is the consistent pronunciation of *ils* as /j/ (*ils ont* /jɔ̃/) over 90% of the time. AF provides evidence, in other word, of the great variability, not to say fragility of liaison processes in vernacular forms of the language.

6. The impact of English

We have already observed that all speakers in the corpus are fluently bilingual. Conditions in the community require the use of English in a variety of contexts outside family circles, and it is inevitable that this contact be manifested in the phonological (and other) behavior of the speakers. In this section, we will exemplify briefly the phonological behavior of loan words, both assimilated and non-assimilated, showing how they demonstrate mastery of the surrounding English variety and how they are assimilated fully, partially or not at all, into the AF of our speakers. First, however, we may note how the following list of loans demonstrates the agricultural roots of the community and how the use of English is reflected in the day-to-day life of the speakers: *acreage, acres, aphids, bodyshop, buggy, bulk*

Table 23. Complete phonological assimilation

Complete phonological assimilation	Phonetic comments
des *sleighs* [sle]	no diphthongization
des *antiques* [ãntsɪk]	assibilation, laxing
les *cabooses* [kabus]	no laxing[24]
j'avais pris du *speed* [spid] pas mal	no laxing
sa *chum* [tʃɔm]	affricate, back vowel
une bonne *job* [dʒɔb]	affricate, back vowel
l'arrondissement de *High Prairie* [hajpreˈri]	apical [r], [e] rather than [ɛ], final stress
il y avait pas de *show* [ʃo]	no diphthongization
c'est ben le *fun* [fɔn]	back vowel
en arrière du *truck* [trɔk]	apical [r], back vowel
c'était une *tank* [taŋk] de huit cents *gallons* [gaˈlɔ̃]	no aspiration; nasal vowel, final stress, no final plural suffix
des *boyfriends* [bɔjˈfrɛn]	apical [r], final stress, no final plural suffix
pour les *combines* [kɔ̃ˈbɪn]	no aspiration; nasal vowel, laxing, final stress

Table 24. Morphological and phonological assimilation

Morphological and phonological assimilation	Comments
comment tu peux *mover* [muˈve] l'Alberta dans le B.C. toi	first conjugation
il était après peinturer la *grainerie* [grɛnˈri]	compare English 'granary'
j'aurais dû arrêter d'avoir *checké* [tʃɛˈke]	first conjugation
il *swathe* [swat]	[a] rather than [ɔ], no interdental fricative
l'orge qu'ils ont *swathé* [swaˈte] là	first conjugation
ça doit être bon à *combiner* [kɔ̃biˈne] ça	first conjugation
j'aime *collecter* [kɔlɛkˈte] des *antiques* [ãˈtsɪk]	first conjugation; no vowel reduction, aspiration, assibilation, laxing
c'est dur *parker* [parˈke] pis tout ça	first conjugation
il *run* [rɔn] ben par exemple	[ɔ] rather than [ʌ]
je suis *fortuné* [fɔrtsyˈne] pour avoir deux langues	compare English 'fortunate'; first conjugation; assibilation, final stress

24. Laxing of high vowels, obligatory in native words, is optional in loans, creating occasional contrasts /i/–/ɪ/, /u/–/ʊ/, etc. in final closed syllables (*speed* – *vide*, *caboose* – *pousse*) and so on.

station, canola, canner, combine, combiner, combining, crate, ditch, farming, grainerie, hitch, land, landmark, lawn, pony, pork, rhubarb, ridge, runner, saskatoons, seeder, shack, shaft, shed, shop, sleigh, struts, swather, tank, truck. This list contains a number of morphologically adapted forms (*combiner*, *grainerie*, *swather*) where, as we will see, such assimilation is also an indication of complete phonological assimilation. The first two lists (Tables 23 and 24) demonstrate such assimilation, where the phonetic properties of AF are fully evident, followed by a set of unassimilated forms demonstrating mastery of English phonology.[25]

While it is clearly impossible to give a detailed description of the differences between Canadian English pronunciation and the phonology of AF, we can highlight some of the properties of the former most evident in the unassimilated examples to follow: the presence of diphthongized vowels, lax vowels and vowel reduction, centralization of the diphthongs /aj/ and /aw/ to [ʌj] and [ʌw], non-final stress, aspiration of voiceless stops, velarization of /l/, retroflex rhotic, flapping of intervocalic /t/ and /d/ to [ɾ] in post-stress position, and so on.[26]

This concludes the brief review of loan phonology in AF, where we essentially see coexistent systems: a native AF phonology paralleled by a native Canadian English structure, a testimony to the bilingual competence of the speakers and the bilingual nature of their community.

Table 25. Unassimilated loans

Unassimilated loans	Comments
Arthur est venu au monde à *Wainwright* [ˈwejnɹʌjt]	initial stress, retroflex [ɹ], centralized diphthong ("Canadian Raising")
il travaille à *Hertz Rent-a-Car* [həɹtsˈɹɛntʰəkʰaɹ]	/h/, retroflex [ɹ], aspiration, non-final stress
il s'en va à *Barry, Ontario* [ˈbɛɹijɔnˈtʰɛɹijow]	diphthongs, aspiration, non-final stress
hockey, comme, *Old Timers* [oɫˈtʰajməɹz]	velarized [ɫ], aspiration, retroflex [ɹ]
voir les *Badlands* [ˈbædlænz]	initial stress, [æ]
travaille au *Bird Walk* [ˈbəɹdwɔk]	initial stress, retroflex [ɹ]
jouer pour les *She Devils*, les *Donnelly She Devils* [ˈdɔnəlijˈʃijdɛvəɫz]	diphthong, velarized [ɫ], initial stress

25. These forms indicate additional morphological, syntactic or lexical properties of AF (*être après* + infinitive, *être une nurse, une LPN* rather than *être infirmière*, absence of pronoun subjects (with e.g., *être*, *faire*), calquing (*comme* = *like*), etc. that are beyond the bounds of this discussion. For a preliminary treatment, see Walker (2003, 2006).

26. Picard (1987) provides an excellent comparative survey of the phonetic and phonological issues involved.

Table 25. (*continued*)

Unassimilated loans	Comments
les choses drôles comme *Simpsons* [ˈsɪmsənz]	initial stress, vowel reduction
des jeux comme *Medieval Times* [məˈdijvəɫˈtʰajmz]	non-final stress, velarized [ɫ], vowel reduction, diphthong
est une *LPN* [ˈɛɫpijɛn]	initial stress, velarized [ɫ], diphthong
je sais pas s'ils sont encore dans l'*NHL* [lɛnejtʃˈɛɫ]	diphthong, velarized [ɫ], affricate
as-tu un jupon de *spare* [spɛɹ]	retroflex [ɹ]
il était dans l'*intensive care* [ɪnˈtʰɛnsəvˈkʰɛɹ]	non-final stress, retroflex [ɹ], aspiration, vowel reduction
nursing home [ˈnəɹsɪŋˈhowm] pis l'hôpital-là ils mettent ça ensemble à cette heure	non-final stress, retroflex [ɹ], diphthong
elle est, euh, plus, comment je dirais ça? *Cozy*. [ˈkʰowzij]	non-final stress, aspiration, diphthong
Dans le voy/ dans le *diner* [ˈdajnəɹ] qu'ils appellent en bon français	non-final stress, diphthong, retroflex [ɹ]
oh…était très *fair* [fɛɹ]	retroflex [ɹ]
il prend un cours de *automotive marketing… business administration* [ˈɔɾəmowdɪvˈmaɹkədɪŋ ˈbɪznəsædmɪnəˈstɹejʃən]	flapping of /t/, vowel reduction, non-final sress, diphthong
les *fun years* [ˈfʌnjəɹz]	retroflex [ɹ], non-final stress,
ma mère est une *nurse* [nəɹs]	retroflex [ɹ]
il est *pewter* [ˈpʰjuwɾəɹ]	aspiration, diphthong, flapping of /t/, non-final stress
faire du *white water rafting* [ˈʍʌjtwɔɾəɹˈɹæfdɪŋ]	/ʍ/, non-final stress, retroflex [ɹ], flapping of /t/, centralized diphthong
Julie est comme *housewife* [ˈhʌwswʌjf]	centralized diphthongs, non-final stress
il est *cute* [kʰjuwt] pis *adorable* [əˈdɔɹəbəɫ]	aspiration, diphthong, non-final stress, vowel reduction, velarized [ɫ]
il y a pal mal rien du *stuff* ici [stʌf]	[ʌ]
on a un gros *front lawn* [fɹʌntˈlɔn]	[ʌ], retroflex [ɹ]
au *theme park* [ˈθijmpaɹk] pis tout ça	diphthong, non-final stress, retroflex [ɹ], interdental fricative
il y avait comme une petite *ditch* [dɪtʃ]	final affricate
tout son *fender* [ˈfɛndəɹ]	non final-stress, retroflex [ɹ]

7. Conclusion

This review of AF phonology reveals it to present a wide range of characteristics that are typical of popular Canadian French in general, an unsurprising result given the history of the set of communities represented in the corpus, communities largely established during the first third of the 20th century via immigration from Quebec. Among the most salient is the conservative structure of the vowel system – the retention of the three distinctions /ɛː/–/ɛ/, /a/–/ɑ/ and /ɛ̃/–/œ̃/. This conservatism is in contrast to the highly innovative set of allophonic realizations – diphthongization, laxing and devoicing, oral and nasal vowel shifts among the vowels, assibilation, cluster simplification, velarization of /ɲ/ among the consonants – again typical of many Canadian varieties.

When we turn to more detailed investigation of the key domains of schwa and liaison, additional generalizations emerge, reflecting in the first instance an understandable distinction between performance in the reading passage and in the spontaneous conversations. Schwa, for example, is significantly more present in reading, although even here we see the weakening of the constraints on its retention, most evident in the lexicalization of the sequence *je me* as /ʒmə/, even following consonants where it violates the constraint favoring schwa retention post-consonantally, as in *ensuite je me*… /ɑ̃sɥitʒmə…/. A parallel situation occurs with liaison, where we again see a breakdown in the restrictions operative in the standard language. Monosyllabic *ils*, for example, should uniformly be linked with a following vowel, but liaison is absent in 39 of 42 cases in the conversations.[27] In the same vein, linking of polysyllabic forms is virtually absent in the conversations, and sharply reduced in the text.

Finally, AF shows the effects of the surrounding anglophone context. Given the bilingual competence of all speakers, loan words are common (as are numerous examples of other contact phenomena – calquing and code switching in particular). Both assimilated and unassimilated forms are frequent, all providing evidence of the long-standing impact of English, with the latter providing detailed phonetic evidence of speakers' mastery of the local variety. This general behavior confirms the profound and on-going sociolinguistic interest of Albertan French and of colloquial Canadian French in general.

27. Alternatively, one could argue that a restructuring of *ils* to /i/–/j/ has occurred, thereby bleeding any potential liaison.

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CHAPTER 14

Phonological variation in French

Unity and diversity across continents

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1. Introduction

This chapter aims at offering a brief summary of the preceding chapters while underlining common trends and specific issues across varieties presented within their geographical regions. In the delicate balance between being too specific or too general, we do not attempt to do full justice to the wealth of information provided by the authors, but concentrate on facts regarding segmental inventories, schwa and liaison, which might help the reader get a better grasp of the mosaic that emanates from this volume. An important caveat is warranted as the reader approaches this concluding chapter: some of the observed differences across varieties may result from uncontrollable performance factors and/or statistical noise in the corpus, or may be influenced by different theoretical frameworks adopted by the contributors. Nevertheless, the illustrations of phonological variation that are depicted in our panorama of three continents are certainly poised to inform both future work on variation in French and theorizing around long-standing problems in French phonology.

2. French in Africa

Three chapters illustrate phonological variation in African French: French in Bangui, the capital of Central African Republic, French in Dakar, the capital of Senegal, and French in Bamako, the capital of Mali. The three countries became French colonies in the late 19th century resulting in the imposition of French as an official language, the only language of formal education and of administration, a situation which remained practically unaltered after independence. French has

thus an elevated *status* (Chaudenson 2000) and its mode of acquisition entails a conservative representation of the language strongly poised to influence the nature of the variety acquired. Although essential, this factor is overshadowed by the impact of regional languages in the acquisition process. In a multi-linguistic setting characteristic of all African countries, French is overwhelmingly a second language (L2), rarely a first language (L1),[1] which entails that degree of proficiency and usage varies across speakers and also across nations. Mali is for example the least francophone of the three countries. The three surveys in this volume were conducted in the countries' capitals where one indigenous language is empowered with the role of a lingua franca: Sango in Bangui, Wolof in Dakar and Bambara in Bamako. We may thus expect that the different L1s of our speakers will interfere in their acquisition of French, an aspect which is envisaged by all authors.

2.1 Segmental inventories

2.1.1 *Vowels*

The three varieties count nine oral vowel phonemes and share certain difficulties involving mid front rounded vowels inexistent in all L1s under consideration. They nevertheless maintain enough specific features to warrant individual treatment. In Bangui, the distribution of mid vowels does not pattern with that of Parisian French (see Section 3.1.1), and in particular, the LdP (*loi de position*) applies systematically to mid back vowels (*rauque* = *roc*). Such is not the case for the two mid front vowels: both [ø] and [œ] appear in closed syllables, but are subject to inter- and intra-speaker variation, although the mid-low vowel is regularly found before /ʁ/. Finally, /e/ and /ɛ/ are in opposition in final open syllables in accordance with classical descriptions, a fact which may be related to the presence of an aperture contrast in Sango as well. Sango's influence might also contribute to the presence of extensive vowel harmony affecting not only mid vowels, but also /i/. This factor interacts with difficulties in articulating front rounded vowels, leading at times to hypercorrections. The other vowels conform to Parisian French with one low vowel /a/ and three nasal vowels, although one speaker maintains a four-way contrast, which could imply a certain amount of inter-speaker variation.

In Dakar, Boutin et al. note that the ATR harmony which characterizes Wolof carries over to French and takes precedence over the LdP. While vowel harmony in Wolof proceeds from left to right, the direction of harmony in the local variety

1. Except in Ivory Coast (Boutin & Turcsan 2009).

of French may be bidirectional, possibly resulting from an interaction with vowel harmony in French (Nguyen & Fagyal 2008). ATR vowel harmony affects /e–ɛ/ and /o–ɔ/. In stressed closed syllables, both vowels may be found, <au>, unlike <ô>, triggering a mid-high vowel. As expected from their absence in Wolof, the acquisition of front rounded vowels is problematic: /y/ may be realized at times as [i] or [u], and the pair /ø–œ/ is replaced by a single central mid to mid-high unrounded vowel that the authors transcribe [ə], insisting on the large span of variation in its realization.

The contrast /a–ɑ/ has been neutralized although it holds for some older speakers who differentiate the two vowels by lengthening, or keep two distinct qualities. The Wolof speakers of Dakar maintain a four-way contrast for nasal vowels although nasal vowels do not belong to the vowel inventory of Wolof. This variety of French thus includes nine oral vowels /i, y, u, e, ɛ, ə, o, ɔ, a/ and four nasals.

French in Bamako shows, as in Dakar, a nine-member oral vowel inventory due to the absence of an opposition /ø–œ/. In the Bamako survey, although all speakers speak Bambara, the local vehicular language, most of them have a different L1. Five typologically distinct L1s are thus represented and they all interfere with the speakers' French, as shown by Lyche & Skattum (2010), Lyche & Bordal (to appear). The impact of these five L1s, coupled with unequal degrees of acquisition, leads to considerable inter-speaker variation. The absence of front rounded vowels in the five L1s plays a significant role in the realization of schwa but not in that of <eu>, probably as a result of formal instruction. Thus <e> might be realized as [e], but <eu> always triggers a rounded vowel. The importance of orthography is palpable as well in the different realizations of /e–ɛ/ which follow the orthoepic norm, and of /o–ɔ/ where <ô> is realized as a mid-low vowel in contradistinction to <au> (*paume* [pom]/[pɔm]).[2] As in Bangui and Dakar, there exists only one low vowel /a/, but the number of nasals is a function of the presence of nasal vowels in the L1 of the speakers. Bambarophones integrate four nasals while Songhay and Tamachek speakers have three.

2.1.2 *Consonants*

One of the most salient features of varieties of French spoken in Africa lies in the phonetic realization of the rhotic and its frequent absence among speakers whose L1s are CV based. In Bangui, /R/ invariably deletes in coda position, usually triggering compensatory lengthening of the previous vowel. It may delete as well in

2. The three surveys differ in this respect: <au> triggers a mid-low vowel in Bangui in a closed syllable, it triggers a mid-high vowel in Dakar, and both, although a mid-high seems preferred, in Bamako.

an onset cluster, albeit less frequently and mostly after /f/. The phonetic realization of the rhotic shows inter- and intra-speaker variation, the same speaker alternating between [ʁ], [r] and [ɾ] in similar contexts. The absence of the rhotic in coda position stems from a partial ban against CVC-type syllables in Sango which triggers the systematic simplification of complex coda clusters and the deletion of all simple codas, irrespective of their nature. Vowel epenthesis breaking a cluster represents another strategy used to repair illicit syllables.

In addition to this widespread phenomenon, Bangui French exhibits palatalization of dentals before all three high vowels, a feature probably imported from Sango, and alveolar and alveopalatal fricative devoicing in word-final position, as observed in other varieties of African French (e.g., Dakar), but unrelated to Sango.

In Dakar, devoicing affects final voiced stops which may also be realized as unreleased like their voiceless counterparts, leading to some potential confusion (e.g., *tu me manques* = *tu me mens*). The most significant features of this variety lie in the presence of three consonants borrowed from Wolof: /ʔ, c, ɟ/ and of prenasalized stops always resulting from assimilation (*en bas* [ã.mba] with a syllabic break after the nasal vowel). The three added phonemic segments do not fulfill identical functions: the word-initial glottal stop is required to fill empty onsets prohibited by an overarching constraint on syllable structure, while the two dorso-palatal stops are simple borrowings appearing in a number of French words and alternating with [tj–dj] respectively.

Wolof syllable structure is of the CVC type, where both onsets and codas are filled by single segments. We would then expect the corpus to show the strong tendency to cluster simplification that was observed in Bangui, but clusters are usually maintained, although a certain amount of cluster reduction is observed word-finally, affecting stop + stop clusters to a larger extent than other combinations.

Unsurprisingly, the consonantal system of Bamako French is influenced by the L1s of the speakers, but not so much in terms of segments, as most speakers master the French consonantal inventory including the phonemes which are absent from their L1s. Once again though, we observe that the native language imposes its syllable structure on French. Five different languages constitute our speakers' L1s, three of which are strict CV (or CV(C)), while the northern languages (Songhay and Tamachek) are CVC and allow complex clusters. As a result, a clear line may be drawn between the North and the rest of the country, with northern speakers maintaining all clusters, to an even greater extent than in European varieties (e.g., no cluster simplification in *ministre*). All remaining speakers simplify final coda clusters, and delete the rhotic in simple codas and in clusters.

The presence of the rhotic was shown to be a major discriminating factor for the determination of the speakers' L1s in a perception test (Lyche & Skattum 2010).

As a conclusion, let us stress that the three chapters show a wide range of variation related not to political or geographical domains, but to the speakers' L1 and their linguistic environments. Although in Mali, for example, all speakers were recorded in the capital, different L1s impinge on French, thus generating distinct varieties. Prosody contributes further to the shaping of these varieties: Boula de Mareüil & Boutin (2011) mention that in Senegal, stress tends to be word-initial, with an intensity peak, a system carried over from Wolof which is not a tone language. In Bangui and in Bamako as well, a study of prosody requires a preliminary consideration of the L1 prosodic system: a tone language producing a tonal system, a stress language producing a stress system. Few speakers acquire a typical French prosody, i.e., accentual phrases with demarcative stress on the final syllable (Bordal to appear; Lyche & Bordal to appear).

2.1.3 *Schwa*

All authors stress that a strict definition of schwa (see Chapter 1), whereby a schwa is realized as a mid front rounded or a central unrounded vowel alternating with a null segment, entails the existence of very few schwas in the varieties under consideration. Recall that in northern varieties of Hexagonal French (e.g., Dell 1973/1985), schwa deletes obligatorily word-internally and word-finally when preceded by a single consonant. It is subject to variable deletion in monosyllables and in initial syllables (of polysyllabic words) in the same context. Except word-finally, it is maintained after two consonants. We observe in the three surveys stable vowels in initial syllables and in most clitics, with little or no distinction between the conversations and the reading exercise. The items where the vowel may drop are high frequency words (e.g., *petit*), probably stored without the vowel.

All authors conclude to the presence of a stable vowel in word-initial position and exclude schwa from this context. Two factors might be invoked to account for this African peculiarity: prosody and the segmental context. Recall that the influence of the different L1s is stressed throughout the three chapters and these L1s obey, in their large majority, a highly ranked constraint against complex segments. The disappearance of an initial vowel would entail a complex cluster and thus violate this constraint.[3] In addition, the stress patterns of the different varieties all indicate that stress is not assigned postlexically (group stress), but lexically (word stress). This autonomy of the word would guarantee its integrity. Finally, in all the countries considered, French is acquired at school and this mode of

3. There is however some debate about the syllabification of a string following the absence of a schwa, but see Grammont (1933) and, for a general discussion, Côté (2009).

acquisition probably favors a closer link to the written word. Interestingly enough, the PFC database shows a certain number of schwa absence in Ivory Coast, the only African country where French might be an L1 (Boutin & Turcsan 2009).

Regarding clitics, Lyche & Skattum analyze the negation *ne*, whose presence (50% of the coded sites) contrasts dramatically with some hexagonal survey points (1.2% in Treize-Vents). The negation stands out among clitics as exhibiting a schwa with a reduction of 50% while others show an overwhelmingly stable vowel. The word-internal context displays true variation with a deletion rate around 50% in the three surveys. The word-final context, on the other hand, might be a locus of discrimination pointing to the influence of the speakers' L1s. Final schwas are thus more frequent in Bangui and Bamako among speakers whose L1 is CV, suggesting an overarching constraint against codas and more specifically complex codas.

2.2 Liaison

Given the small amount of variation observed, liaison does not call for an individual consideration of each survey. Liaison is mostly realized after monosyllables and associated with the plural, although the morphological marking alone cannot explain the massive percentage of liaisons in [z] compared to European survey points. This high proportion of liaisons in [z] stems from the fact that liaison is mainly confined to categorical contexts (Durand & Lyche 2008) excluding adjective + noun where it is optional, but including monosyllabic prepositions + X (only *dans* in Bangui and Bamako, but *dans* and *chez* in Dakar). It is interesting to note that liaison usage does not increase with the formality of the task in Bangui and Bamako, contrary to the strong tendencies observed in European surveys (Durand & Lyche 2008; Durand et al. 2011). A certain distinction is perceived in Dakar, but not as large as what has been disclosed for European French (Mallet 2008). The absence of a register distinction in Bangui and Bamako may be due to the local practice of French usage, which is restricted to the formal sphere. The reluctance to link contiguous words in a sentence might stem from the prosody of the different varieties: recall that in Dakar, a glottal stop is inserted word-initially and that an intensity stress falls on the initial syllable of the word. In Bangui and Bamako as well, lexical words tend to bear stress (or keep a certain tonal contour) eliminating the possibility of liaison. The lack of variable liaison then follows from the prosody.

Variable liaisons seldom occur, except after the monosyllabic *est.* Bordal unveils a particularly intriguing phenomenon in Bangui where the past participle *allé* appears to trigger liaison, so that it would be realized in *suis* [z]*allé* but not in *suis arrivé* for instance.

The African varieties of French described here all point to the weight of the L1 of the speakers, which interferes not only with the segmental inventories, but also with the treatment of schwa and liaison. In spite of transnational similarities in the latter two phenomena, the results presented here converge on the need to consider varieties in terms of an L1 more than in terms of a geographical location, although the melting pot role of larger cities cannot be ignored (Lyche & Skattum 2010).

3. French in Europe

French in Europe has been repeatedly described as subject to powerful leveling forces (Coveney 2001; Armstrong & Pooley 2010; inter alia), regional features disappearing in favor of a supralocal norm, succumbing to what Pooley (2006) associates to an 'Oïl Slick'.

> Nowhere else in western Europe are phonological regiolectal features levelled to such a degree over a large area. […] there is little evidence to suggest that new vernacular varieties are emerging. Projected overviews of southern, Belgian and Swiss varieties may nuance this view to some extent, but it cannot alter the fact that the Oïl French area not only covers around two-thirds of the landmass of the francophone Europe and the majority of its population, but that it is expanding still further. This *exception française* merits revisiting in a wider perspective.
> (Pooley 2006: 386)

Similarly, Gadet (2003/2007) claims that variation in French is reduced to the stylistic sphere, that it no longer affects phonological features characterizing different geographical varieties. As suggested by Pooley's quotation above, southern, Belgian and Swiss French might be more resistant to this Oïl Slick, a prognosis that we may now test with a comparison of PFC survey points.

3.1 Segmental inventories

3.1.1 *Vowels*

The vowel system presented by Hansen for nine young Parisian speakers confirms earlier studies (e.g., Peretz 1977; Landick 1995) and more specifically Lyche & Østby (2009) in their analysis of 12 PFC speakers from the Parisian upper bourgeoisie. If this system is to be considered as tomorrow's standard, it is reduced to ten oral and three nasal vowels. The distinction /a–ɑ/ no longer prevails although some speakers regard it as prestigious and differentiate the two phonemes in minimal pairs. Mid vowels are all affected by the LdP, albeit to different degrees. The

mid-high vowel gains considerable ground in open syllables, as speakers do not internalize here a prestigious norm and their pronunciations remain unaffected by the proximity of the different items when reading minimal pairs: *épée* = *épais*. The distinction /ø–œ/ in the pair *jeûne – jeune* is weakening as expected, due to its low functional load, while the few traditional exceptions to the LdP are maintained in word-final syllables. The opposition /o–ɔ/ shows the most vitality, but it is threatened as well in open internal syllables (*beauté-botté* [bote]), and the merger in closed syllables, when it occurs, favors the mid-low vowel. It seems that the decried LdP (e.g., Morin 1986) represents a system-internal force (Durand, Eychenne & Lyche to appear) that regulates the distribution of mid vowels in northern varieties of French.

Nasal vowels have merged to three in a system where the opposition /ɛ̃–œ̃/ no longer exists although the quality of the vowel is subject to large variation. In addition, Hansen's study brings forth new results on the evolution of vowel length in Hexagonal French. Although length distinctions are maintained in, for example, some parts of Normandy (Montreuil 2003; Lepelley 1999 for the Cotentin; contra Girard & Lyche 2003 for Domfront and Brécey), they fluctuate in Parisian French (see also Østby forthc.). Mid-high vowels in closed syllables are traditionally presented as long (e.g., Delattre 1966) (*rauque* [ʁoːk]), but they now do not exceed in length their mid-low counterparts in similar contexts. Vowel length is being expunged from Parisian French and its demise will probably affect other varieties of French as already observed in Normandy (Girard & Lyche 2003). In Belgium and Switzerland on the other hand, its vitality remains remarkable.

In Neuchâtel French, contrastive vowel length is present for all front vowels (/i, y, e, ɛ, ø/) in final open syllables (*nu* [ny] vs. *nue* [nyː], *ami* [ami] vs. *amie* [amiː]) where the degree of lengthening depends on the vowel. Morphology here interacts with phonology as length may often express a gender distinction (masculine-feminine). In final closed syllables, Racine & Andreassen found significant length differences for the opposition <é>/<ai> vs. <ê> and <a> vs. <â>, i.e., in the traditional contexts which are no longer active in northern French. In the three survey points considered by Hambye & Simon, contrastive vowel length is present, but less pervasive than in Neuchâtel: final closed syllables of words spelled with a circumflex (*fête, pâte*) are lengthened as in Neuchâtel, but in final open syllables, only feminine words spelled <ie> or <ée> are subject to lengthening. The domain of vowel length, on the other hand, extends to penultimate or final syllables affected by a specific prosodic contour, as for example *maison* [meːzõ]. Although solid, length distinctions in final closed syllables are reduced (they remain stable for /a/, however) among younger speakers in Switzerland and among speakers living closer to the French border in Belgium. Regarding vowel inventories, both chapters show that traditional features persist, for example the

opening of final unstressed vowels in Belgian French, the presence of /o–ɔ/ and /e–ɛ/ contrasts in final open syllables in Neuchâtel. It is clear from both chapters that the LdP does not interfere with vowel distribution. Nasal vowels on the other hand tend to follow the Parisian pattern and although the contrast /ɛ̃–œ̃/ retains some vitality, it appears threatened, the two vowels merging into /ɛ̃/.

Compared to these rich vowel inventories, albeit in evolution, Midi French presents a stable vowel system composed of seven oral and four nasal vowels. Coquillon & Turcsan analyze the speech of 18 speakers in the Marseille area and show that this variety of French does not exhibit a phonemic height contrast for mid vowels whose distribution is strictly governed by the LdP. Although some speakers in all age groups are conscious of the northern norm, it does not affect their productions in conversations, its impact being mostly confined to the reading of minimal pairs at the end of the word list. The vowel inventory includes one low vowel only (/a/) as traditionally described (Durand 2009) and four nasal vowels. Coquillon & Turcsan propose that nasal vowels, although unstable, might be underlying and not derived, as was argued by for example Durand (2009) for other surveys. They point to an extreme intra- and inter-speaker variation in the realizations of these vowels.

3.1.2 *Consonants*

The consonantal system shows much less variation across surveys than the vocalic system. Hansen confirms the projected disappearance of the nasal palatal usually replaced by /nj/ or even /n/ and notices a certain amount of velar palatalization, usually associated with speakers originating from suburban areas, albeit not in her own survey. In Belgium, Hambye & Simon observe final consonant devoicing at the end of prosodic phrases, a phenomenon restricted to Liège and Gembloux. Tournai, close to France, is affected by regressive assimilation only; a final voiced consonant may be devoiced when followed by a voiceless one. The tendency to palatalization of dental stops is present in Belgium and in Midi French, but does not stem from the same process. Probably an archaism in Belgium as it affects older speakers, it is mostly a young generation phenomenon in southern France linked to immigration (Trimaille 2010).

3.2 Schwa

Barring the North-South opposition, schwa behavior shows more homogeneity in our three survey points than the rest of the segmental system. Nevertheless, although subtle, a certain amount of variation is present. Schwa's basic behavior differs little across surveys and corresponds to traditional descriptions (e.g., Dell

1973/1985): present after two realized consonants, it may be absent in a V(#)C_ context. Hansen notes fewer schwas absent word-initially than in clitics, and she stresses that the initial <re-> (prefix or not) favors retention, although lexical factors should be taken into account. A clear register and age distinction is observed as well, the number of schwas maintained increasing with age and the degree of formality. Although both factors are not systematically studied in the other chapters, they seem to play a similar role in the other surveys.

Hansen investigates a more recent phenomenon spreading through northern France (Candea 2000) that she labels 'prepausal schwa'. Prepausal schwas appear before an intonation boundary, mostly after a single consonant, whether or not a graphic vowel is present (*c'est net* [sɛnɛtə]). In contradistinction to her earlier studies of the phenomenon (Hansen 1997), she notes a non-negligible number of occurrences in the reading task signaling a certain evolution of the phenomenon. For Belgian French, Hambye & Simon view the presence of final schwas as conditioned by phonotactic constraints, but not by prosodic factors. Word-initially, on the other hand, they stress the role played by morphology, and in particular the impact of the prefix <re>, in unison with the Parisian situation. In Neuchâtel French, an in-depth analysis of schwa reveals the influence of token frequency, lexical category (more absence in initial syllables of nouns and adjectives than of verbs), a high rate of deletion (72%) for initials in <re> (contra the other two surveys), and a generally high deletion rate for schwas in initial syllables of polysyllables. This singles out this particular variety even though Racine & Andreassen stress the importance of non-phonological constraints for schwa maintenance. The three surveys thus point to a slight differentiation in schwa behavior, the most striking being undoubtedly the high frequency of final schwas in Parisian French.

As a massive presence of schwas in southern French has traditionally been a characteristic element in its phonology, Coquillon & Turcsan's analysis is a welcome addition to earlier studies of schwa in Southern French for other surveys (Durand & Eychenne 2004; Coquillon & Durand 2010). We observe that schwa in southern French is under pressure and that its evolution follows the historical development of schwa in northern French (Durand, Eychenne & Lyche to appear): if in word-initial syllables, <e> remains a stable vowel and is rarely a schwa, such is not the case of other word positions. Word-internally, the vowel is weaker and still weaker word-finally, younger generations leading the change. All registers seem to be affected in the same way in opposition to what was observed in the other southern surveys. Coquillon & Turcsan stress as well, although indirectly, the absence of a prepausal schwa phenomenon. For a final schwa to be realized in southern French, it must have a graphic correlate, thus reinforcing the geographical limitation of the phenomenon.

3.3 Liaison

While the different chapters brought to light geographic variation regarding segmental inventories and, to a certain extent, schwa, they concur in their treatment of liaison. Categorical liaison is restricted to a few contexts (e.g., determiners + X, pronouns + verbs, a few monosyllabic prepositions) and, more specifically, an adjective is not systematically linked to the following noun (*parfait // anglais* in Neuchâtel). Variable liaison is overwhelmingly scarce, truly variable after *est*, but nearly inexistent between a plural noun and an adjective for instance. All surveys stress that variable liaison is more frequent in the reading task than in conversations although a differentiation does not seem possible between the guided and the informal contexts. Among external factors influencing the realization rate, age seems to be important notwithstanding individual differences. For Belgium, Hambye & Simon find that women might realize more variable liaisons than men. Southern French patterns with the other surveys in spite of the presence of final schwas which could be expected to trigger an increased use of liaison. Coquillon & Turcsan discuss this eventuality and conclude that it is not the case, that a schwa may appear when liaison occurs, thus avoiding a consonant cluster, but that the reverse is not true.

As a conclusion to this section, let us stress that, southern, Belgian and Swiss varieties of French maintain their characteristics and do pose strong resistance to the leveling tendencies observed by Armstrong & Pooley (2010). In addition to the phenomena presented above, two chapters (Hambye & Simon and Coquillon & Turcsan) show that those varieties, through their typical intonation patterns, will resist leveling for the years to come, as distinctive patterns are kept alive by all generations.

4. French in North America

The first permanent European settlements were established in Canada in the early 17th century when French colonists occupied the banks of the St. Lawrence River and the Maritime Provinces located on Canada's east coast. The two colonies showed distinct immigration patterns and developed separately administratively and linguistically. As a result, two major French dialect groups are present in Canada today, Acadian French and Laurentian French, both represented in this volume, with Tracadie (New Brunswick) for Acadian French, and Trois-Rivières (Quebec), Hearst (Ontario), and Peace River (Alberta) for Laurentian French. The major variety of French spoken in Louisiana maintains a few linguistic ties to Acadian French due to the settlement in Louisiana of a number of Acadian exiles

who were expelled from Canada in the mid 18th century. The varieties of French in North America may thus be distinguished linguistically, although this factor alone proves insufficient for their characterization. In Ville Platte, Louisiana and in Peace River, Alberta, monolingual speakers are scarce, French there fights for its survival and is slowly being supplanted by English. In the other three PFC surveys presented here (Tracadie, Trois-Rivières and Hearst), French is the major language of communication, the speakers' proficiency level in English varying from high to limited.

4.1 Segmental inventories

4.1.1 *Vowels*

Phonetically, there appears to be little variation between the four Canadian surveys, which maintain an extremely rich set of oral and nasal vowels. On the basis of an analysis of complementary data, Côté proposes that high vowel laxing, traditionally considered as allophonic, may be reanalyzed as contrastive. Côté, who added a list of 209 words to the standard PFC word list, thereby largely augmenting the Canada-specific list used in the other surveys (Durand & Lyche 2003), argues that Laurentian French has 23 contrastive vowels, including four rising diphthongs, which can be identified in final closed syllables. All authors agree on the presence of full mid-vowel contrasts, of a distinction between *fête* and *faites* attributed either to length or to quality (i.e. /ɛː/ vs. /ɜ/), and the presence of diphthongs in final closed syllables. The observed unity is broken by an Acadian particularity, where mid-low vowels tend to raise to mid-high in word-final syllables before /R/ and mid-back vowels raise to high in certain words (*ôter* [ute]).

All high vowels undergo laxing and lengthening in certain environments: in stressed syllables closed by voiced fricatives (and /R/), vowels are tense and usually long. For Laurentian French, Côté posits long lax vowels before /R/ (*dur* [dᶻʏːR]), while Cichocki does not make this distinction for Acadian French (*court* [kuːR]). High vowels may be devoiced when occurring between voiceless consonants. This assimilation process has commonly been observed in different varieties of Laurentian French (Gendron 1966; Walker 1984), but its presence in Acadian French is first noticed here.

A two-way low vowel contrast (/a–ɑ(ɒ)/), clearly identifiable in final closed syllables, is kept in all surveys with a number of specific tendencies. While /a/ is subject to backing in final open syllables, Hearst's subjects in their majority pronounce an anterior vowel in *rat* and *ras* in the PFC word list. Côté, for Laurentian French, points to an ongoing change whereby the /ɒ-ɔ/ distinction weakens in final closed syllables before /R/ and where a decline of the usual contrast /a–ɒ/

occurs also before /R/ in favor of the back vowel, a tendency which goes counter to normative pressure in favor of /a/. The two phonemes may be distinguished by an increased degree of frontness and vowel length: *patte* [pæt] vs. pâte [paːt], especially in the reading task.

A four-way contrast prevails among all nasal vowels, although previous descriptions of Acadian French mention three vowel phonemes. The speakers of Tracadie conform to their Quebec neighbors and distinguish *brin* from *brun.* They show, however, a tendency to neutralize the /ɑ̃–ɔ̃/ contrast in open syllables, a phenomenon which was claimed to be geographically based (Flikeid 1984) and which has been noticed in Louisiana as well (Papen & Rottet 1997), although not in Ville Platte.

The vocalic system of Ville Platte to which we now turn, is much less complex than its Canadian counterpart, retaining only high vowel laxing, which occurs sporadically in all final closed syllables. Mid vowels conform to the LdP without any raising in syllables closed by /r/, in contradistinction to what was observed in other parishes (Dubois 2005). There is, however, a lowering of /e/ to [æ, a] before a coda /r/. The /a–ɑ/ contrast seems inexistent in spite of a wide variation in the phonetic realizations of the vowel, systematically more posterior than in FR. Three nasal vowels are distinctive in Ville Platte and the contrast /ɛ̃–œ̃/ seems lost except in the pair *brin-brun.* The system gives the impression of being highly nasalized, though, due to pervasive contextual nasalization which affects all vowels adjacent to a nasal consonant.

4.1.2 *Consonants*

The consonantal inventory of French in North America presents few surprises if we disregard the absence of a palatal nasal in Louisiana French and the presence of historical alveopalatal affricates [tʃ, dʒ] in Acadian French, although their phonemic status is the subject of some debate. Affrication affects /t, d, k, g/ as well in Ville Platte, where it is restricted to a few lexical items for which speakers are aware of the non-affricated form. All varieties are subjected to alveodental assibilation before high front vowels and glides. Traditionally, Acadian French is not affected by the process, which constitutes an element distinguishing the two major varieties of French in Canada. Cichocki observes assibilation in reading and in conversations, more frequently with younger speakers than with older ones, which could point to an ongoing change in Tracadie French. Specific to Louisiana French is the commutation between dental and alveopalatal fricatives, leading for instance to the realization [ʃovɑʒ] for *sauvage*.

Certain surveys witness the survival of word-initial aspiration (*la honte* [ʰõt]), while it is disappearing from the varieties of French where it used to be heard (Eychenne 2009; Lepelley 1999). The presence of /h/ in the consonant inventory is

mentioned for Acadian French, Alberta and Louisiana, but the segment does not extend to Hearst or Trois-Rivières.

The place of articulation of the rhotic is subject to variation across surveys. While we traditionally find an apical realization in the western part of Quebec and a dorsal in the eastern part, Côté shows for her speakers in Trois-Rivières a tendency which confirms earlier studies pointing to the emergence of a dorsal norm. In prevocalic position, the six younger speakers all produce a dorsal rhotic in their conversations. Cichocki draws a similar conclusion for Tracadie, where his results parallels Flikeid's (1984) suggestion of an ongoing change initiated in syllable-final position. The dorsal variant is almost categorically used in Hearst, while Peace River exhibits both apical and dorsal rhotics in addition to other variants due to contact with English. In Ville Platte on the other hand, the rhotic is realized as an apicoalveolar tap weakened and sometimes absent in coda position as in Bangui or Bamako French (see Section 2.1.2). /R/ weakening occurs as well in Tracadie, where the consonant is often reduced to a schwa-like vowel word-finally, and deleted after [ø] and [o] in the same context.

Massive word-final consonant cluster reduction prevails in all surveys. The phenomenon has been abundantly illustrated in France (Laks 1977; Wachs 1997), but the reduction rate is undoubtedly higher in North America than in Europe, both in conversations and in the reading task. On the other hand, a final /t/, usually absent in European French, commonly appears in certain words (e.g., *bout, juillet*). A nasal assimilation phenomenon, which frequently occurs after the simplification of an obstruent + liquid cluster, is mentioned both for Laurentian French and Louisiana French: *chambre* [ʃɑ̃m].

4.2 Schwa

Authors do not concur on the phonemic status of the vowel and it remains unclear whether this divergence hides deeper distinctions: Walker, for Peace River, considers that schwa is a phoneme endowed with a specific realization, while Côté does not include schwa in the vowel inventory of Trois-Rivières. She considers that schwa is an allophone of /œ/ without a distinct quality. Only in Louisiana do we observe for schwa a realization not confined to the mid-vowel space, as schwa may surface as [i]. Authors agree however on a clear distinction between the rate of presence of schwa in the reading test and in conversations. These results fully support what has been observed in all other PFC surveys. Albeit with a few exceptions, all varieties obey the standard constraints regulating the presence or absence of schwa in a string. Compared to other varieties discussed in Sections 2 and 3, North America may be characterized globally as composed of schwa-avoiding

varieties. Côté opposes schwa behavior word-finally in Trois-Rivières and in the PFC database. While schwa is nearly categorically absent in that environment in Trois-Rivières, it shows a 26% retention rate in the rest of the database, this proportion being typical for Ile de France for instance. Walker, for Peace River, draws similar conclusions and notes as well that schwa absence word-finally is especially remarkable in words ending in a cluster.

Louisiana French patterns with the other varieties and might be even more schwa-avoiding given the behavior of monosyllables. We might conjecture that the absence of written knowledge impacts on the use of schwa. Common to Ville Platte and all Canadian surveys is the presence of metathesis which takes place regularly with /R, l, ʒ/ giving rise at times to stable vowels (*erpasser* for *repasser* in Ville Platte). This phenomenon establishes a clear distinction between North American and European varieties of French where metathesis survives exclusively in a few dialects of the western part of France (e.g., in Normandy, Desgrippes 1982).

4.3 Liaison

Categorical and variable liaison contexts in all surveys correspond to more recent descriptions which take into account a large number of PFC surveys (Durand & Lyche 2008; Durand et al. 2011). The system shows nevertheless a few peculiarities to which we will now turn. Liaison consonants are reduced to three, /z, n, t/, except in Trois-Rivières where liaisons in /R/ are attested as well in the corpus. In Trois-Rivières, Tracadie and Ville Platte, analogical plural [z] is observed to extend to numerals (*cinq* [z]*écoles* in Louisiana), although to varying degrees. In Louisiana, the fricative may agglutinate at times to the following word (*un indien – un zindien*). Louisiana French presents otherwise a highly reduced liaison system, with hardly any variable liaison when we disregard the context auxiliary *est* + X.

Laurentian French shows a few specific phenomena regarding liaison, the most commonly described (here both by Côté and Walker) concerning the absence of liaison after the clitic pronoun *ils* (*ils ont* [jõ]), and the variability of liaison after *on*, although this variability might be restricted to the context *on y* in Trois-Rivières. In addition, two non-standard phenomena are mentioned by Côté for Laurentian French which, interestingly enough, considerably increase the realization rate of liaisons in the corpus. Liaison is observed to be frequent after the different forms of the present tense of *être* and also before the infinitive. In both cases, the occlusive [t] is the liaison consonant. Thus, not only do we have standard realizations like *ils sont* [t]*installés,* but also strings like *je suis* [t]*en ville*

and *tu es* [t]*ébloui.* Moreover, *être* triggers liaison before the infinitive as in *ça va* [t]*être,* an isolated example in Trois-Rivières, although this specific phenomenon is not uncommon in Laurentian French. Thus, *être* in its monosyllabic realizations is much more prone to bring about liaison in Laurentian French than in European French. Considering exclusively rates of presence might be deceptive as the figures hide different usages. Note as well how generalized liaison with *être* or lack of it may impact these figures: when speakers are conscious of the norm, they avoid these non-standard forms and thereby reduce the percentage of realized liaisons in their speech.

4.4 Related issues

Cichocki and Walker consider in detail the influence of English on the varieties they describe. Although Tracadie's speakers do not exhibit the same level of English proficiency as Peace River's speakers who are all fluent bilinguals, the overwhelming presence of English in the Atlantic region has introduced a large number of borrowings into the language, thereby impacting that variety. The two surveys display similarities in loanword adaptation and in the variable retention of the retroflex [ɹ]. Diphthongs tend to become tense monophthongs (lengthened in Tracadie), affricates are maintained and the central vowel [ʌ] is realized as [ɔ] (*truck* [trɔk]).[4] The conversations in Peace River reflect more than anywhere else the bilingual status of all speakers with numerous instances of code-switching (*as-tu un jupon de SPARE?*).

We will close this section with a few remarks on prosody amply examined by Tennant in his chapter on Hearst and mentioned as well for Tracadie and Ville Platte. Both in Tracadie and Ville Platte, the presence of an initial stress and of stress clash are detected with somewhat distinct implementations. Tennant proposes a study of the prosodic rhythm of a selection of PFC speakers from Quebec City, Windsor (Ontario) and Hearst under the assumption that the impact of English prosody would increase with the degree of contact. We would then expect the rhythm of Windsor's speakers, all bilinguals, to be more stress-timed than that of Quebec City speakers who, for lack of direct contact with English, would maintain a syllable-timed rhythm typical of French. The results of this study reveal little influence from English, it establishes on the contrary that all varieties remain within the syllable-timed range.

4. Although this is not discussed specifically by all authors, these tendencies prevail in all varieties of French in North America including Louisiana.

5. Conclusion

This chapter shows that each variety described in this volume is unique in one way or another, that the leveling which might affect northern French does not spread in a similar fashion to other varieties. There is no doubt, however, that the prestige of FR outside of France has the potential to accelerate certain changes. Apical /r/ for instance is maintained in Africa, due to language contact, and in Louisiana, where there is no overarching norm, but it is receding in Canadian varieties whereas the dorsal variant, at times felt as more prestigious, seems to be spreading across geographic regions. Vowel systems preserve their specificities and exhibit a large span of variation: from eleven in southern French to a potential twenty-three in Laurentian French. In contradistinction to this massive variety warranting distinct phonological treatments, we observe some common trends regarding schwa. Note first that if schwa is by definition a vowel alternating with zero, its distribution will vary from one survey to another, southern French and African French exhibiting fewer real schwas than other varieties. It seems however that when a schwa may occur in all word-positions, deletion rates vary according to register and word-position, e.g., word-initial schwas are stronger than schwas in clitics. Numerous studies underline positional strength, and although French mostly keeps characteristics of a cursus language (in terms of Pulgram 1970), the word as a phonological unit continues to impact postlexical phonology (Lyche & Girard 1995). Finally, with respect to liaison, although the rate of retention may vary, categorical contexts remain uniform throughout the francophone world. The rate of realization of variable liaisons does differ though, and this should be seen in connection with the importance attributed locally to orthography and the knowledge thereof. Liaison might be, however, the phonological domain where a unified analysis across varieties is warranted.

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