

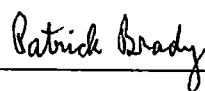
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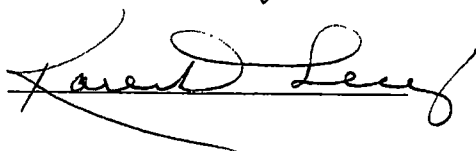
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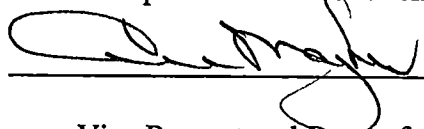
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Acceptance for the Council:



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Graduate Studies.

**PEDAGOGICAL CHALLENGES IN TEACHING
FRENCH PHONEMICS TO AMERICAN STUDENTS**

**A Thesis Presented for the Master's of Arts Degree
The University of Tennessee, Knoxville**

**Maud Hinault
December 2001**

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Abstract

Within the teaching of foreign languages, little space is given to the teaching of pronunciation. Nowadays, grammar and the structure of the language remain the focus, yet a communicative classroom is what teachers are looking for. So why is the production of foreign sounds barely taken into account if the expectation is for students to be able to express themselves in the target language and be understood by native speakers?

The purpose of this study was to show the challenges of teaching French phonemics to American students learning French as a second language. Findings revealed that the two languages have many speech sounds -or phonemes- in common, but some Standard French phonemes do not exist in American English and are a source of difficulties for American students. Information for the writing of this thesis were collected in different linguistic reviews as well as through the readings of many books dealing with the field of American English and Standard French phonemics, phonetics and phonology.

After a comparison of American English and Standard French phonemes and allophones, difficulties of Standard French pronunciation are stated with some tips on how to correct mispronunciation of French phonemes by native speakers of American English. However, if learning how to produce separate sounds correctly is one important and necessary step in the acquisition of a foreign language, putting sounds together and producing a sentence with the correct intonation pattern is another one, which is even more omitted in the foreign language classroom. Therefore, the importance of the teaching of Standard French stress, rhythm, and intonation is also explained.

Recommendations for a change in the teaching of foreign languages are offered, so that more emphasis can be put on the acquisition of French phonemics in the classroom.

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Introduction

Nowadays, learning a foreign language is crucial. Indeed, the need for communication between people is growing, and there are more and more exchanges at the economic, political, social, or academic levels. Tourism also accounts for the greatest need for foreign languages. So, speaking a language other than one's native tongue turns out to be a necessity in our present world. English is by far the language that everybody should know, but the French language still plays an important role at different levels worldwide, and it is also the official language of many countries. However, acquiring a new language is not an easy task. It means acquiring a new syntactic system, because sentences are formulated differently in every language, and the word-order usually differs from one language to another, or there may be more tenses in some language, and fewer in another, etc... The acquisition of a foreign language also requires learning a new vocabulary, a new set of words. The same object may have a different name in the other language, or some words will not translate into the foreign language because the words have no equivalent because no meaning, or the way of thinking in the target language might differ, including the way to express oneself. Finally, it requires the acquisition of a new phonological system, including new phones and new phonemes. Indeed, learning a foreign language does not only mean being able to understand a new grammar, a new organization of words, in brief, how the target language works, it also means that the learner must be able to produce sounds that may exist somewhat in the native tongue, and learn to produce sounds that are completely non-existent in, or differ in pronunciation from those of the native tongue. The production of unfamiliar sounds must be difficult. Yet, in general, too many studies are concerned with the challenges associated with the acquisition of a foreign language, but only a few deal with the difficulties that students encounter in the reproduction of sounds or the production of new sounds. Many are the students who cannot read properly in the target language after the first two years. They can no doubt understand what

they read because they have acquired the grammar, conjugations and vocabulary, but they are usually unable to read a sentence with the correct pronunciation. They commonly read and pronounce the target language as if they were reading in their first language. Has something been omitted in the teaching of the foreign language?

This study deals with the pedagogical challenges of teaching Standard French phonemics to American students. Here, Standard French is understood as the French language spoken in France. Therefore, when referring to the phonetics of Standard French, we mean the way speakers from France pronounce the French language nowadays. In this study, Standard French is opposed to American English, by which we mean the language spoken presently by native speakers in the United States. The author being a native French speaker teaching French to American students at the university level, the study only concerns the acquisition of Standard French pronunciation by adult American English native speakers. Indeed, adult acquisition of a foreign language is to be opposed to the acquisition of that same foreign language by children. Until the age of 12-13 years old, acquiring the phonemic system of a foreign language is easier than at the adult age, because for a child, the phonatory apparatus is not completely formed, and the child can still build up more muscular habits, i.e, he can still learn how to produce new speech sounds -or phonemes- correctly. Indeed, when adult, the phonatory apparatus is completely formed, and becomes used to the production of certain sounds, i.e. the ones found in the first language. The adult will then have to make much more efforts to produce or reproduce new speech sounds properly. However, at the adult stage the acquisition of a new syntaxe, and a new set of vocabulary is usually faster because adults can make a comparison with their native tongue, and by doing so, they usually understand better how the target language works. On the other hand, although children acquiring a new language will have no problem with the production of new phonemes, the grammar and syntactical rules of the native tongue not being perfectly understood yet, they will make more mistakes trying to formulate grammatically correct sentences. In the

United States, the teaching and thus the learning of a foreign language usually starts in high school and goes on in the university. The learners are thus considered as adults. These students do not usually face difficulty with the acquisition of French syntax, grammar, and conjugations, but their pronunciation of French is most of the time terrible. Why? First of all, not enough time is devoted to the production of the sounds of the Standard French phonemic system in the foreign language classroom, the emphasis being mostly on grammar. Secondly, although Standard French and American English share many vowel and consonant phonemes, the two phonemic systems differ in many ways and American students often have trouble producing Standard French phonemes. Therefore, it is appropriate to talk about challenges when it comes to teaching Standard French pronunciation to American students.

The first section of this thesis will focus on the description of the phonatory apparatus, followed by the general organization of a phonemic system and its division between consonant and vowel speech sounds. The second section will deal with consonant phonemes in the two languages; they will first be studied phonetically, then phonemically. Studying the allophones of the consonant phonemes in each language, we will find out that there are not many differences between the two languages, and that the difficulties of Standard French pronunciation are to be found somewhere else. The third section will deal with vowel phonemes in both languages, and their study will have the same format as for consonant phonemes. This section will show that vowel sounds differ a lot in Standard French and in American English: the target language has a set of vowel phonemes that do not exist in American English, and, consequently, their acquisition represents a difficulty for American students. The latter usually have trouble recognizing the new sounds and reproducing them. When studying the consonant and vowel sounds more in-depth in their respective sections, the notions of articulation and muscular tension will be defined, the role they play and their importance in the pronunciation of any language will be explained. Indeed, though the two languages have many phonemes in common, the difficulties are

found at the level of production of these phonemes. Thus, when comparing the production of a phoneme by a native speaker of Standard French to the production of that same phoneme by a native speaker of American English, the two sounds -whether a consonant or a vowel phoneme- will be different. Finally, to make the study of the comparison of Standard French and American English pronunciation complete, a fourth section deals with stress, rhythm and intonation. This section shows that these factors also play a crucial role in the production of utterances, and that they should not be omitted in the teaching of a foreign language. So, can the question be raised as to whether the teaching of foreign languages is defective? Should more time be spent on the reproduction of new speech sounds, on utterances in the target language so that students would get the correct pronunciation?

I) General Aspects of Phonation

1. The Organs of Speech

With the exception of one organ, the larynx –located at the top of the trachea, the human speech system borrows most of its organs from the respiratory and nutritive system: the lungs, the nose, the mouth, the lips, the teeth, the palate, and the tongue. Within the larynx are folds of muscle called vocal folds –or vocal cords. A flap of tissue called the epiglottis is attached at the front of the larynx, and can fold down and back to cover and protect the vocal folds, which are stretched horizontally along the open center of the larynx. The opening between these folds is called the glottis. Both of the vocal folds are attached to cartilage at the front of the larynx but are separated at the back. By bringing the two free ends together, the vocal folds can be fully or partially closed regulating the flow of the pulmonary airstream. If the vocal folds are slightly approximated, the airstream that goes through produces a noise of friction [h] similar to [φ], the noise of friction that the lips produce when blowing out a flame. If the vocal cords are closed, the passage of the air stream produces an explosion (glottal stop) at the moment that the vocal folds separate from each other under pressure from the airstream. If the vocal folds are approximated enough, but not totally closed, the airstream makes them vibrate and impart voicing to the sounds. The more powerful the pressure of the airstream, the more intense is the voicing; and the more tense the vocal folds, the higher the voice. Thus, the airstream, even before meeting other obstacles, can either produce a voiced or a voiceless sound. For example: when producing a voiceless sound like [s], the vocal folds are separated and produce no vibrations, hence, the name “voiceless”. However, when producing a sound [z], there will be vibration or buzzing feeling due to the vibration of the vocal folds, hence the name “voiced”. A little higher in the system of human speech production, the air stream goes through the pharynx and arrives

at the velum –or soft palate. This posterior half of the palate is mobile and can therefore go up and down. If the velum is down, part of the air stream can pass through the nasal cavities, adding a nasal resonance to the produced sound. If the velum is up, it prevents any airstream from getting into the nose, and the resonance is not completely oral. The activity of the velum therefore creates two distinct sounds: either a nasal sound or an oral sound. The airstream then goes through the mouth –or buccal/oral cavity- where it can encounter many different obstacles because of the movements of the lower jaw and the mobility of the lips, the tongue and the velum. On the upper part of the oral cavity, the airstream successively encounters: the uvula (a small soft tongue that hangs at the extremity of the velum), the hard palate (the front half of the roof of the mouth), the alveolar ridge (a convex part that covers the roots of the teeth), the upper teeth and the upper lip. On the lower part of the oral cavity, the airstream successively encounters the root of the tongue (which faces the pharyngeal surface), the back of the tongue (that faces the velum), the front of the tongue(that faces the palate), the tip of the tongue (whose upper part has to be differentiated from its lower part), the lower teeth, and the lower lip. The tongue being so flexible, it can take a variety of shapes: it can raise itself at different points, it can be flat, hollow, convex, it can shape a conduit in the middle with some obstructions on each side, or it can shape an obstruction in the middle with a conduit on each side. These tongue positions result in different sound qualities.

Consequently, many factors have to be taken into account when describing the production of speech sounds.

2. Consonants versus Vowels

The smallest unit in the human speech system is called a speech sound. Speech sounds are divided into consonants, vowels, semi-vowels, or diphthongs in American English. French does not have diphthongs. As a general rule, consonants are more closed sounds than vowels. So to produce a vowel sound –as

opposed to a consonant sound- one has to make an opening movement, that is a movement of the oral cavity that starts from a position of the mouth more or less closed to a position more or less open. To make it simple, sounds articulated in such a way that the airstream flows unhindered along the median line of the vocal tract are classified as vowels, whereas sounds that are articulated in such a way that the airstream is one way or another along the median line are classified as consonants. But, it is a little more complicated than that. Indeed, the difference between vowels and consonants involves many elements, and these are the components of the human speech phonation system that were described previously. The difference between vowels and consonants has to be explained by the proportions in which the three elements of friction, voicing, and resonance are distributed in the production of one speech sound. The more the friction, the more the sound is a consonant. The more the voicing and resonance, the more the sound is a vowel

In parts II and III, the articulation and the production of French and American English consonants and vowels will be described and compared in order to understand where the difficulties are for Adult native speakers of American English trying to learn and pronounce French as a foreign language.

II) Consonants

1. *Phonetics: The Consonants*

When describing the consonants of both American English and French, three features need to be specified: 1. Is the sound voiced or voiceless, 2. Where is the place of articulation, and 3. What is the manner of articulation? As it has already been mentioned in Part I, a speech sound is either voiced or voiceless depending on whether the vocal folds are approximated and therefore vibrating (voiced speech sound), or open with no vibration (voiceless speech sound) or partially closed (whisper). It is also necessary to state where there is a constriction in the vocal tract, i.e. where the vocal tract is made more narrow. This refers to the place of articulation of the speech sound –or phone.

Place of articulation of the consonants:

- *labials* : these sounds are produced by one or both lips. The lower and upper lips combined result in bilabial sounds such as [p] and [b], while the lower lip raised to contact the upper teeth produces labiodental sounds like [f] and [v] as in “fan” and “van” respectively.

- *dentals, interdental or linguadentals* : when the tongue contacts the teeth, the sounds are said to be dental or dentalized. These sounds are considered to be typically American English sounds and are the interdental [θ] and [ð], as in the words “breath” and “breathe” respectively.

- *alveolars* : for these sounds, the tongue typically contacts the alveolar ridge, the area immediately behind the upper teeth. This contact will be complete for sounds such as [t] and incomplete for sounds such as [l] or [s]. The alveolars comprises a fairly large set of speech sounds both in American English and French: /t/, /d/, /s/, /z/, /n/, /l/, and some productions of /r/, /ʃ/ and /ʒ/.

- *palatals* : for the production of the palatals, the tongue contacts some portion of the hard palate. Because the palate is relatively large, sounds produced there may be variously grouped as alveopalatals, pre-palatals, palatals and post-palatals. The palatals are /ʃ/, /ʒ/, /tʃ/, /dʒ/, /j/, /ɲ/ and some productions of /r/.

- *velars* : the sounds made with tongue contact on or about the soft palate –or velum- are called velars, with /k/, /g/, /ŋ/ as the clearest examples in both languages.

- *medio-palatal* : this French sound is produced when the middle of the back of the tongue is close to the middle of the palate. The tip of the tongue stays down. The French medio-palatal is the /ɲ/ as in the word *agneau*. It always corresponds to the graph *-gn*.

- *glottal* : the only glottal phoneme that occurs in American English is the /h/, made by narrowing the glottis by partially adducting the vocal folds, so that some friction or turbulence is produced. This sound does not exist in French.

- *uvular* = the French /r/ is produced by pressing the back of the tongue against the uvula.

Along with voicing and place of articulation, it is also necessary to describe the manner of articulation to classify consonants. As noted before, voicing refers to the abducted (open) or adducted (closed) state of the glottis causing the vocal folds to vibrate, and the place of articulation is the point of contact or near contact of the active and passive articulators. The manner of articulation refers to how the sound is produced. Once the articulators are positioned, they must behave in a particular way as they control the flow of air through the system or cause resonance changes. At times their action may completely stop airflow; at other times the blockage will be partial. In a sense, the manner of articulation relates to the acoustic properties of speech sounds.

Manner of Articulation Features of Consonants:

- *obstruents* : these consonants are opposed to sonorants, and are characterized by an obstructed vocal tract, either complete or partial.

-*Sonorants*: When producing sonorants, the channel through which the air passes, either oral or nasal, is relatively open. Therefore, all the vowels and consonants with vowel-like features are classified as sonorants. The consonantal sonorants are: /m/, /n/, /ŋ/, /ɲ/, /l/, /r/, /w/, and /j/.

-*stops/plosives* : these obstruent consonants are produced with complete stoppage of the airflow through the vocal tract. Some stops are produced with an audible burst of air on release while others are not. In American English and French, the stops are: /p/, /b/, /t/, /d/, /k/, /g/.

-*fricatives* : fricatives are obstruents that result from a partial blockage of the airstream, thus causing turbulence or friction during their production. The fricatives are: /f/, /v/, /θ/, /ð/, /s/, /z/, /ʃ/, /ʒ/, and /h/.

-*nasals* : the velum can be raised or lowered, and if it is lowered –as it is during normal breathing and during the production of nasal sounds, then the air stream can escape through the nasal cavity. When the velum is raised against the larynx, no air can escape through the nasal passages. Sounds that are made with the velum raised are called oral sounds. Sounds that are made when the oral cavity is completely obstructed are called nasals; /m/, /n/, /ŋ/, /ɲ/.

-*affricates* : affricates are made by briefly stopping the airstream completely and then releasing the articulators slightly so that friction is produced. There are no affricates in French, and only two in American English: /tʃ/ and /dʒ/.

-*Stridents*: the affricates and some of the fricatives are stridents. These sounds are made by directing the airflow against a surface, such as the back of the upper teeth, so that considerable friction is produced. The stridents are: /f/, /v/, /s/, /z/, /ʃ/, /ʒ/, /tʃ/ and /dʒ/.

-Sibilants: the sibilants are a subset of stridents often referred to as the “hissing/hushing” sounds /s/, /z/, /ʃ/, /ʒ/, /tʃ/ and /dʒ/. They are characterized by relatively high frequency noise.

-liquids : when a liquid is produced, there is an obstruction formed by the articulators, but it is not narrow enough to stop the airflow to cause friction. Liquids are subdivided into laterals and trills.

-glides/semi-vowels : glides are consonants that provide a rapid transition, usually to a following vowel, then called onglide. Offglides are transitions from a preceding vowel. There are no phonemic glides in French, but American English has two onglides: /w/ and /j/.

Even though, basically, American English and French consonants appear to be the same on paper, and even though phonetically they may be transcribed in the same way, they are not produced the same way. In the following two sub-sections, we will study the separate phonetic systems of the two languages to identify the differences.

1.1. Description of American English Consonants

Because the same consonant sound can occur in different phonetic settings, the following table gives an example of each position in which each speech sound can be produced.

Phonetic Symbols for The Consonants of American English and Their Sound Distribution

<i>Symbol</i>		<i>Examples</i>		
		<i>initial</i>	<i>middle</i>	<i>final</i>
[p]	<i>as in</i>	picture	apple	soup
[b]		bed	baby	robe
[t]		teacher	tattoo	cat

[d]	dog	ladder	bread
[k]	cat	cookie	cake
[g]	girl	magazine	egg
[f]	foot	elephant	leaf
[v]	village	river	five
[θ]	thumb	toothbrush	teeth
[ð]	there	mother	smooth
[s]	song	castle	bus
[z]	zoo	music	nose
[ʃ]	shadow	washer	brush
[ʒ]		treasure	garage
[tʃ]	chair	ketchup	church
[dʒ]	judge	magic	cage
[h]	hat	lighthouse	
[m]	mailbox	lemon	dime
[n]	nail	dinner	son
[ŋ]		singer	spring
[j]	yellow	onion	tie
[w]	water	reward	
[w]	whale	cartwheel	
[r]	rabbit	carrot	star
[l]	lamb	alarm	doll

Place and Manner of Articulation of American English consonants

<i>Manner of Articulation</i>	<i>Voiceless</i>	<i>Voiced</i>	<i>Place of Articulation</i>
Stops/Plosives	[p]	[b]	bilabial
	[t]	[d]	alveolar
	[k]	[g]	velar
Fricatives	[f]	[v]	labiodental
	[θ]	[ð]	interdental
	[s]	[z]	alveolar
	[ʃ]	[ʒ]	alveopalatal
	[h]		glottal
Affricates	[tʃ]	[dʒ]	alveopalatal
Nasals		[m]	bilabial
		[n]	alveolar
		[ŋ]	velar
Lateral Liquid		[l]	alveolar
Retroflex Liquid		[ɭ]	alveolar
Glides		[w]	bilabial

[j]

alveopalatal

1.2. Description of French Consonants**Phonetic Symbols for The Consonants of French and Their Sound Distribution**

Symbol	Examples			
	<i>initial</i>	<i>middle</i>	<i>final</i>	
[p] <i>as in</i>	pont	appeler	cap	
[b]	bon	habit	snob	
[t]	ton	attends	sept	
[d]	dont	addition	sud	
[k]	cou	accuser	bac	
[g]	garage	aggraver	grog	
[f]	fou	effet	neuf	
[v]	vous	revu	rêve	
[s]	ses	assez	os (sing.)	
[z]	zèbre	oser	gaz	
[ʃ]	chou	acheter	cache	
[ʒ]	jouet	âge	gage	
[l]	lion	malade	bal	
[r]	rat	mari	bar	
[m]	mes	femme	idem	
[n]	nez	anneau	eden	

[ŋ]	gnole	agneau	montagne
[ŋ]			camping

Place and Manner of Articulation of French Consonants

<i>Manner of Articulation</i>	<i>Voiceless</i>	<i>Voiced</i>	<i>Place of Articulation</i>
Stops/plosives	[p]	[b]	bilabial
	[t]	[d]	alveolar
	[k]	[g]	velar
Fricatives	[f]	[v]	labiodental
	[s]	[z]	alveolar
	[ʃ]	[ʒ]	alveopalatal
Nasals		[m]	bilabial
		[n]	alveolar
		[ɲ]	palatal
		[ŋ]	velar
Lateral Liquid		[l]	alveolar
Rhotic Liquid		[r]	alveolar

1.3. Comparative study of the Articulation of some American English Consonants and their French equivalents

Following is a more detailed study of some American English and French consonants, and more precisely their manner of articulation. We begin with consonants that are produced at the front of the mouth and work towards the back. We describe the sounds as they would be pronounced in only one position. This will show that there are already differences between American English and French, even when the speech sounds would be thought to sound the same and be produced in the same manner. The position chosen here is the word-initial position.

NB: The unit of measurement for the teeth and others is the inch.

[p] as in American English "pin" and in French "papa", is a voiceless bilabial stop.

	American English	Standard French
<i>Tongue</i>	Neutral position, inactive	Neutral position, inactive
<i>Lips</i>	Tense, upper and lower lips pressed firmly together, muscle tension released at onset of voicing	Little tension, upper and lower lips lightly touching.
<i>Jaw</i>	In motion towards position of following vowel during articulation	Immobile
<i>Air pressure</i>	Fairly intense, it rushes through lips upon articulation with audible turbulence.	Very light at point, of articulation air escape barely perceptible.
<i>Teeth</i>	1/4 inch apart	1/8 inch to 1/4 inch apart

[t] as in American English "time" and in French "temps", is a voiceless alveolar stop.

	American English	Standard French
<i>Tongue</i>	The tip rises to make firm contact with the point on alveolar ridge. The blades are slightly cratered and the sides wedged between molars	The tip thrusts forward to firmly touch at gum level of upper incisors. The blade is flat and fairly narrow. The sides are lightly contacting the inside lingual surfaces of the upper teeth (the vertical surfaces of inner side of teeth -facing the tongue). The rear is near neutral position
<i>Lips</i>	Inactive	Inactive
<i>Air pressure</i>	Rather strong, the air escapes upon articulation and produces a marked aspiration	Slight, barely audible at the moment of articulation
<i>Jaw</i>	In motion during articulation toward position of following vowel.	Immobile
<i>Teeth</i>	1/4 inch apart	1/8 inch apart

[k] as in American English "carry" and as in French "carré", is a voiceless velar stop.

	American English	Standard French
<i>Tongue</i>	The tip is 1/8 to 1/4 back of the lower incisors. The blade is arched sharply upward. The dorsum is firmly contacting the palate at a point determined by the following sound. The sides are touching the molars depending on whether the following sound is frontal or posterior. The rear is falling off vertically	The tip rests just behind the lower incisors. The blade slants steeply upward. The dorsum is lightly in contact with the palate at the point determined by the following sound. The sides touch the upper molars midway back. The rear curves down and drops off vertically.
<i>Lips</i>	Inactive	Inactive
<i>Jaw</i>	In motion towards the position of the following vowel	Immobile
<i>Teeth</i>	1/4 inch to 3/8 inch apart	1/8 inch to 1/4 inch apart

[b] as in American English "bank" and as in French "banc", is a voiced bilabial stop.

	American English	Standard French
<i>Tongue</i>	Neutral position, inactive	Neutral position, inactive
<i>Lips</i>	Tense, upper and lower lips pressed firmly together, muscle tension released at onset of voicing.	Little tension, the upper and lower lips are lightly touching
<i>Jaw</i>	In motion toward the position of the following vowel during the articulation	Immobile
<i>Air pressure</i>	Fairly intense, it rushes through the lips upon articulation, with some audible turbulence.	Very light at the point of articulation, the air escape is barely perceptible.
<i>Teeth</i>	1/4 inch apart	1/8 inch to inch 1/4 apart
<i>Voicing</i>	Occurs simultaneously with articulation	Begins split second before the articulation.

[d] as in American English “dawn” and in French “dans”, is a voiced alveolar stop.

	American English	Standard French
<i>Tongue</i>	The tip rises to make firm contact with the alveolar ridge. The blade is slightly cratered. The sides are wedged between the molar	The tip is thrust forward firmly to touch the gum level of the upper incisors. The blade is flat and fairly narrow. The sides are lightly contacting the inside lingual surfaces (vertical surfaces of inner side of teeth –facing tongue) of the upper teeth. The rear is near the neutral position.
<i>Lips</i>	Inactive	Inactive
<i>Air pressure</i>	Rather strong, the air escapes upon articulation produces a marked aspiration	Slight, barely audible
<i>Jaw</i>	In motion toward the following vowel	Immobile
<i>Teeth</i>	1/4 inch apart	1/8 inch apart
<i>Voicing</i>	Simultaneous with articulation	Occurs a split second before articulation.

[g] as in American English “gay” and in French “gai”, is a voiced velar stop.

	American English	Standard French
<i>Tongue</i>	Tip 1/8 to 1/4 back of the lower incisors. The blade is arched sharply upward. dorsum is firmly contacting the palate at the point determined by the following und. The sides are either touching or not touching the molars, depending on whether the following sound is frontal or posterior.	The tip is resting just behind the the lower incisors. The blade is slanting steeply upward. The dorsum is lightly contacting the palate at the point determined by the following sound. The sides are touching the upper molars midway back.
<i>Lips</i>	Inactive	Inactive
<i>Jaw</i>	In motion towards the position of the following vowel	Immobile
<i>Teeth</i>	1/4 to 3/8 apart	1/8 to 1/4 apart
<i>Voicing</i>	Simultaneous with articulation	occurs split second before Articulation

[m] as in American English “mother” and in French “maman”, is a voiced bilabial nasal.

	American English	Standard French
<i>Tongue</i>	In resting position, inactive.	Slightly depressed from the resting position, the rear is arched slightly to the pharyngeal wall.
<i>Lips</i>	Touched together as in resting position	Moderately pressed together, rather tense.
<i>Teeth</i>	1/8 apart	1/8 apart
<i>Voicing</i>	Occurs simultaneously with articulation.	Begins a split second before articulation.
<i>Velum:</i>	Open	Open

[n] as in American English “net” and in French “nette”, is a voiced alveolar nasal.

	American English	Standard French
<i>Tongue</i>	Tip lightly pressed against the alveolar ridge, same position as for [t].	The tip is touching the upper incisors and the lower alveolar ridge, same position as [t].
<i>Lips</i>	Completely inactive, relaxed.	Inactive, but alert to accompanying vowels
<i>Teeth</i>	1/8 to 1/4 apart	1/8 to 1/4 apart
<i>Voicing</i>	Occurs simultaneously with articulation.	Begins split second before articulation.
<i>Velum</i>	Open	Open

[f] as in American English “fee” and in French “fille”, is a voiceless labiodental fricative.

	American English	Standard French
<i>Tongue</i>	Neutral position, anticipating the following sound.	Neutral position, anticipating the following sound.
<i>Lips</i>	Inside edge of the lower lip rises to press slightly against the upper incisors, the upper lip is immobile	Inside edge of the lower lip rises to press slightly against the upper incisors, the upper lip is immobile
<i>Air pressure</i>	Fairly strong, causes brief, audible sibilance from sides of lip-teeth contact preceding articulation; the air that escapes produces a sibilant noise.	Less intense than in American English; the aspiration that follows is also less audible.
<i>Teeth</i>	At least 1/8 apart	At least 1/8 apart

[s] as in American English "suit" and in French "sous", is a voiceless alveolar fricative.

	American English	Standard French
<i>Tongue</i>	The tip is lightly touching inside edges of lower incisors. The blade curving sharply upward against alveolar ridge with small v-shaped groove in center through which sibilant sound is produced. The sides are against and between the inside lingual surfaces of the upper molars and cuspids. The dorsum is grooved 1/2 wide and cratered. The rear is arching downward.	The tip is turned further downward than in American English, pressing against the lower incisors. The blade is bearing against the lingual Surfaces of the upper incisors and the lower alveoles with narrowing v- shaped groove. The sides are pressed against inside the lingual surfaces of the upper molars, cuspids, and second incisors. The dorsum is grooved 1/4 wide with less cratering than English. The rear is bunched slightly toward the velar-pharyngeal wall.
<i>Lips</i>	Inactive	Inactive
<i>Teeth</i>	Barely apart	Barely apart

[ʃ] as in American English “shoe” and in French “chaussure”, is a voiceless palatal fricative.

	American English	Standard French
<i>Tongue</i>	The tip is flattened and pointing downward 1/8 to 1/4 behind the lower incisors. The blade is humped upward, pressing against the alveolar ridge, allowing a small aperture of 1/8 to 1/4 wide for the emission of fricative sounds. The dorsum is close below the hard palate. The sides are touching the cuspids and cradled in the molars. The rear is falling away in a gentle downward curve.	The tip is in contact with the alveolar ridge. The blade is bunched at the palate-alveolar juncture, allowing a small 1/4 inch wide channel for the fricative sounds, and forms a slight crater below the hard palate. The dorsum is flat, slightly grooved, lower than in American English. The sides are cradled against the upper molars, without touching the cuspids. The rear is humped toward the soft palate and the pharynx.
<i>Lips</i>	Pushed slightly forward with some rounding.	Inactive
<i>Teeth</i>	Almost touching.	1/8 apart

[v] as in American English “very” and in French “vers”, is a voiced labiodental fricative.

	American English	Standard French
<i>Tongue</i>	Neutral position, anticipating the following sound	Neutral position, anticipating the following sound
<i>Lips</i>	The inside edge of the lower lip rises to press lightly against the upper incisors, the upper lip is immobile.	The inside edge of the lower lip rises to press lightly against the upper incisors, the upper lip is immobile.
<i>Air pressure</i>	Fairly strong; it causes a brief, audible sibilance from the sides of the lip-teeth contact that precedes the articulation; the air that escapes produces a sibilant noise.	Less intense than in American English; the aspiration that follows the articulation is also less audible.
<i>Teeth</i>	At least 1/8 apart	At least 1/8 apart
<i>Voicing</i>	Occurs simultaneously with articulation.	Begins split second before articulation.

[z] as in American English “zero” and in French “zéro”, is a voiced alveolar fricative.

	American English	Standard French
<i>Tongue</i>	The tip touches lightly the inside edges of the lower incisors. The blade curves sharply upward against the alveolar ridge with a small v-shaped groove in the center through which a sibilant sound is produced. The sides are against and between the inside lingual surfaces of the upper molars and cuspids. The dorsum grooves about 1/2 wide, and is cratered. The rear arches downward.	The tip is turned further downward than in American English, and presses against the lower incisors. The blade bears against the lingual surfaces of the upper incisors and the lower alveoles with a narrowing v-shaped groove. The sides press against the inside lingual surfaces of Upper molars, cuspids, and second Incisors. The dorsum grooves 1/4 with less cratering than American English. The rear bunched slightly toward the velar-pharyngeal wall.
<i>Lips</i>	Inactive	Inactive
<i>Teeth</i>	Barely apart	Barely apart
<i>Voicing</i>	Simultaneous with articulation	Occurs split second before articulation.

[3] as in American English “vision” and in French “jeune”, is a voiced palatal fricative.

	American English	Standard French
<i>Tongue</i>	The tip is flattened and points downward 1/8 to 1/4 behind the lower incisors. The blade is hump upward and presses against the alveolar ridge, allowing a small aperture of 1/8 to 1/4 wide for the emission of fricative sounds. The dorsum is close below the hard palate, widening groove. The sides touch the cuspids and cradle in molars. The rear falls away in a gentle downward curve.	The tip is in contact with the alveolar Ridge. The blade bunches at the palato-alveolar juncture, allowing a small 1/4 wide channel for fricative sounding, and forms a slight crater below the hard palate. The dorsum is flat, slightly grooved, lower than in English. The sides cradle against the upper molars, without touching the cuspids. The rear humps toward the soft palate and the pharynx.
<i>Lips</i>	Pushed slightly forward with some rounding.	Inactive
<i>Teeth</i>	Almost touching	1/8 apart
<i>Voicing</i>	Uninterrupted between vowels and within words	Begins split second before articulation.

[l] as in American English “long” and in French “long”, is a voiced alveolar lateral liquid.

	American English	Standard French
<i>Tongue</i>	The tip touches the midpoint of the alveolar ridge. The blade is narrow and extended upward. The dorsum is cratered behind and below the retroflexed tip, and is humped toward the soft palate. The sides are drawn inward without touching the upper molars on either extremity. The rear falls off sharply downward, deep in the pharyngeal region.	The tip touches behind and against the upper incisors. The blade is flat. The dorsum is slightly grooved, angling gradually downward. The sides touch the lingual surfaces of the cuspids and the molars. The rear is slightly arched into the pharyngeal region.
<i>Lips</i>	Inactive	Inactive
<i>Jaw</i>	In motion to or from accompanying vowel	Immobile
<i>Teeth</i>	1/4 to 1/2 apart	1/8 apart

[r] (retroflex) as in American English “frank” and [ʁ] (uvular) in French “franc”, is a voiced liquid.

	American English	Standard French
<i>Tongue</i>	The tip is extended upward, curves slightly back (retroflex) to within about 1/4 to 1/8 of the hard palate. The blade is cratered. The dorsum slants down and back. The sides touch the second and third upper molars. The rear slopes off in normal position.	The tip is about 3/8 behind the lower incisors. The blade is flat and angles forward. The dorsum is 3/8 under the soft palate. the sides are parallel to the inside edges of the molars. The rear bunches to within 1/4 of the pharyngeal wall, touching or almost touching the uvula.
<i>Lips</i>	Inactive, lax.	Inactive, slightly tense
<i>Teeth</i>	1/4 apart	1/4 apart

As it can be noticed, the articulation of the speech sounds that French and American English words have in common is not always exactly the same. The way a French person articulates a [p] at the beginning of a word is slightly different than the way an American English person articulates the same speech sound in the same position. This point is developed more fully in the next part that will be focusing on phonemics, i.e. a more detailed study of the different articulations in terms how they are grouped into phonemes of a given language.

2. Phonemics

2.1 Phonemics versus Phonetics

Both phonetics and phonemics can be defined as sciences that study speech sounds. Indeed, it is possible to study the universal set of phones –or speech sounds- that can be produced by the human vocal tract without much regard to the languages or dialects in which they occur. This is called a purely *phonetic*

analysis. Thus, phonetics is more specifically the study of how speech sounds are produced, what their physical properties are and how they are interpreted. *Articulatory phonetics* is the study of the production of speech sounds and focuses on how phones are produced by speakers of any language, as well as the description and classification of those sounds according to their properties (i.e. stop consonant, front vowels, etc...). As we have already noticed in the preceding section, similar speech sounds are found in both American English and Standard French, but each language also has speech sounds that have no equivalent in the other language. Yet, when considering the same speech sounds -or phones- in the two given languages they will have different functions and will not be recognized in the same way in the two languages. In other words, while the same speech sound can be found in two or more languages, these languages will not organize it in the same way. The science that investigates the organization of speech sounds as well as the sound pattern of a particular language is called *phonemics*. The study of the sound pattern of a given language involves 1) the set of sounds that occur in the language, 2) the permissible arrangements of those sounds in words, and 3) the processes for adding, deleting or changing those sounds in words. Indeed, although all languages share certain basic phonetic properties, it is highly unlikely that any two languages have exactly the same sound pattern. Sound patterns can differ in three ways: 1) the sound inventories can be different, 2) the sounds may occur in different orders, 3) the rules -or processes- that affect sounds may be different.

2.2 What is phonemic analysis?

The two words "seat" and "sit", respectively [sit] and [sɪt] are composed of two different speech sounds: a long [i] and a short [ɪ]. Native American English speakers will hear and make the difference. Standard French does not have this difference: the French language has only one [ɪ] sound that is closer to the short

American English [ɪ], but a little different anyway. Thus, a French native speaker will hardly hear and make the difference between “seat” and “sit” and will have difficulties in pronouncing these two words. For a native American English speaker, [i] and [ɪ] are two different phonemes, whereas for a French native speaker, [i] and [ɪ] are allophones or variants of the same phoneme. These two languages may also differ in terms of constituent sound types, meaning that some sounds will exist in one language but not in the other one. As compared to American English, Standard French contains a set of vowels produced in the front part of the mouth cavity, and with lip rounding, such as: du [dy], deux [dø], leur [lœr]. These speech sounds do not exist in American English. On the other hand, the initial consonant sounds [ð] and [θ] in American English such as in the words them [ðəm] and three [θri] are alien to French ears. The permissible combinations of speech sounds in American English and Standard French are also different. French has initial consonant clusters of *ps*, as in *psychologie* that are pronounced as they are written. American English does not have the initial sound sequence *ps*: the American English word *psychology* is spelled with *ps* but the initial [p] is not pronounced. To understand the difficulties of Standard French pronunciation for American English native speakers, we shall now study what phonemic rules govern both languages, what the sound pattern of both languages is and what are the similarities and the differences in the distribution of each speech sound are. When talking of speech sounds, we shall use the words “phoneme” and “allophone”. A *phoneme* is a class of speech sounds that are identified by a native speaker of a given language as the same sound. The members of these classes are called allophones, in other words, the various ways a phoneme is pronounced are called *allophones*. A phoneme is the fundamental unit of the sound system of a language; it is a set of allophones –or speech sounds- but can sometimes consists of a single phone. Phonemes are represented with parallel

slant lines //, and phones with square brackets []. The discovery and study of the phonemic system of a language involves testing variation in phonetic substance against variation in meaning: two phones belong to two different phonemes if the substitution of one for the other results in a change of meaning. Thus, in the two French words *déssert* [dɛsɛʁ] (a “dessert”, a “pudding”) and *désert* [dɛzɛʁ] (“desert”, like the Sahara), when [s] of “dessert” is replaced by [z], we get the word “désert” which is completely different in meaning. It can then be said that [s] and [z] are two different phonemes. Words like “dessert” and “desert” form a minimal pair. A minimal pair is defined as a pair of words with different meaning which are pronounced exactly the same way except for one sound that differs in the same position. American English “tear” [ti:r] and “deer” [di:r] also form a minimal pair, showing that /t/ and /d/ are separate phonemes. These two phones being allophones of separate phonemes are said to be contrastive because they cause a change of meaning. On the other hand, if two phones are allophones of the same phoneme, they are non-contrastive. In brief, a pair of phones is contrastive if interchanging the two can change the meaning of a word, but two sounds are non-contrastive if the alternation of the phones does not result in a change of meaning. For example, though, not all American English vowels are the same length, changing the length of a vowel will not cause a change in the meaning of the word. Whether one says *beat* [bit] with a short [i] or *bead* [bi:d] with a long [i:] makes no difference, there will be no change of meaning. Vowel length in American English is thus said to be non-contrastive.

A phonemic analysis will reveal that some speech sounds will change their form depending on their phonetic context. These allophones of one phoneme will occur in specific places; thus the analysis of the distribution of phones in a language is necessary. Two phones are in overlapping distribution when the sets of phonetic environments in which they occur are partially or completely identical. Two phones are said to be in complementary distribution if they are

allophones of the same phoneme, such that they never occur in the same phonetic environment. When allophones are in complementary distribution, the appearance of one allophone or the other is predictable, meaning that depending on the phonetic environment, only one of the allophones will occur. Phones that are in overlapping distribution are said to be in free variation.

2.3 Phonemic Rules

Every language is governed by rules. As we have seen in 2.2, a phoneme, being an abstract concept, is never pronounced, but one of its allophones is. In other words, the starting point is a phonemic form to which phonemic rules are applied so that a phonetic form –or allophone- can be pronounced. When speaking a language, a native speaker applies some phonemic rules to determine and pronounce the phonetic form. Any speaker of a language has knowledge of the phonemic rules that allows him/her to “transform” phonemes into speech sounds. The knowledge of these rules is part of the speaker’s linguistic competence. For instance, a French native speaker knows that a /p/ can be pronounced in front of a /s/, so the consonant cluster /ps/ is possible in Standard French and the speaker is able to pronounce the word *psychologie* [psikolozi]. After a general classification of phonemic rules, we shall study the phonemics of American English and Standard French in order to compare the two languages and understand where the difficulties of French pronunciation are.

Classification of Phonemic Rules:

-Assimilation: there is assimilation when a sound becomes more like a neighboring sound with respect to some features. The segment affected by this rule assimilates or takes on a feature from the adjacent sound.

For example: phonebook [fɒnbuk] > [fɒmbuk]

-Dissimilation: there is dissimilation when two neighboring sounds become less alike with respect to some features.

For example: fifth [fɪfθ] > [fɪft]

-Insertion: there is insertion when a segment not present at the phonemic level is added to the phonetic form of the word.

For example: athlete [ætɫɪt] > [ætθəlɪt]

-Deletion: there is deletion when a sound is eliminated at the phonetic level.

For example: Columbus [kəlʌmbəs] > [klʌmbəs]

To summarize, the goal of a phonemic analysis of a language is to determine the set of phonemes and their permissible patterns in regard to position and occurrence in different phonetic contexts. Therefore, a phonemic analysis should produce:

- a list of the phonemes of the language *
- a classification system for categorizing the phonemes *
- an analysis of the positional and sequential occurrences of phonemes within the language, otherwise called their distribution.
- a list of the allophonic variations for each of the phonemes

* see sections 1.1 and 1.2.

Following is the phonemic analysis of American English and Standard French consonants.

2.4 Phonemics: American English consonants

Allophonic Variations of Stop Consonants

/p/ as in pit [p ɪ t]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[p ^h]	Aspirated release in initial word and stressed position	poke [p ^h ok]
[p̚]	Unreleased in word final position	top [tap̚]
[p]	Unaspirated release in clusters, especially after /s/	spot [spat]
[p:]	Lengthening when an arresting /p/ is followed by a releasing /p/	stop Pete [stap:it]
[p̃]	Nasal release before a syllabic nasal	stop'em [stap̃m]

/b/ as in bit [b ɪ t]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[b̚]	Unreleased in word final position	rob [rab̚]
[b:]	Lengthened when an arresting /b/ is followed by a releasing /b/	rob Bob [rab:ab]
[b̃]	Nasal resonance before a syllabic nasal	rob him [rab̃m]

/t/ as in tip [t ɪ p]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[t ^h] or [t]	Aspirated release in word initial and stressed positions	tape [t ^h ep]
[t-]	Unreleased in word final position	coat [kot-]
[t]	Unaspirated release in consonant clusters, especially with /s/	stop [stap]
[t̪]	Dentalized before /θ/	eighth [e̪t̪θ]

[f]	Nasal release before a syllabic nasal	button [bʌfŋ]
[ɾ] *	Flapped, intervocalically (alternat /t/	letter [lɛɾə]
[ʔ]	Glottal stop before syllabic [ŋ] or [l]	button [bʌʔŋ]
[t:]	Lenghtening when an arresting /t/ is followed by a releasing /t/	let Tim [lɛt:ɪm]
[tʃ]	Affrication of initial /tr/	train [tʃɹen]

* In American English there is a preference for the flapped /r/ : [ɾ]

/d/ as in dip [d ɪ p]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[d̪]	Dentalized before an interdental	width [wɪd̪θ]
[d̚]	Unreleased in word final position	dad [dæd̚]
[dl]	Bilateral release with /l/	padlock [pædlɒk]
[d̪]	Nasal release before a syllabic nasal	rod'n reel [rɑd̪rɪl]
[ɾ]	Flapped, intervocalically	ladder [læɾə]
[d:]	Lenghtening when an arresting /d/ is followed by a releasing /d/	sad Dave [sæd:ev]
[dʒr]	Affrication of initial position /dr/	drain [dʒɹen]

/k/ as in kit [k ɪ t]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[kʰ] or [k]	Aspirated release in word initial and stressed position	keep [kʰɪp]
[k̚]	Unreleased in word final and some blend positions	take [tek̚]
[k]	Unaspirated release in consonant clusters especially with /s/	scope [skɒp]
[k:]	Lenghtening when an arresting /k/ is followed by a releasing /k/	take Kim [tek:ɪm]
[k̪]	Nasalized before a syllabic nasal	beacon [bɪk̪ŋ]
[kl]	Bilateral release with /l/	clock [klɒk]

[c] or [k]	Assimilated to a front sound	keen [kin]
[ʔ]	Glottal stop before a syllabic [ŋ]	bacon [beʔŋ]
[kw]	Rounded before a bilabial glide	quack [kwæk]

/g/ as in gig [g ɪ g]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[g̚]	Unreleased in word final position and some clusters	flag [flæg̚]
[g:]	Lengthening when an arresting /g/ is followed by a releasing /g/	big grapes [bɪg:reps]
[gl]	Bilateral release before /l/	glee [gli]
[ḡ]	Nasalized before a syllabic nasal	pig and goat [pɪḡŋgot]
[gw]	Rounded when followed by a bilabial glide	Gwam [gwæm]

Allophonic variations of Fricative Consonants

/f/ as in fan [fan]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[θ]	In certain words	trough [traθ] for /traf/
[ɸ]	Weakened and following a labial	comfort [kʌmɸət]

/v/ as in van [van]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[v] or [f]	In word final position, or when followed by a voiceless sound	have to [hæv̥tə]
[bm̩]	In informal speech in medial position	seven [sɛbm̩]

/θ/ as in thigh [θaɪ]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[θ] or [ð]	Voiced, in coarticulation with a voiced consonant	with many [wɪθməni]

/ð/ as in thy [ðaɪ]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[d̪]	dentalized when coarticulated with an alveolar phoneme	get these [ɡetd̪ɪz]

/s/ as in sip [sɪp]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ʃ]	Palatalization before /j/	kiss you [kɪʃju]

Many varieties of /s/ are possible, depending on dentition and mandibular positioning

/z/ as in zip [zɪp]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[z̥]	Devoiced in word final position or in selected words, medially	keys [kɪz̥]
[ʒ]	Palatalized before /j/	as you [æzju]
[d]	Stopping	business [bɪdnɪs]

/ʃ/ as in ship [ʃɪp]

No significant allophonic variation has been reported for this sound.

/ʒ/ as in measure [mɛʒər]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[dʒ]	In “anglicized” productions of some words borrowed from French	garage [gəˈrɑdʒ]

/h/ as in hat [hæt]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[h]	Voiced, intervocalically	ahead [ə ˈhɛd]
[ç]	palatalization, when /hj-/ is produced tensely and with strong breath pressure	hue [çu]
[ʔ]	With glottal release	hello [ʔɛlo]
omit	In unstressed environments	He has his [hi ˈhæziz]

Allophonic variations of Affricate Consonants

/tʃ/ as in chin [tʃɪn]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[tʃ]	Rounded when coarticulated with a rounded phoneme	chew [tʃu]
[tj]	The sound from which /tʃ/ evolved; in selected words	question [ˈkwɛstjən]

/dʒ/ as in gin [dʒɪn]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[dʒ]	Rounded in coarticulation with a rounded phoneme	juice [dʒus]

Note: /dʒ/ will tend to occur in connected speech instead of /dj/

Allophonic variations of Nasal Consonants

/m/ as in met [mɛt]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[m̩]	Syllabic	something [sʌ ^h m̩]
[m:]	Lengthened when an arresting /m/ is followed by a releasing /m/	some more [səm:ɔr]
[m]	Labiodental nasal when followed by /f/	comfort [kʌmfə ^t]

/n/ as in net [nɛt]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[n̪]	Dentalized before a labiodental /f/ or /v/	invite [im̪vart]
[ŋ]	Velarized before /k/ or /g/	think [θɪŋk]
[n̩]	Syllabic	button [bʌ ⁿ n̩]
[n:]	Lengthening, when /n/ arrests and releases adjoining syllables	ten names [tɛn:emz]

/ŋ/ as in lung [lʌŋ]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[n]	The alveolar /n/ in word-final position	running [rʌnɪn]
[ŋ]	Syllabic	lock and key [lʌkŋki]

Allophonic variations of Glide, Liquid and Lateral Consonants

/j/ as in yet [jɛt]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɪu]	An offglide as a type of restressing	beauty ['biu ^t ɪ]

/w/ as in wed [wɛd]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[hw] or [ʍ]	In wh- words	wed [hwɛd] or [ʍɛd]

/hw/ as in where [hwɛr]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[w]	In wh- words	where [wɛr]

/r/ as in red [rɛd]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɾ]	Devoiced as a fricative /r/ in voiceless clusters	treat [triɾ]
[ɾ]	The one-tap flap /r/	very [vɛɾi]
[ɽ]	The retroflexed /r/	right [ɽaɪt]

/l/ as in led [lɛd]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[l̥]	Syllabic	bottle [bɑt̥l̥]
[l]	“Clear-l” made with the tongue in the classical fronted position	lease [liːs]
[ɫ]	“Dark-l” is produced with the tongue tip and blade in the position; the syllabic-l is usually considered to be “dark”	call [kɔɫ]
[l̥]	Devoiced in consonant clusters with voiceless stops	play [p̥le]
[ɫ]	Post-palatal, or velar /l/	milk [mɪɫk]
[ɫ̥]	Devoiced in consonant clusters with voiceless stops, considered non-standard	play [p̥ɫ̥e]

2.5 Phonemics: French consonants

According to the research that has been done in this area there are fewer allophones for Standard French phonemes than there are for the American English ones. Furthermore, most allophonic variation in French occurs in vowels. Indeed, most of the surveys that have been conducted focused on French vowel sounds. The results reported here are based on a study that was conducted in 1977 by Henriette Walter on the “average” phonological system. The same format as in 2.4 will be used to describe the allophones of the phonemes of French consonants.

Allophonic Variations of Stop Consonants

/p/ as in papa [papa]

No significant allophonic variation has been reported for this sound.

/b/ as in balle [bal]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[p]	In front of a voiceless consonant that belongs to that correlation of sonority there is a tendency to words neutralization. This is called assimilation.	gibecière [ʒipsjɛr] absoudre [apsudr]

/t/ as in thé [te]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[d]	phenomenon of assimilation	atmosphère [admosfɛr]

* Sometimes pronounced like an apico-alveolar

* Sometimes pronounced more like an interdental than an apico-dental.

/d/ as in dent [dã]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[t]	phenomenon of assimilation	dessous de plat [dəsutpla]

* Sometimes pronounced like an apico-alveolar

* Sometimes pronounced more like an interdental than an apico-dental.

/k/ as in koala [koala]

[k] in front of a front vowel

The point of articulation of this consonant varies with the point of articulation of the vowel that follows.

/g/ as in gant [gã]

The point of articulation of this consonant varies with the point of articulation of the vowel that follows. For example : gateau [gato], [g] is a velar-palatal stop consonant.

gant [gã], [g] is a velar stop consonant

Allophonic Variations of Fricative Consonants

/f/ as in fin [fẽ]

No significant allophonic variation has been reported for this sound.

/v/ as in vin [vẽ] or in wagon [vagõ]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[f]	In front of a voiceless sonorant	oisiveté [wazifte]

consonant, tendency to neutralization

brieveté [brijeftə]

In general, French consonants tend to neutralize in terms of voicing when followed immediately by another consonant.

/s/ as in sac [sac]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[z]	In front of a consonant belonging to the same correlation of sonority, tendency to neutralize.	décevant [dezvā] disgrace [dizgras]

/z/ as in zoo [zu]

No significant allophonic variation has been reported for this sound.

/ʃ/ as in chat [ʃa]

No significant allophonic variation has been reported for this sound.

/ʒ/ as in jour [ʒuʁ]

No significant allophonic variation has been reported for this sound.

Allophonic Variations of Nasal Consonants

/m/ as in maman [mamā]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[m̥]	voiceless realization usually found in final position after a voiceless consonant.	rhumatisme [rymatism̥]

/n/ as in noir [nwax]

No significant allophonic variation has been reported for this sound.

/ŋ/ as in ping-pong [piŋpõŋ]

The velar nasal /ŋ/ appeared relatively recently in the French language. This consonant is usually found in final position in words that are mostly borrowed from English (i.e., parking, ring, living, shopping, footing...). This phoneme should be pronounced exactly like in American English, without the addition of the consonant /g/.

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ŋg]	In final position	camping [kãpiŋg]
[ŋ]	In final position	camping [kãpiŋ]
[ŋŋ]	In final position	camping [kãpiŋŋ]

Allophonic Variations of Glide, Liquid and Lateral Consonants

/ɲ/ as in campagne [kãpaɲ]

Before listing the allophones of this Standard French phoneme, we shall define this sound that does not exist in American English. The /ɲ/ of brugno[n] [bruɲõ] is in opposition with the /ɲj/ of union [yɲjõ], like the /ɲ/ of accompagner [akõpaɲe] is in opposition with the /ɲj/ of panier [paɲje]. But nowadays, in intervocalic position, many Standard French speakers no longer make the distinction and mistake one phoneme for the other, usually using [ɲj] instead of [ɲ]. In final position, most Standard French speakers pronounce a unique [ɲ], but in this position, it cannot be opposed to [ɲj] anyway.

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[nj]	Intervocalic position	compagnon [kõpanjõ]
[nj] *	Final position	châtaigne [ʃatɛnj]

* Some speakers tend to pronounce [nj] for all the graphic –gn.

/j/ as in yacht [jɔt]

Words with the unanimous pronunciation [j] are words like “pied” and “rien” that had a diphthong in Old French. Words where a difference occurs (like “lion”, “scier”) are words that had a hiatus in Old French.

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[i]	In front of a vowel and preceded by only one consonant.	lion [liõ], lier [lie]
[ij]	In front of a vowel and preceded by two consonants, the second being /r/ or /l/.	vitrier [vitije] peuplier [pøplije]

* The realizations of [j] have to be compared with the realizations of [w] and [ɥ], which in the same positions are bound by the same rules, but [w] and [ɥ] are never found in final position. The three phonemes /j/, /w/ and /ɥ/ are considered to be the variants of the vocalic phonemes /i/, /u/ and /y/ in front of vowels.

/w/ as in ouest [west]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[u]	In front of a vowel	nouer [nue] jouet [ʒue]

/ɥ/ as in muet [mɥɛ]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[y]	In front of a vowel in diaeresis	muet [mɥɛ] buée [bye]

/r/ as in rouge

- [ʀ] vibrating uvular articulation, almost non-existent.
- [r] vibrating apical articulation, no trace in present Standard French, except in Southern dialects.
- [ʁ] This /r/ corresponds to the present /r/ used by Standard French native speakers. It corresponds to the voiced consonant found in the International Phonetic Alphabet (IPA). Yet, some voiceless realizations are found in final position, usually after a voiceless consonant: âcre [akʁ]

/l/ as in lait [lə]

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[l̥]	Voiceless in final position after a consonant.	peuple [pøp̥l̥] gicle [ʒik̥l̥] sable [sab̥l̥]

3. Comparative study of American English and Standard French phonemes

3.1 Comparative diagrams of American English and Standard French consonant phonemes

Thanks to the analyses that have been done of the consonants of American English and Standard French, a contrast of the two phonemic system can now be

performed in order to reveal the conflict between the two languages, and hence reveal the difficulties that can be encountered in teaching Standard French to Adult Native American speakers learning French as a second language.

(see tables in the Appendix)

3.2 The difficulties of French consonant phonemes for American native learners

Comparing the diagrams of American English and Standard French consonants, it appears that only two phonemes could be a source of difficulty for Adult Native American learners of French as a second language, namely the phonemes /ʊ/ and /ɲ/. However, before focusing on these two consonant sounds, it is necessary to state what are the general difficulties of Standard French consonants' pronunciation. Thus, this part will be dealing with corrective phonetics. Indeed, every language uses acoustic materials that is relatively easy to learn, if each phoneme is produced separately from the other phonemes; yet, difficulties appear when phonemes are put together in a sentence and when the articulation, the rhythm, the intonation are brought into play. To compare the French phonetic features with those of American English and help to correct the pronunciation of the learners, three major phonetic characteristics of Standard French have been defined.

The standard French *tense feature* is to be opposed to the *lax feature* of American English. The tense mode means that there is a bigger expenditure of energy to tighten the articulatory muscles during phonation. Thus, when pronouncing Standard French as compare to American English:

- there is economy of movements,
- the articulatory states are stable and constant,
- there is no affrication,
- for the transition from one sound to another, there is no diffusion,

- for the intonation, there is no slip,
- for the rhythm, there is syllabic equality,
- and for the accent, there is subjugation of intensity and independence to the length.

In "L'état actuel du phonétisme français" the linguist Pierre Fouché said that "*...nulle part la tension musculaire n'est comparable à celle qu'exige une prononciation française... Remarquons toutefois que ce travail intense ne se laisse pas voir: il est tout intérieur, et le Français, tout en s'imposant une discipline musculaire des plus rigides, ne trahit aucunement son effort... Par conséquent, forte tension musculaire et grande sobriété de la mimique phonatoire.*"

[French pronunciation demands unusually high muscle tension. Note, however, that the French speaker internalizes his intense effort and does not allow it to be seen. This results in strong muscle tension and limited speech movements.]

If there is a lack of articulatory tension, the consonants will sound heavy. As opposed to Standard French in which the phonation organs separate quickly because the opening and closing muscles are tense, in American English, the separation of organs is slow and lax; sometimes, it produces affrication. In American English, the contact of the organs for producing an occlusion is relatively light and lax; in Standard French, it is as reduced as possible and firm. The organs are then really tense when there is constriction.

The following sketches depict the difference between a Standard French and American English consonant as far as the characteristic phases are concerned. In American English, the three phases are not very clear: the holding of the production of the sound is unstable and the transition movements are relatively slow. In Standard French, the holding is more stable, and the transitional movements are faster.

The Standard French *front feature* is to be opposed to the *back feature* of American English. This means that the place of articulation and the sounds' resonance are located at the front of the mouth in French, and that the proportion of front articulation is big. The most concrete signs are the convex shape of the tongue and the rounding of the lips. Indeed, when producing American English sounds, the tongue is more in a concave or retroflex position, the tips of the tongue points to the alveoles or the palate which produces a back resonance, said to be guttural or pharyngeal. In order to get a front resonance, the lips have to be more rounded, more stretched, and more projected to the front. More details will be given later on the phoneme /r/ which has a further back articulation.

The Standard French *increasing feature* is to be opposed to the *decreasing feature* of American English. This means that the Standard French consonants, vowels, and syllables are produced with a sustained muscular effort, i.e., not a complete effort at first, but one that starts slowly and increases progressively. Therefore, the opening movement of the mouth dominates in the production of French syllables, the dominating acoustic part of the syllable being produced in a progressive opening movement. The closing movement belongs more to the syllabic transition (between a vowel and a consonant); also the consonant is connected with the following vowel, and not the one that precedes. Vowels dominate the syllables, and a Standard French speaker anticipates more vowels than consonants; this vocalic anticipation is fundamental in French phonetics.

The French /r/: [ʁ]

The French /r/ is the phoneme that creates a problem for American speakers learning French as a second language. The /r/ of Standard French is uvular, meaning that it is articulated with the back of the tongue against the uvula and is pronounced [ʁ]. It is defined as a voiced fricative whose point of articulation is between the back of the tongue and the back of the soft palate (or velum). It is also described as a dorsal because of the important role played by the back of the

tongue during its articulation. The American English /r/ is articulated with the tip of the tongue moved back towards the middle of the palate which gives a back resonance. The French /r/ is a key consonant for Standard French pronunciation because the good articulation of vowels depends on it. It is easy to notice how the American English /r/ deforms the French vowels that precede or follow it because when articulated, the back of the tongue withdraw and the tip of the tongue raises before the end of the articulation of the preceding vowel, the latter being then diphthongized or partly absorbed. On the other hand, the French /r/ is almost completely independent from the preceding or following vowels that are free during their articulation. Its point of articulation is so moved backward that the tongue can deal with all the vocalic positions. Furthermore, the French /r/ can be articulated with all the positions of the tongue and opening of the mouth of every vowel without affecting the front part of the tongue. Thus, when pronouncing a French /r/, the vowels remain pure and the resonance is anterior, as opposed to the pronunciation of an American English /r/. As far as correcting the pronunciation of American English speakers, they must learn how to keep the vowels' position of the tongue (i.e. the back of the tongue is curved and the tip is down) since in that position, the back and the tip of the tongue are independent from the bottom of the tongue that produces the /r/.

The French /ʁ/

The phoneme /ʁ/ does not exist in American English. However, there are many words in which the consonant sound [ʁ] can be heard, yet it is composed of the phoneme /ɲ/ and /j/. For example: onion [ʁɔ̃jɔ̃n].

companion [kəmpænjɔ̃n]

The /nj/ sound in American English corresponds to the allophone of the Standard French phoneme [ɲ], namely /nj/. Therefore, the pronunciation of this French phoneme should not be a source of difficulty for American Speakers learning French as a second language. On the other hand, the problem that is raised here is that of spelling; indeed, the graph -gn does exist in American English, but it is not pronounced the same way as in Standard French. As an example, we can take the French word *campagne* (countryside) that American speaker usually mistranslate as the word *campaign* in American English; their first attempt to pronounce the French word would probably give something like [kämpaŋ] because the graph -gn in American English is pronounced like a [ŋ]. So, in addition to pronunciation, American speakers will also have to learn to associate spelling with sounds. This leads us to the last part of this chapter on consonants dealing with spelling.

4. French Spelling and Pronunciation: The Consonants

4.1. Notions of orthoepy.

1. What is orthoepy?

The linguist Pierre Léon describes orthoepy as the science that defines the rules of pronunciation with respect to the rules of spelling, and states the phonetic laws that govern the phonic system of a given language. In other words, this science can be defined as “the grammar of the sounds of a language.” This fourth part of the chapter on consonants will be dealing with the difficulties that Standard French spelling raises as far as pronunciation is concerned. Speaking a language is one thing, but a language is also read and written, and when it comes to reading and writing French, American English speakers are faced with many difficulties. These difficulties are inter-related; it is a matter of hearing a sound and

recognizing it as being such sound and not another one, and hence being able to transcribe it onto paper. Or it is the opposite phenomenon, namely seeing a written word, analyzing what sound it corresponds to, and being able to pronounce it. Every language has spelling rules, and in this part, the rules that govern French spelling will be defined so as to help the American English learner of French to better cope with and learn to associate French spelling with French pronunciation and vice and versa.

2. Some preliminary remarks on French consonants

In both American English and Standard French, there are words with double consonants. Double consonants –or geminate consonants– are to be opposed to long consonants: long consonants are produced with only one articulatory tension; a geminate consonant requires two consecutive articulatory tensions, i.e., another articulatory effort after the production of the first consonant. As far as spelling goes, double consonants are represented by two written consonants, sometimes separated by [ə] (called “e” caduque, or “e” instable). However, because of spelling, geminate consonants in Standard French are produced twice, in a style that sounds insisting or affecting. Here are a few examples:

LL: illégal [illegal]

alléger [alleʒe]

belliqueux [bellikø]

MM: immense [immās]

NN: inné [inne]

These double consonants have a phonetic value that is not distinctive, meaning that if only one consonant or the two consonants are produced, there will not be any change of meaning.

On the other hand, some geminate consonants have a phonemic value that is distinctive. In this case, when there are two written consonants, the two consonant sounds have to be produced, otherwise there will be a change of meaning or a misunderstanding. It is the case for verbs whose Imperfect tense (past tense) ends in *-rait* and the same verbs whose Conditionnal Present tense ends in *-rrait*. Here, the double consonant, as opposed to the single consonant, is used to make the difference between two tenses. Here are a few examples:

/r/	/rr/
<i>Imparfait</i>	<i>Conditionnel</i>
courait	courrait
mourait	mourrait
éclairait	éclair(e)rait

In other forms, the two consonants of the geminate consonant group have to be pronounced so as to establish contrast with a similar group and to avoid misunderstanding. Here are a few examples:

Il a dit / il l'a dit [iladi] / [illadi]

Une oie / une noix [ynwa] / [ynnwa]

La dent / la-dedans [ladō] / [laddō]

There are also some words in which the geminate consonants are not opposed to a single consonant, but the pronunciation of the two consonants of the group is important for good comprehension. Here are a few examples:

trente-trois [trötttrwa]

nettete [nette]

In the following section, all the different spellings of each Standard French phoneme will be listed so as to try to state some rules to help American English

learners of French to associate the words read with the sounds they hear and produce.

4.2. Voiceless Stop consonants

The phoneme /p/

Spelling	p	pp
Initial position	pas	—
Middle position	épi	apprendre
Final position	cap	nappe

Remarks on the grapheme P

The graph P is always mute in middle position in the following words: septième [setjɛm], compter [kɔ̃te], sculpter [skyltɛ], baptiser [batize].

In final position, P is never pronounced: drap [dra], champs [ʃɑ̃], temps [tɑ̃], but there are exceptions to that rule for some monosyllabic words: cap [kap], cep [sɛp], in some foreign words: stop [stɔp], handicap [ɑ̃dicap], and the word septembre [sɛptɑ̃br].

As opposed to American English, P in initial position is pronounced if in front of N and S: pneu [pnø], psychologie [psikolozi]. But in final position it is not pronounced in front of S, except in biceps [bisɛps], forceps [fɔʁsɛps].

The phoneme /t/

Spelling	t	tt	th
Initial position	table	attendre	théâtre
Middle position	santé	patte	athlète
Final position	note	—	luth

Remarks on the grapheme T

In final position, the grapheme T is usually mute, with the exception of the following monosyllabic words: est [ɛst], ouest [wɛst], sept [sɛt], huit [ɥit], net [nɛt], brut [bryt], chut [ʃyt], dot [dɔt], zut [zyt], Brest [bʁɛst], Proust [pʁust]. Its pronunciation is optional in but [byt], soit [swat], aout [ut], un fait [fɛt].

The T is sometimes mute in some words: Montréal [mɔ̃ʁeal], Montmartre [mɔ̃mɑʁtʁ].

The grapheme Th is sometimes pronounced [s]: isthme [ism̃].

In front of a I, the T is sometimes pronounced [s]: nation [nasjɔ̃].

The phoneme /k/

Spelling	c	cc	ch	ck	cqu
Initial position	café	—	choeur	—	—
Middle position	écu	accroc	orchestre	hockey	acquisition
Final position	lac	—	Varech Zurich	stock	grecque

Spelling	q	qu	k	x
Initial position	—	question	képi	xylophone
Middle position	pique	paquet	kaki	taxi
Final position	coq	masque	—	sexe

Remarks on the grapheme QU

The grapheme QU is usually pronounced [k] in initial and middle position, but it is sometimes pronounced [kwa] in front of A: aquarium, aquatique, quadragénaire, quadrupède, quadrille, quartz, quator, adéquat, équateur, équation, square, sine qua non.

or [kɥi] in front of I: quiétisme, ubiquité, équilatéral, équidistant.

Remarks on the grapheme C

In final position, the grapheme C can be mute: tabac, croc, accroc, escroc, cric, caoutchouc, estomac, clerc. It is also mute when it is preceded by a nasal consonant: banc, blanc, franc, tronc. The exception is the linking word donc [dɔ̃k].

When preceding a T, the grapheme C is sometimes not pronounced: aspect, respect, exact, distinct.

Remarks on the grapheme CH

The grapheme CH usually represents the speech sound [ʃ], but in some words it represents the phoneme [k]: chaos, chianti, chiromancie, choléra, chœur, archaïque, archange, archéologie, écho, eucharistie, lichen, orchestre, orchidée, psychanalyse, psychiatre, psychologie, chlore, technique, Christ, chronomètre.

Remarks on the grapheme X

The grapheme X can represent the speech sounds [ks] or [gz]. In final position, it is usually mute like in prix [pʁi], but it is pronounced in some words: silex [sileks]. It can also represent the phonemes /s/ and /z/ like in six [siks], deuxième [døzjɛm].

4.3. Voiced Stop consonants

The phoneme /b/

Spelling	b	bb	bh
Initial position	bain	—	—
Middle position	tabac	abbé	abhorrer
Final position	robe	—	—

Remarks on the grapheme B

The grapheme B can be mute in middle position in some nouns: Lefèbvre [ləfɛ:vʁ]. It is usually mute in final position, with the exception of some words: snob [snɔb], club [klœb], Jacob [ʒakɔb], and in foreign words in general.

The phoneme /d/

Spelling	d	dd	dh
Initial position	dent	—	—
Middle position	cadeau	addition	adhésion
Final position	ride	—	—

Remarks on the grapheme D

In final position, the grapheme d is usually mute, with the exception of the monosyllabic word sud, and in some foreign words: Alfred [alfʁɛd], David [david], Le Cid [ləsid], Madrid [madʁid], Bagdad [bagdad]. It is also mute in compound words like grand-rue [grɑ̃ry], grand-père [grɑ̃pɛʁ], etc...

The phoneme /g/

Spelling	g	gu	gg	gh	x
Initial position	goût	guerre	—	ghetto	Xavier
Middle position	église	aiguise	aggraver	Afghan	examen
Final position	zigzag	dogue	—	—	—

Remarks on the grapheme GN

The grapheme GN is usually pronounced [ɲ]. The pronunciation [gn] is only found in the following words: agnostique, diagnostic, ignition, inexpugnable, magnat, prognatisme, stagnation.

Remarks on the grapheme GH

In initial position, the graphemes GH and X pronounced [g] are only found in some foreign words: Ghana [gana]. In middle position, this spelling is really rare: Afghanistan.

Remarks on the grapheme GG

In middle position, this grapheme is only found in about 15 words, including: agglomérat [aglomera].

Remarks on the grapheme G

In final position, this grapheme is only found in the following words: zigzag, thalweg, whig, grog, gong, erg, joug, thug, gang, ying, yang. In the other words, the grapheme G is mute in final position: sang [sã]

4.4. Voiceless Fricative consonants

The phoneme /f/

Spelling	f	ff	ph
Initial position	faim	—	photographie
Middle position	café	affaires	téléphone
Final position	bœuf	griffe	paragraphe

Remarks on the grapheme F

In final position, the grapheme F is usually pronounced, but there are some exceptions: clef [kle], nerf [nɛʁ], cerf [sɛʁ]. In the plural form of some words, the final F is no longer pronounced: bœufs [bø], œufs [ø]. Same as in compound words like cerf-volant [sɛʁvɔlɑ̃], chef d'œuvre [ʃedœʁvɛ]. However, it is pronounced in chef-lieu [ʃɛfljø]

Other remarks

The grapheme FF can be found in final position in borrowed words like bluff [bloɛf].

The grapheme PH is found in final position in the name Joseph [ʒozɛf]

In the German word kugelhpf, the grapheme PF is pronounced [f].

The phoneme /s/

Spelling	s	ss	sc	c	c	t
Initial position	sang	—	scie	cire	—	—
Middle position	chanson	poisson	—	acier	garçon	nation
Final position	as	chasse	—	glace	—	—

Remarks:

The speech sound [s] is represented by the grapheme X in the following words:

soixante [swasãt], Bruxelles [brysɛl], Auxerre [osɛʁ], six [sis], dix [dis]. The grapheme S becomes [z] in: six ans [sizã], dix heures [dizœʁ].

In final position, the grapheme S is usually mute, with the exception of the following words ending in:

-AS: atlas, hélas, vasisats, Arras, Texas, mars

-ES: Agnès, faciès, Jaurès, licence es-lettres, express

-EPS: biceps..

-IS: bis, fils, gratis, jadis, maïs, myosotis, oasis, tennis, vis, tourne-vis, volubilis, Médicis, Tunis.

-OS: Albatros, Albinos, Calvados, Eros..

-US: angelus, autobus, blocus, hiatus, prospectus, terminus, Vénus

The final S is also pronounced in Reims, Lens, Sens, sens, Rubens..

The word os [ɔs] is pronounced [o] in the plural form.

The grapheme Z represents the speech sound [s] in two words borrowed from German: quartz [kwarts], ersatz [ɛʁzats].

In the middle of some words, the grapheme S is not pronounced in words composed of les, mes, des: lesquels, mesdames, desquels. It is also not pronounced in : Descartes, Les Vosges.

Remarks on the graph C:

In front of the following speech sounds, the phoneme /s/ is always represented by the grapheme C: [i], [ē], [e], [ɛ], [ø], [ə], [ã] et [j], the vocalic sounds always start with I or E like in: cinéma, cinq, ciel, céder, cette, cela, ceux, cent.

Remarks on the grapheme SC

The grapheme SC is found in front of [o], [e], [ɛ], [i], [ē] and [j], the vowel starting graphically with I or E as in: sceau, scène, scie, scintiller...

Remarks on the grapheme ç

In front of [a], [ā], [ō] and [y], the speech sound [s] is represented by the grapheme ç (called C cédille). The vowel that follows is either A, O or U as in: ça, garçon, aperçu. Without the cédille, the grapheme C is pronounced [k] in front of these vowels.

Remarks on the grapheme T

In final position, the speech sound [s] is represented by -T:

-TIE: démocratie, inertie, ineptie

-TIER: initier, différentier

-TIEL: confidentiel, différentiel

-TIANE: gentiane

-TIAL: initial

-TIAUX: initiaux

-TION: nation, section, invention, population

-TIEUX: ambitieux, contentieux

-TIEN: Egyptien, Capétien

-TIUM: Latium

Pronunciation of the final S in the word TOUS:

TOUS adjectif: the S is never pronounced: Tous les jours [tulɛʒu:ʁ]

TOUS pronoun: the S is always pronounced: Ils sont tous ici [ilsõtusisi]

The phoneme /ʃ/

Spelling	ch	sch	sh
Initial position	chat	schéma	short
Middle position	achat	—	—
Final position	planche	kirsch	—

Remarks:

The grapheme CH is pronounced [k] in some words like chaos [kɑo], orchestre [ɔʁkestr], and it is not pronounced in almanach [almana]. However, in final position, it is pronounced in some words: Foch [fɔʃ], Auch [ɔʃ], sandwich [sɑdwiʃ].

4.5. Voiced Fricative consonants

The phoneme /v/

Spelling	v
Initial position	vache
Middle position	laver
Final position	cave

Remarks

The grapheme W can represent the phoneme /v/ in some foreign words: wagon [vagɔ̃], Watteau [vato], Edwige [ɛdviʒ], edelweiss [ɛdɛlvais].

The grapheme V can be found in final position in some words like: Tel Aviv [tɛlavi:v].

There is a linking [v] that still exists in neuf heures [nœvœ:ʁ], neuf ans [nœvɑ̃].

The phoneme /z/

Spelling	z	s
Initial position	zéro	—
Middle position	azur	maison
Final position	onze, gaz	rose

Remarks:

The grapheme -Z in final position is only found in some words: gaz, Fez, Berlioz, Suez.

The intervocalic S is always pronounced [z], even when preceded by a nasal vowel: transatlantique, transition.

The grapheme S is pronounced [z] in the following words: Alsace, balsa, Jersey, Guernesey, Elsa.

The word Zeus is pronounced [dzøʁs].

The phoneme /ʒ/

Spelling	j	g
Initial position	jour	genou
Middle position	déjeuner	danger
Final position	—	neige

Remarks:

The grapheme J is almost always found in initial position, and JE is really scarce in final position.

When the speech sound [ʒ] is not spelled J, it is represented by the grapheme G in every position in front of [i], [ē], [e], [ə], [ɛ], and the following graphic vowel is always E or I like in gilet, gingembre, âge, digestion, rouge.

In front of the speech sounds [a], [ā], [o], [ō], [wa], [y], the phoneme [ʒ] is represented by GE as in: mangeable, nageant, agent, bougeotte, pigeon, rougeoie,

In all consonant group, the speech sound [ʒ] is represented by J: objet, adjectif.

In final position, the speech sound [ʒ] is represented by the grapheme -GE: Belge, rouge, orge.

In present Standard French, there is a tendency to pronounce [ʒ] as [ʃ] in: je peux [ʃpø], je ne sais pas [ʃepa], je trouve [ʃtruv] etc....

The phoneme /l/

Spelling	l	ll
Initial position	lit	—
Middle position	milieu	allumette
Final position	sel	malle

Remarks:

In final position, the grapheme -il is always pronounced [il]: Brésil, avril, cil. But there are some exceptions like in: chenil, coutil, fournil, fusil, gentil, outil, persil, sourcil. However, it is pronounced [j] in ail.

In final position, the grapheme -ille is pronounced [j] or [ij]: paille [pa:j], travaille [trava:j], veille [vɛ:j], famille [famij]. Yet, in the following words, it is pronounced [il]: ville, mille, tranquille, Achille, Gille, Lille, oscille, distille.

In some words, the grapheme -L is not pronounced: Hinault, Renault, Meaulnes.

In present day familiar Standard French, there is a tendency to drop the -L in : il m'a dit [imadi], celui-la [sɥla].

The phoneme /r/

Spelling	r	rr
Initial position	robe	—
Middle position	parole	charrette
Final position	air	terre

Remarks:

In final position, the grapheme -R is pronounced in front of S, T, D like in: pars, sort, bord. S, T and D are then mute.

In final position, R is not pronounced in 2 words out of 3. It is not pronounced in: monsieur, messieurs, gars. It is also not pronounced in -ER verbs and in adjectives in -ER and -IER: manger [mãʒe], écouter [ecute], passer [pase], épicier [episje], léger [leʒe]. However, it is pronounced in the following words: amer [amɛv], cuiller [kɥijɛv], enfer [ãfɛv], fer [fɛv], hiver [ivɛv], mer [mɛv], ver [vɛv], hier [ijɛv], fier [fjɛv], cancer [kãsev], éther [etɛv], Jupiter [ʒypitɛv]; and in some borrowed English words: reporter [rəpɔ:tɛv], revolver, starter, gangster, leader, speaker [spikœv].

The value of the geminate consonant /rr/ has been mentioned previously.

4.6. Nasal consonants

The phoneme /m/

Spelling	m	mm
Initial position	mère	—
Middle position	féminin	immense
Final position	dame	femme

Remarks on the grapheme M

The speech sound /m/ is never preceded by a nasal vowel inside the same word, with the exception of the prefixe –EM: emmener, and in some past verbal forms (Passé Simple) of verbs like tenir, venir: nous tîmes, nous vîmes.

In final position, -M is pronounced in borrowed and learned words: forum, album, film, ultimatum, maximum, minimum, rhum, idem, macadam, Amsterdam, Jérusalem.

The grapheme –MN is pronounced [n] in automne, condamner, damner, but this consonant group is rare in Standard French.

The phoneme /n/

Spelling	n	nn
Initial position	neige	—
Middle position	animal	année
Final position	lune	bonne

Remarks on the grapheme N

The speech sound /n/ is never preceded by a nasal vowel inside the same word, with the exception of the prefixe –EN: ennoblir, ennui, ennuyer ...

The grapheme –N indicates the pronunciation of a nasal vowel, except in front of another –N consonant (geminate consonant), or in final position: inné, amen, abdomen, dolmen, gluten, hymen, lichen, pollen, spécimen, Cohen, Bergson.

The grapheme –MN is found in some words: automne, condamner, damner.

The phoneme /ɲ/

Spelling	gn
Initial position	gnognotte
Middle position	agneau
Final position	peigne

Remarks on the grapheme GN

The grapheme –GN can be pronounced [ɲ] in some learned words: gnome, diagnostic, gneiss, gnete, gnomon, gnose, gnou.

In initial position, the grapheme –GN is only found in slangy words: gnanngnan, gnognotte, gnole.

The word oignon is pronounced [ɔɲjɔ̃].

The phoneme /ŋ/

Spelling	ng
Initial position	—
Middle position	—
Final position	camping

Remarks on the grapheme NG

The speech sound [ŋ] is borrowed from the English consonant system; therefore, it exists only in some borrowed words, and only in final position: camping

[kãpiŋ], meeting [mitiŋ], shopping [ʃopiŋ], parking [pa:rkiŋ], smoking [smokiŋ].

III) The Vowels

1. General Rules about the Phonetics of vowels

Vowels are the most sonorant –or intense-, and the most audible sounds in speech. They are produced by a vocal tract that is more or less unobstructed, the only contact being made by the tongue with the upper and lower teeth and their corresponding gum ridges. With different tongue postures, the oral cavity is shaped into a number of configurations that produce the different vowel sounds. Vowels usually function as syllable nuclei, and the consonants that surround them often depend on the vowel sound for their audibility. To describe the vowels, different features are used than those used for the consonants. Indeed, being produced with a relatively open vocal tract, vowels are sounds that do not have a point of articulation (place of constriction) or a manner of articulation (type and degree of constriction) like consonants do, and they are almost always voiced. The source for vowel sounds is the vocal folds vibrations. The vocal tract above the glottis acts as a resonance chamber affecting the sound made by the vocal folds. The shape of this resonator determines the quality of the vocalic sound. In order to describe the articulation of vowel sounds, the best way would be to describe the various way in which the vocal tract can be shaped so as to produce different types of resonance. But this being too complicated, phoneticians mainly take into consideration the most mobile of the vocal organs, the tongue, which influences the most the shape of the vocal tract. Thus, articulatory descriptions of vowels mostly depend on the position of the tongue.

1.1 Vowels characteristics

high vs low vowels

The position of the tongue is usually described in terms of two dimensions: high vs. low and front vs. back. As far as high and low vowels go, the essential

difference is the distance between the highest part of the tongue and the palate. In a high vowel the distance between the tongue and the palate is very small; in a low vowel, the distance is much greater: the tongue is not only flattened out, but the distance is often increased by a lowering of the whole jaw. Vowels can also be mid-vowels; in this case, the tongue is raised half-way. For example: [i] versus [a] in American English.

front vs back vowels

Besides being held high, mid or low, the tongue can also be pushed forward or pulled back within the oral cavity. A good example is the opposition between the high front vowel [i] as in leap and the high back vowel [u] as in loop.

rounded vs unrounded vowels

Another characteristic of the vowels depends on the position of the lips. When a sound like [u] is pronounced, the lips are rounded; on the other hand, when a sound like [i] is pronounced, the lips are unrounded.

tense vs lax vowels

Vowel sounds can also differ in the relative degree of muscular energy involved in their articulation. Vowels that are tense have more extreme positions of the tongue or the lips than vowels that are lax. The production of tense vowels involves bigger changes from a mid central position in the mouth. Thus, tense vowels are made with a more extreme tongue gesture, i.e., the position of the tongue when the tense mid front vowel [e] is produced is higher and more fronted than when the lax mid front vowel [ɛ] is produced.

short vs long vowels

Vowel sounds can also differ in duration. The length of a vowel will depend on the following consonant or group of consonants, and therefore the length of vowels will be different in each of the two languages.

monophthongs vs diphthongs

Vowels are either “pure” –or monophthong- or diphthongized depending on whether or not they maintain the same quality throughout their articulation. Although in normal speech every vowel sound changes constantly in quality, there is a distinction between vowel sounds which obviously change in quality during their articulation, and vowel sounds which remain relatively constant. Vowels of the first type, which clearly change in quality are called diphthongs; vowels that remain relatively constant are called monophthongs. In order to perceive the constance of the vowel, the speech organs have to remain immobile for a moment in the position that gives the most characteristic sound of the vowels. In this case, the vowels produced are “pure” ones like all the French vowels and some American English vowels. However, if the speech organs (especially the tongue and the lips) change position during the production of a vowel sound, the tone also changes, and the vowel is then said to be diphthongized. If a vowel undergoes diphthongization, i.e., if the beginning and the end of a vowel are two different vowel sounds in one syllable, the result is a diphthong. It must be noted that unlike American English, French has no diphthongs nor diphthongized vowels. An example of English diphthongs is [aj] as in “lie”.

oral vs nasalized vowels

Vowels are said to be oral or nasal depending on whether or not there is a significant resonance of the nasal cavity. A vowel is oral when the velum –or soft palate- is raised against the pharynx in order to let all the airstream in the mouth. A nasal vowel is produced when the velum is lowered as to let part of the airstream going into the nasal cavity where it resounds. There are four nasal

vowels in French: [ɑ], [ɔ], [œ], [ɛ]. There are no nasal vowels in American English.

open vs close vowels

Vowels are more or less open or close depending on whether the tongue is more or less far from the palate. When the tongue is close to the palate, the vowel sound produced is said to be close; when the tongue is far from the palate, the vowel sound produced is said to be open. There are open and close vowel sounds in both American English and French.

1.2 Description of American English vowels

Because the same vowel sound can occur in different phonetic settings, the following table gives an example of each position in which each speech sound can be produced.

Phonetic Symbols for the Vowels of American English and their Sound Distribution

<i>Symbol</i>		<i>Examples</i>		
		<i>initial</i>	<i>middle</i>	<i>final</i>
[i]	<i>as in</i>	eagle	feet	key
[ɪ]		indian	fish	taxi
[e]		apron	paper	tray
[ɛ]		egg	bed	
[æ]		apple	cat	
[ʌ]		oven	sun	

[ə]	asleep	alphabet	camera
[ɜ]	herb	curtain	fur
[ɛ]	urbane	afternoon	newspaper
[u]		noon	tattoo
[ʊ]		book	
[o]	ocean	boat	toe
[ɔ]	office	cross	law
[ɑ]	olive	clock	shah
[aɪ]	eye	kite	sky
[aʊ]	hour	mouse	cow
[ɔɪ]	oil	boy	toy
[ju]	you	fuse	review

Phonetic Description of American English Vowels

The front vowels:

- [i] is a high front tense unrounded vowel or a close front unrounded vowel *
- [ɪ] is a lower high front lax unrounded vowel
- [e] is a mid front tense unrounded vowel or a close-mid front vowel *
- [ɛ] is a lower mid-front lax unrounded vowel or an open-mid front vowel *
- [æ] is a low front lax unrounded vowel

The central vowels:

[ʌ] is a lower mid-to-back central lax unrounded vowel or an open-mid unrounded back vowel *

[ə] is a neutral mid-central lax unstressed unrounded vowel

[ɜ̃] is a mid-central r-colored tense vowel

[ɞ̃] is a mid-central r-colored lax vowel

The back vowels:

[u] is a high back tense rounded vowel or a close rounded back vowel *

[ʊ] is a high back lax rounded vowel

[o] is a mid-back tense rounded vowel or a close-mid rounded back vowel *

[ɔ] is a low mid-back lax rounded vowel or an open-mid rounded back vowel

[ɑ] is a low back lax unrounded vowel or an open unrounded back vowel *

(* the second definition is that of the revised IPA vowel chart from 1996.)

The Diphthongs:

[aɪ] is a rising low-front to high-front (offglide) diphthong

[aʊ] is a rising low-front to high-back (offglide) diphthong

[ɔɪ] is a rising mid-back to high-front (offglide) diphthong

[ju] is a high-front to high-back (onglide) diphthong

1.3 Description of French vowels

Phonetic Symbols for the Vowels of French and their Sound Distribution

<i>Symbol</i>	<i>Examples</i>			
	<i>initial</i>	<i>middle</i>	<i>final</i>	
[i] <i>as in</i>	île	style	ainsi	
[y]	eu	sur	reçu	
[u]	où	bouger	cou	
[j]	hier	nier	aille	
[ɥ]	huître	suer	lui	
[w]	oui	souhait	Louis	
[ɛ̃]	inviter	peinte	lapin	
[œ̃]	un	punk	parfum	
[ɑ̃]	en	chambre	attends	
[ɔ̃]	honte	comprendre	pardon	
[ɛ]	aime	élève	jamais	
[e]	épée	pecher	pâte	
[œ]	heure	coeur		
[ø]	heureux	peureux	nœud	
[ə]	ce	petit		
[ɔ]	or	port		
[o]	eau	seau	tableau	
[a]	à	patte	chat	

[ɑ]

âpre

pâte

pas

Phonetic Description of French Vowels

Oral vowels which have one timbre

[i] is a front (or palatal) unrounded close unrounded vowel

[y] is a mid front rounded close vowel

[u] is a back (or velar) rounded close vowel

[ə] is a mid-low central unrounded vowel

Semi-vowels corresponding to the preceding oral vowels respectively

[j]

[ɥ]

[w]

Nasal vowels

[ẽ] is a mid front unrounded nasal vowel

[œ̃] is a mid front rounded vowel

[ã] is a low back unrounded nasal vowel

[õ] is a mid back rounded nasal vowel

Oral vowels which have two different tones

[ɛ] is a front unrounded mid-open vowel

[e] is a front unrounded mid-close vowel

[œ] is a front rounded mid-open vowel

- [ø] is a front rounded mid-close vowel
- [ɔ] is a back unrounded mid-open vowel
- [o] is a back unrounded mid-close vowel
- [a] is a front unrounded open unlabial vowel
- [ɑ] is a back unrounded open vowel

1.4 Comparative study of the Articulation of some American English vowels and their French equivalents

NB: the measurements are in inches.

[i] as in American English "see" and in French "pire"

	American English	Standard French
<i>Tongue</i>	The tip rests against the lower incisors. The blade slants sharply upward toward the hard palate. The sides rest against the lingual surfaces of the upper molar	The tip is lightly pressed against the lower incisors. The blade arches steeply to within 1/8 of the alveolar ridge and hard palate. The sides press against the lingual surfaces of the upper molars and the cuspids
<i>Lips</i>	3/8 apart, lax, inactive	1/4 apart, the corners are pulled outwards to form a tightly drawn, narrow, orifice
<i>Teeth</i>	1/4 to 3/8 apart	1/8 apart

[y] as in French “du”, contrasted with the American English [i] as in “see” (* Phonemically, American English has no /y/ vowel. /i/ is used for contrast, being similar in tongue position and in acoustic formants).

	American English	Standard French
<i>Tongue</i>	The tip is lightly against the lower incisors. The blade slants sharply upward toward the hard palate. The sides rest against the lingual surfaces of the upper molars. The rear arches abruptly downward from the midpalate.	The tip presses against the lower incisors. The blade is bunched to within 1/8 of the alveolar ridge and is tense. The sides touch the upper molars and the cuspids. The rear arches downward, leaving more resonance space than in American English.
<i>Lips</i>	3/8 apart, lax, inactive	Tense, close to rounding
<i>Teeth</i>	1/8 to 1/4 apart	Almost touching

[e] as in American English “take” and in French “thé” (* the American English [e] has a moderate glide tendency toward [i] resulting in a diphthongized speech sound; the French [e] remains pure).

	American English	Standard French
<i>Tongue</i>	The tip rests at the lingual surfaces of the lower incisors. The blade is flat and slants upward to within 1/4 of the alveolar ridge. The sides half fills the space between the molars. The rear rounds back and downward.	The tip presses on the upper inside edge of the lower incisors. The blade is bunched closely to within 1/8 of the alveolar ridge. The sides press against the lingual surfaces of the upper cuspids, filling the space between the molars. The rear slopes off more steeply than in American English.
<i>Lips</i>	3/8 to 1/2 apart, lax, inactive	Spread, corners are pulled to sides, 1/8 to 1/4 part, moderately tense.
<i>Teeth</i>	1/4 to 3/8 apart	1/8 to 1/4 apart

[ɛ] as in American English “set” and as in French “tête”

	American English	Standard French
<i>Tongue</i>	The tip rests just behind the lower incisors. The blade is flat and slants upward. The dorsum is within 3/8 of the midpalate. The sides rest on the surfaces of the lower molars. The rear is within 1/2 of the palate, and then falls off in a gradual downward curve.	The tip touches the inside edges of the lower incisors. The blade is flat and widened, and arches upward to a point not as high as [e]. The dorsum is slightly lower than in American English. The sides touch the upper cuspids, the edges fill the spaces between the molars. The rear curves gently back and down.
<i>Lips</i>	3/8 apart, lax, inactive	3/8 to 1/2 apart, not very tense with horizontal opening.
<i>Teeth</i>	1/4 apart	1/4 to 3/8 apart

[a] as in American English “father” and in French “patte”

	American English	Standard French
<i>Tongue</i>	The tip is about 1/8 behind the lower incisors. The blade and the dorsum are flat and low. The sides are against and slightly overlapping onto molars with the corners touching the lower cuspids. The rear is gently arching downward.	The tip touches the upper edges of the lower incisors. The blade is flat and low, fairly wide and fronted. The dorsum is flat and low. The sides overlap the lower molars, the cuspids, and sometimes the incisors. The rear arches downward at a more gradual angle than American English.
<i>Lips</i>	1/2 apart, neutral position, lax	Horizontal opening, 5/8 apart, not very tense. The corners are pulled slightly outward.
<i>Teeth</i>	3/8 to 1/2 apart	1/4 to 3/8 apart

[ɑ] as in American English palm and in French pâte (There is no real phonetic difference in American English between [a] and [ɑ]; they are allophones of the open vowel phoneme)

	American English	Standard French
<i>Tongue</i>	The tip is about 1/8 behind the lower incisors. The blade and the dorsum are flat and low. The sides are against and slightly overlap onto the molars, the front touching the lower cuspids. The rear gently arches downward.	The tip is 1/4 or more behind the lower incisors. The blade is flat, just above the plane of the molars. The dorsum is flatter and lower than for [a]. The sides are cradled low with the tongue surface almost parallel to the level of the lower molars. The rear projects to about 1/2 inch of the pharyngeal wall.
<i>Lips</i>	3/8 to 1/2 apart, slightly below the neutral position	3/8 apart, not very tense
<i>Teeth</i>	1/4 to 3/8 apart	1/4 to 3/8 apart

[ɔ] as in American English "office" and in French "mort"

	American English	Standard French
<i>Tongue</i>	The tip is a little back of the lower incisors. The blade is lightly grooved and concave, the sides touch the inside edges of the lower molars. The rear is arched somewhat into the pharyngeal region.	The tip is just behind the lower incisors. The blade is grooved, moderately tense. The sides rest on the inside edges of the lower molars. The rear is arched back slightly.
<i>Lips</i>	Lax, with some effort towards rounding, 3/8 to 1/2 apart	The corners are pulled inward, protruding slightly forward, with an oval to circular rounding, 1/2 to 3/4 apart, tense.
<i>Teeth</i>	3/8 to 5/8 apart	1/2 to 3/4 apart

[o] as in American English “go” and in French “tôt” (the American English [o] has a moderate glide tendency toward [u] resulting in a diphthongized speech sound; the French [o] remains pure).

	American English	Standard French
<i>Tongue</i>	The tip retracted about 3/8 from the lower incisors. The blade and the surface gently arch rearward from the rest position. The rear is bunched backward into the pharyngeal cavity.	The tip is retracted about 1/2 from the rest position. The blade and the surface arch somewhat higher than the American English[o], and is fairly tense. The rear is bunched upward and backward deep into the uvular-pharyngeal region.
<i>Lips</i>	Some rounding; about 1/4 apart, slight protrusion	Thrust forward 1/8 to 1/4 with the corners pinched, drawn to form an oval opening of about 1/2 between the lips.
<i>Teeth</i>	3/8 to 1/4 apart	3/8 to 1/2 apart

[u] as in American English “too” and in French “tout”

	American English	Standard French
<i>Tongue</i>	The tip is about 5/8 behind the lower incisors. The blade is rather flat, slanting upward toward the soft palate. The rear is bunched into the uvular region and is tense.	The tip is about 1/2 behind the lower incisors. The blade is slightly grooved, inclining upward toward the soft palate. The rear arches higher and more deeply (than American English) into the uvular and pharyngeal regions, and is tense.
<i>Lips</i>	Extended forward very slightly with some rounding, moderately tense.	Protruded 1/4 to 3/8 forward, the corners are drawn in with close rounding, tense.
<i>Teeth</i>	About 1/4 apart	About 1/4 apart

[ø] as in French “deux”, compared with the American English [u] as in “look”

	American English	Standard French
<i>Tongue</i>	The tip lightly presses against the lower incisors. The blade is partially grooved with a gentle, upward slant. The sides are raised slightly higher than for a [o], pressing on the lower edges of the molars.	The tip is in contact with the back of the lower incisors. The blade is grooved with a sharp convex curve toward the high position. The sides press against the lower inside edges of the upper molars and the cuspids.
<i>Lips</i>	Tense, the corners are drawn in, forming annular configuration with 3/8 space between lips.	In a fairly tense, rounded position 3/8 to 5/8 apart.
<i>Teeth</i>	1/8 to 1/4 apart	3/8 apart

[œ] as in French “peur”, compared with [ʌ] as in American English “other”

	American English	Standard French
<i>Tongue</i>	The tip barely touches the lower incisors. The blade is flat, with a slight upward angle. The dorsum is about 1/2 from the hard palate. The sides are cradled in a neutral position, with some contact with the inside edges of the upper molars, lax. The rear is bunched moderately upward toward the soft palate.	The tip touches the lower incisors. The blade is thrust forward, grooved, slanted upward to a mid-high position. The dorsum is about 3/8 from the hard palate, angling rapidly downward. The sides are pressed against the inside edges of the upper molars, and are rather tense. The rear is lightly drawn forward away from the pharyngeal wall.
<i>Lips</i>	lax, 3/8 to 5/8 apart	The corners are drawn inward, the lips are extended forward 1/4, rounded 1/2 to 5/8 apart rather tense.
<i>Teeth</i>	3/8 to 1/2 apart	3/8 to 1/2 apart

[ə] as in American English “integral” and in French “demie”

	American English	Standard French
<i>Tongue</i>	The tip rests against the lower incisors, in a near neutral position. The blade is nearly flat. The dorsum is mid-high. The sides are cradled by the lower teeth. The rear rounds back and downward.	The tip presses against the top inside edges of the lower incisors. The blade is somewhat grooved, sloping upward. The dorsum is about 1/2 under the mid-palate. The sides touch the cuspids and rest between the upper and lower molars. The rear falls steeply downward.
<i>Lips</i>	Inactive, lax, open 3/8 to 1/2	Pursed, with an oval opening 1/8 to 1/4 apart.
<i>Teeth</i>	1/4 to 1/2 apart	1/8 to 1/4 apart

[j] as in American English “year” and in French “hier”

	American English	Standard French
<i>Tongue</i>	The tip makes contact with the lower incisors. The blade is wide and convex with the highest point touching the mid-palate, with a slight horizontal groove. The sides fill the space between the molars. The air pressure is moderately strong, causing a fricative noise as it is forced through a groove. The rear curves steeply downward.	The tip touches the edges of the lower incisors. The blade is fairly wide, broadly bunched with the center groove touching the palate. The sides partly fill the space between the molars. The air pressure is strong, being forced through a wide tongue groove, causing fricative noise. The rear falls off almost vertically.
<i>Lips</i>	Inactive	Inactive
<i>Teeth</i>	1/8 apart	Barely apart

[w] as in American English “week” and in French “oui”

	American English	Standard French
<i>Tongue</i>	The tip is slightly back of the lower incisors. The blade curves upward and back to about 3/8 from the soft palate. The sides overlap inside the edges of the lower molars. The rear is bunched into the velar area.	The tip is 3/8 to 3/4 back of the lower incisors. The blade arches up to a point 1/4 from the soft palate. The sides touch only lightly the inside lingual surfaces of the molars. The rear is bunched deeply into the velar area.
<i>Lips</i>	Extended and closely rounded, not as tense as the French [w].	Pushed forward, closely rounded.
<i>Teeth</i>	1/4 apart	1/8 apart
<i>Voicing</i>	Simultaneously with articulation	Occurs split second before articulatory release.

2. Vowels and their allophones

2.1 Phonemics: American English vowels

Allophonic variations of American English Front Vowels

/i/ as in “eat”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[i̠]	Diphthongized in open and stressed syllables	flee [fl i̠]
[iə]	Before a liquid	seal [siə]
[ə] or [ɪ]	Vowel reduction	revise [rə 'vaɪz] or [rɪ 'vaɪz]

/ɪ/ as in "it"

Allophone *Occurrence*

[ɪ:] Lengthening

[ə] Vowel reduction

Example

carrying [kæri:ŋ]

chalice [tʃæləs]

/e/ as in "ate"

Allophone *Occurrence*

[eɪ] Diphthongized in open or stressed syllables

[i] or [ɪ] In words with "-day"

[eə] or [eɪə] Triphthongized or diphtongized

Example

say [seɪ]

Monday [mʌndɪ]

or [mʌndi]

jail [dʒeɪəl]

/ɛ/ as in "get"

Allophone *Occurrence*

[ɪ] In informal speech

Example

get [ɡɪt]

/æ/ as in "at"

Allophone *Occurrence*

[æ̃] Raised and nasalized

Example

man [mæ̃n]

Allophonic variations of American English Central Vowels

/ʌ/ as in "above"

Allophone *Occurrence*

[ɛ] In informal speech

[ɪ] For the adverb

Example

such [sɛtʃ]

just [dʒɪst]

/ə/ as in “above”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɪ]	An alternate reduced vowel	telephone [ˈtɛlɪfən]

/ɜ/ as in “herder”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɪr]	An alternate form	syrup [sɪrəp]
[ʌ]	An alternate syllable division	hurry [ˈhʌrɪ]

/ə/ as in “herder”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ə]	Non-dialectal “r-dropping” or before stressed /r/	motherly [ˈmʌðəli] separation [sɛpəˈreʃən]

Allophonic variations of American English Back Vowels

/u/ as in “hoot”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[u̯ə]	Before a liquid	stool [stu̯əl]
[ʊ] or [ə]	Vowel reduction in unstressed syllables	to own [tuon] to go [təgo]
[uɪ]	Diphthongization in stressed or open syllables	do it [duɪt]

/ʊ/ as in “hood”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ʌ] or [ə]	Vowel reduction or in rapid speech	would [wʌd] or [wəd]

/o/ as in “owed”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ou]	Diphthongization in stressed and open syllables	go [gou]
[ə]	Vowel reduction	window ['wində]

/ɔ/ as in “hailed”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɒ]	Lowering, will vary with /ɑ/	cot [kɒt]

/ɑ/ as in “hot”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɒ]	Rounded	got [gɒt]
[a]	Fronting, especially with front sounds	not [nat]
[ɔ]	In platform speech	father [fɔðə]

Allophonic variations of American English Diphthongs

/aɪ/ as in “kite”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[aɪə]	Before the liquid /l/	I'll [aɪəl]
[ə]	Vowel reduction, and in informal speech	I don't know [ədɔ̃ˈno]

[ɜ̃]	Before voiceless consonants	ice [is]
<i>/ã/ as in "cow"</i>		
<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɑ̃]	Slight retraction in onset	cow [kau]
[ʌ̃]	Slight reduction	house [haus]

<i>/ɔ̃/ as in "coin"</i>		
<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɑ̃]	A few speakers may use an older pronunciation for this sound in a few words	hoist [haist] join [dʒaɪn]

<i>/j̃u/ as in "cue"</i>		
<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ĩu]	As an offglide with stress alteration such that the onset becomes more prominent	beauty ['biuʃi]
[j̃ə]	Vowel reduction	you [j̃ə]
[j̃u]	Before /r/ in the same syllables	bureau [bjuro]
[u]	Typically after the affricates	chew [tʃu]

2.2 Phonemics: French vowels

As mentioned in part II when studying the allophones of the phonemes of Standard French consonants, if allophones are to be found there, one must look in the vocalic sounds.

The first set of phonemes are the two *a*, /a/ and /ɑ/, an opposition which is particularly instable. It does exist for most Standard French speakers, but at

various degrees. Because interchanging the two phonemes can be a source of misunderstanding, or incertitude regarding the word used, it has been noted that the adjective “fatigué” is now used instead of “las”, to avoid the confusion with the preposition “là”. It seems that /a/ followed by a voiced consonants tend to be pronounced /ɑ/ instead of /a/, i.e., bague, fromage, cristal...

Allophonic variations of Standard French Front vowels

/a/ as in “chat”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɑ]	In certain word	pâté [pɑte]
[a:]	In front of a final /r/	part [pa:r]

/i/ as in “vite”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[i:]	Before a /r/	pire [pi:r]

/y/ as in “cru”

No significant allophonic variation has been reported for this sound.

The following two phonemes, /e/ and /ɛ/, are mostly complementary in final word position. In final position, [ɛ] is found in a closed syllable: jette [ʒɛt] , perle [pɛrl]. In non-final position, certain words regularly have [ɛ] in a closed syllable, but other can have [e]: for example, escargot can be pronounced [ɛskargo] or [eskargo] because the [sk] sequence can be treated either as Vs + k or V + sk. In non-final position and in an open syllable, words are usually

pronounced with [e]: hélice [elis]. However, some Standard French speakers will pronounce [e] if the vowel of the following syllable is closed, and [ɛ] if the vowel of the next syllable is open: hélice [elis], étage [ɛtaʒ]. This is called vowel harmony.

/e/ as in “été”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[e]	In non-final position, in open syllable and if the vowel of the next syllable is open	étage [ɛtaʒ] fétard [fɛtar] (normally [e] in open syllable non-final)
[ɛ]	In closed non-final syllable	effectuer [ɛfɛktɥe]

/ɛ/ as in “elle”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[e]	In non-final position, in closed syllable	escargot [eskargo]
[ɛ:]	In front of a final /r/	faire [fɛ:r]

Allophonic variations of Standard French Central vowels

/ɑ/ as in “âge”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɑ]	In certain word	âgé [aʒe]

The phoneme /ə/ has been a topic of controversy for years in French phonemics. Linguists name it “e muet”, “e caduque”, or “e instable”. Traditionnaly, one considers as “e muet” every *e* of the spelling system that is not pronounced like

[e], [ɛ] or even [a] like in the word “femme” [fam], or which is not part of digraph or trigraph like *eu*, *en*, *eau*. In most of the cases, this vowel can appear or disappear without any change in the message. For example, if the word *melon* is pronounced without a vowel between the /m/ and /l/, everybody will still understand that one is talking about the fruit (cantaloupe). However, in some cases, the pronunciation of this vowel is crucial, otherwise, there is a change of meaning that can be a source of misunderstanding: *plage* [plɑʒ] (beach), *pelage* [pələʒ] (fur, of animal). With the exception of some other rare cases, the presence or the absence of this phoneme is phonetically conditioned. If the word preceding *melon* ends with a consonant, /ə/ is pronounced; if the word that precedes *melon* ends with a vowel, then /ə/ can be omitted. Thus, one will hear in France *un m'lon* [ɛmlɔ̃]. Yet, even though there are a few rules governing the pronunciation or not of this phoneme, the phonetic realization of this vowel is different depending on the speaker. Its articulation is usually close to that of /ø/ or /œ/, depending on the word that is pronounced and the person who pronounces it. This phoneme can occur anywhere in a word, with the exception of the initial and final positions; consequently, it differentiates itself from the other vowels, whose distribution is broader.

/ə/ as in “le”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ø]	In some words	<i>selon</i> [sølɔ̃]
[œ]	In some words	<i>debout</i> [dœbu]
[ö]	After /r/	<i>crevette</i> [krövɛt] <i>bretelle</i> [brötɛl]
[ɔ]	After /r/	<i>reblochon</i> [rɔblɔʃö]
omit	Between two consonants	<i>la petite</i> [laptit]

paletot [palto]
la semaine [lasmen]

The following two phonemes are not supposed to be interchangeable, and both of them often occur before certain consonants. [ø] usually occurs before /k/, /z/, /ʒ/, /t/, and /tr/. [œ] usually occurs before /j/, /g/, /p/, /r/, /v/. Also, it must be noted that in some words, one of the two phonemes cannot be pronounced. This is the case in a word like *peur*, that cannot be pronounced *[pøv], or a word like “*creuse*” would not be pronounced *[kʁœz].

/œ/ as in “*seul*”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ø]	In some words	ailleurs [ajøʀ]
[œ:]	Before /r/	fleur [flœ:r]

/ø/ as in “*feu*”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[œ]	in some words	heureux [œrø]
[œ:]	in some words	jeûne [ʒœ:n]

Allophonic variations of Standard French Back vowels

/ɔ̃/ as in “*bocage*”

The phoneme /ɔ̃/ is an intermediate realization between [ɔ] and [œ]. It is mostly found in non-final free syllables. It is never found in final position, except in the

word trio. It can be noted that this phoneme often appears when there is an /i/ nearby.

/ɔ/ as in “fort”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɔ:]	Before a /r/	fort [fɔ:]
[o]	In certain words	joli [ʒoli] obèse [obɛz] botté [botɛ] godet [gode]

/o/ as in “chaud”

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɔ]	Neutralization when preceding /r/	maure [mɔr] (pronounced like the word <i>mort</i>)
[õ]	Very rare, except in some words	officier obusier omicron

/u/ as in “tout”

No significant allophonic variation has been reported for this sound.

Allophonic variations of Standard French Nasal vowels

/ã/ as in “enfant”

No significant allophonic variation has been reported for this sound.

/õ/ as in “mon”

No significant allophonic variation has been reported for this sound.

The following two nasal vowel sounds are really unstable. The feature that distinguished the two phonemes is the rounding of the lips. Now, with the degree of aperture when pronouncing one of the two nasal sounds, the rounding of the lips is difficult to do, and the rounded /œ̃/ is really close to the unrounded /ɛ̃/. Presently, the phoneme /œ̃/ tends to disappear in favor of the phoneme /ɛ̃/. The only minimal pair that are still left are:

brin [brɛ̃]	/	brun [brõ]
empreinte [ɑ̃prɛ̃t]	/	emprunt [ɑ̃prõ]
Alain [alɛ̃]	/	alun [alõ]

/ɛ̃/ as in "brin"

No significant allophonic variation has been reported for this sound.

/œ̃/ as in "brun"

<i>Allophone</i>	<i>Occurrence</i>	<i>Example</i>
[ɛ̃]	In most words with the phoneme /œ̃/ and the graph <i>un</i> or <i>um</i> .	lundi [lɛ̃di] humble [ɛ̃bl]

3. *Comparative study of American English and French vowels*

3.1 Comparative tables of American English and French vowel phonemes

(see tables in the Appendix)

3.2 The difficulties of French vowel phonemes for American native learners

As has been mentioned in part II, Standard French has a very tense pronunciation. French vowels, as opposed to American English vowels, are pure and are not diphthongized. When pronouncing Standard French, there is a much

greater effort of the muscles of the phonatory apparatus, and an articulation much more anterior. The muscular tension is constant and sustained during the whole articulation of the vocalic sounds; thus the tone of the vowels does not change and vowels are very clear in both accentuated and inaccentuated positions.

Pure vowel

Diphthongized vowel

French [i] in *si*



American English [i] in *see*

The greater opening of the mouth as well as the greater movements of the lips must also be noted, hence a greater articulation. Standard French, like American English, has rounded versus unrounded vowels, back versus front vowels, but the French language has rounded front vowels whereas American English does not. French also has nasal versus oral vowels, as opposed to American English that has oral vowels and diphthongs, the latter being non-existent in the French language. At this point, it is necessary to mention that correcting the pronunciation of a non-native speaker of French starts with working on the hearing and recognizing of the different sounds that exist in the target language. Even if American English and Standard French have many vocalic phonemes in common, these speech sounds differ in their articulation and production. Therefore, they may not be recognized because the sounds are not heard correctly, and then not produced properly. In order to be able to pronounce a sound the right way, one first has to hear it. Following are some oppositions that the American English learner will first have to hear before trying to produce the sounds:

Rounded vowels versus Unrounded vowels:

Ce chat / ces chats [səʃa] / [sɛʃa]

Je fais / j'ai fait [ʒəfɛ] / [ʒɛfɛ]

Back vowels versus Front vowels:

Je vauX / je veuX [ʒəvo] / [ʒəvø]

Un petit pot / un petit peu [œ̃pətipɔ] / [œ̃pətipø]

Nasal vowels versus Oral vowels:

Il vient / ils viennent [ilvjɛ̃] / [ilvjɛn]

Un bon chien / une bonne chienne [œ̃bɔ̃ʃjɛ̃] / [ynbɔ̃ʃjɛn]

To deal with the correction of vocalic sounds that represent a difficulty for the American English speaker, the phonemes will be grouped according to their roundness, their anteriority, their nasality, and their openness.

a. Rounded vowels versus Unrounded vowels

American English and Standard French both have rounded and unrounded vowels. Yet, the articulation being a little different, and above all the tension on French vowels being much greater, as opposed to the lax American English pronunciation, French vowels are difficult for the American English learner. The biggest difficulty is the pronunciation of the phoneme /y/ which does not exist in American English. Speakers of American English tend to produce a /u/ sound because they do not stretch their muscles enough: their lips are not put forward enough, their tongue remains too flat, not curved enough and the tip of the tongue is not enough pressed against the lower incisors. Other rounded French vowels representing some difficulty are: [e] versus [ɛ], [o], [ø] and [œ]. For lack of tension, or due to too much laxness, American English speakers tend to diphthongize these vowels. In order to correct the American pronunciation of rounded French vowels, one must have them hear the difference between the rounded and the unrounded vowels through listening to minimal pairs: *ces/cé*

[sɛ] / [se], *si/su* [si] / [sy], *saut/sotte* [sot] / [sɔt]. The learners must start from the unrounded vowels and learn how to round and put their lips forward without forgetting to apply greater tension during the production of the vocalic sounds.

b. Back vowels versus Front vowels

Standard French and American English both have back and front vowels, but here again the articulation, the tension and hence the production differ in the two languages. The French front vowels that present some difficulty for the American English speaker are especially the phonemes /ø/ and /œ/ because they do not exist in American English. Because there is almost no tension in the articulation of American English sounds, American English speakers tend to produce [u] or [ʌ], sometimes [o] or [ɔ]. The first thing to do is to make the learners hear the difference by producing minimal pairs. Once they hear the difference they should try to reproduce the vocalic sounds:

poor / peur [pʊr] / [pœʁ]

so / ceux [so] / [sø]

When [o] is produced instead of [ø], a good exercise for correction is to have the learners produce [e], which is an even more front vowel than [ø]. Indeed, [ø] is a rounded [e]. Similarly if [ɔ] is produced instead of [œ], the learners can produce [ɛ] and try to round their lips. If the nasal vowel [ɑ̃] is produced like [ɛ̃], the correction can be made by trying to produce the further back nasal vowel [õ]. It can be mentioned that labialization (which is the rounding and the throwing forward of the lips) favors the backward movement of the tongue.

Indeed, a back vowel is always more rounded than the corresponding unrounded vowel.

c. Nasal vowels versus Oral vowels

French nasal vowels represent a real difficulty for American English speakers since these sounds do not exist in the English language and are unknown to American ears. First, learners have to hear the nasal sounds, and a game of opposition of minimal pairs of oral and nasal vowels can be played. The following sounds can be opposed:

saut / son [so] / [sõ]

sa / sang [sa] / [sã]

si / sain [si] / [sê]

The main error that American English speakers make is that they cut the nasal sound into two sounds, making it an oral vowel followed by a consonant sound; plus, the oral vowel is usually diphthongized. The difficulty here lays in the fact that the learners focus on the spelling of the words because in American English, the only grapheme that would be pronounced as a nasal sound would be the *-ing* in a word like *camping, shopping* etc... Other words with the same spelling as in Standard French are pronounced with an oral vowel disassociated from the following consonant.

Here is an example: his son [ɪzɔn] / son fils [sɔfis]

Consequently, learners will have to learn to associate the oral vowel and the nasal consonant that follows and make them only one sound and not two. When this is understood, the difficulty is to produce the nasal sounds, and make the difference between [õ] and [ã]. The phoneme [ê] is usually produced properly without too many difficulties. At this point, it must be noted that the difference between [ê] and [œ] will not be emphasized since present native French speakers do not even hear nor make the difference. On the other hand, the phonemes [ō] and [ã]

represent a real difficulty because these two nasal sounds are very similar for American English speakers, and they barely hear, hence make, the difference. These two phonemes correspond to the oral vowels [o] and [ɑ], and one should start by a repetition of opposite minimal pairs, first listening then trying to reproduce the sounds they hear. Another way is to start from the oral vowel and to lower the tone little by little, since lowering the tone favors nasalization. Here the danger is to produce a consonant appendix after the nasal vowel. Effectively, in this case the nasal vowel would be pronounced, plus the nasal consonant part of the nasal sound: *tombé* would be pronounced [tõmbe] instead of [tõbe].

Learners have to realize that the nasal consonant is part of the nasal sound.

Another problem might appear when American English speakers pronounce a French word combining a vowel and a nasal consonant, they might tend to nasalize the vowel that is followed by a nasal consonant. This mistake is due to the spelling that leads them astray. This is called assimilation. Here, to try to correct the error, one can replace the nasal consonant by a corresponding oral consonant: [m] by [b], [n] by [d], [ɲ] by [j] and have the learners hear the difference between words like *aide* and *haine* where the vocalic sound does not change, even if in the spelling there is *-n*.

d. Open vowels versus Closed vowels

Both American English and Standard French have open and closed vowels, but here again, the tension in Standard French articulation as opposed to the more lax American English one, is the difference. Repetition of minimal pairs is probably one good exercise to help to correct the mispronunciation of some Standard French vowels. Here are some minimal pairs that can be proposed:

si / ces [si] / [sɛ]

sé / ces [se] / [sɛ]

ceux / ce [ø] / [œ]

(see in the Appendix the Table of The System of Vocalic Oppositions of Standard French)

4. French spelling and pronunciation: the vowels

4.1 Oral Vowels

The phoneme /i/

Spelling	i	î	ï	y
Initial position	il	île	—	Yves
Middle position	fil	Nîmes	naïf	type
Final position	Il a rit	... qu'il rît	Isaïe	jury

The phoneme /e/

Spelling	e	é	ai	aî	œ
Initial position	effet	été	ai	—	œcuménisme
Middle position	—	—	—	gaîté	—
Final position	—	clé	quai	—	—

The phoneme /ɛ/

Spelling	e	è	ê	ai
Initial position	herbe	hère	être	aile
Middle position	sel	mère	rêve	paire
Final position	respect	après	forêt	paix

Spelling	aî	ay	ei	ey
Initial position	—	—	—	—
Middle position	maître	balayer	treize	grasseyer
Final position	—	—	—	—

The phoneme /a/

Spelling	a	à	â	e	oi
Initial position	avis	à l'école	âge	—	oiseau
Middle position	gare	—	Vous aimâtes	femme	poisson
Final position	papa	là	Il aimât	—	moi

Remarks:

The grapheme -E is pronounced [a] in the following words: femme [fam], poêle [pwal], moelle [mwal], couenne [kwan].

The phoneme /ɑ/

Spelling	a	â	oi(s)
Initial position	—	âme	—
Middle position	sable	pâte	—
Final position	tracas	mât	mois

The phoneme /ɔ/

Spelling	o	au	ô	u(m)
Initial position	hoquet	augmenter	hôpital	—
Middle position	sotte	Paul	—	pensum
Final position	—	—	—	—

Remarks:

The grapheme –O is sometimes pronounced [ɔ] where one could expect to hear [o] as in words ending in:

-osse: adosse [ados], endosse [ãdos], fosse [fos], grosse [gros].

-ome: arôme [aʁom], axiome [aksjom], idiome [idjom], aérodrome [aerodrom], hippodrome [ipodrom], vélodrome [velodʁom], chrome [kʁom], tome [tom] (most of these words being scholar words from the Greek language).

-one: cyclone [siklon], amazone [amazon].

However, in words derived from the latter, the grapheme –O is pronounced [ɔ]:
aromatique, atomique, idiomatique, Amazonie.

The phoneme /o/

Spelling	o	ô	eau	au
Initial position	ohm	hôtel	eau	aumône
Middle position	rose	drôle	—	pauvre
Final position	sabot	rôt	beau	saut

The phoneme /u/

Spelling	ou	où	où
Initial position	ours	où	—
Middle position	poule	—	voûte
Final position	cou	—	coût

The phoneme /y/

Spelling	u	û	eu / eû
Initial position	une	—	eûmes
Middle position	lune	sûr	gagèire
Final position	vendu	affût	eut / eût

Remarks:

The grapheme –UE preceded by –Q or –G, is part of the speech sound [k] or [g], and does not represent a vocalic sound. Here are a few examples: *marque* [maʁk], *bague* [bag] , *quand* [kɑ̃].

The grapheme –EU is pronounced [y] only in some forms of the *Passé Simple* and *Past Participles* of the verb *Avoir*: *eu*, *eu*..and in the word *gagèire* [gaʒy:ʁ].

The phoneme /ø/

Spelling	eu	eû	oeu
Initial position	eux	—	oeufs
Middle position	meute	jeûne	—
Final position	feu	—	noeud

The phoneme /œ/

Spelling	eu	oe	oeu
Initial position	heure	oeil	oeuvre
Middle position	feuille	—	coeur
Final position	—	—	—

Remarks:

The grapheme –EU is turned upside down in words like: cueille [kœj], orgueil [ɔʁɡœj], cercueil [sœʁkœj], feuille [føj].

The phoneme /ə/

Spelling	e	ai	on
Initial position	—	—	—
Middle position	devenir	faisant	monsieur
Final position	tombe	—	—

Remarks:

In words that are derived from the verb “faire”, the grapheme –AI is pronounced [ə] as in : faisant [fəzɑ̃], faisons [fəzɔ̃], faisiez [fəzje], malfaisant [malfəzɑ̃], as well as in faisan [fəzɑ̃]. However, some words still have the speech sound [ɛ]: malfaiteur [malfɛtœʁ], bienfaiteur [bjɛ̃fɛtœʁ].

4.2 Nasal Vowels

The phoneme /ɛ̃/

Spelling	in	în	im	yn	ym
Initial position	inconnu	—	impossible	—	—
Middle position	dinde	vînmes	simple	syncope	symphonie
Final position	fin	advînt	—	—	thym

Spelling	ain	aim	ein	en
Initial position	ainsi	—	—	—
Middle position	sainte	—	peinture	bientot
Final position	main	faim	rein	chien

Remarks:

The grapheme –IENT usually represents the speech sound [jǎ] in words like client, but it represents the speech sounds [jĕ] in the verbal forms: tient [tjĕ], vient [vjĕ]...

The grapheme –EN usually represents the speech sound [ǎ] in words like dent [dǎ], but it represents the speech sound [ĕ] in foreign or geographical words like: appendice [apĕdis], benzine [bĕzin], benjamin [bĕʒamĕ], pentagone [pĕtagon], referendum [referĕdom], Rubens [rybĕ:s], Stendhal [stĕdal].

The grapheme –ING in English words is pronounced [iŋ] like in parking [pa:ʁkiŋ], shopping [ʃɔpiŋ], with the exception of the word shampoing [ʃǎpwĕ].

The phoneme /ǎ/

Spelling	an	am	en	em	aon	aen
Initial position	ange	ampoule	enfant	empereur	—	—
Middle position	tante	jambe	gendre	tempe	—	—
Final position	enfant	Adam	vent	temps	paon	Caen

Remarks:

The grapheme –EM does not exist in final position. The grapheme –AM in final position only exists in the name Adam. In foreign words, the grapheme –AM

represents the speech sound [am]: Amsterdam [amstɛɹdam], macadam [makadam]...

The grapheme –AON is only found in *paon*, *taon*, *faon* and *Laon*.

The phoneme /õ/

Spelling	on	om
Initial position	ongle	ombre
Middle position	monde	tombe
Final position	pont	plomb

Remarks:

The speech sound [õ] is always written –ON; yet it is written –OM in front of B and P, except in the word *bonbon*.

The phoneme /œ/

Spelling	un	um
Initial position	un	humble
Middle position	lundi	—
Final position	chacun	parfum

Remarks:

The grapheme –UM is pronounced [ɔm] in all the other words: rhum [rɔm], maximum [maksimɔm], minimum [mimimɔm].

4.3 Semi-Vowels

The phoneme /j/

Spelling	i	y	il	lle	ille	ill
Initial position	hier	yeux	—	—	—	—
Middle position	pied	crayon	—	—	—	'brouillon
Final position	—	paye	oeil	fil·le	oreille	—

Remarks:

The grapheme –ILLE can be pronounced [il] in some words: Lille [lil], ville [vil], mille [mil], tranquille [trãkil], and in some learned words like pénicilline [penisilin], oscillographe [ɔsilograf]..

The grapheme –AYE in final position is no longer pronounced [aj] but [ɛ], except in some geographical words like Faye and Biscaye [aj] in the South of France.

The grapheme –AY followed by a vowel is usually pronounced [ɛj + vowel] as in ayéz, ayons, essayer, but the pronunciation [aj] is found in some words: Bayonne [bajɔn], La Fayette [lafajɛt], mayonnaise [majɔnɛ:z], cobaye [kobaj], Mayence [majãs].

The grapheme –OY followed by a vowel usually represents the speech sounds [waj] as in croyons, soyons, soyez.. but this grapheme can also represent the speech sounds [ɔj] in some foreign words: coyotte [kɔjɔt], Goya [gɔja], Loyola [lɔjɔla].

The grapheme -UY follwed by a vowel usually represents the speech sound [ɥij] as in essuyer, ennuyer, tuyeau.. but this grapheme can also represent the speech sound [ɥj] in some words: bruyère [bɥɥjɛ:ʁ], gruyère [ɡɥɥjɛ:ʁ].

The phoneme /ɥ/

Spelling	u
Initial position	huit
Middle position	nuage
Final position	—

The phoneme /w/

Spelling	ou	oi
Initial position	oui	oie
Middle position	fouet	voiture
Final position	—	—

IV) Stress, Rhythm and Intonation in Standard French and American English

This study, being concerned with the problems encountered by native speakers of American English learning French as a second language, would not be complete if stress, rhythm and intonation were not mentioned. Indeed, nowadays, the teaching of foreign languages emphasizes oral communication whereby students are asked to speak up in class, to communicate with their classmates and the teacher, or to simulate a communicative situation as if they were talking to native speakers. Even then, in most foreign language classrooms, whether the target language is French or other, little emphasis is put on oral production. If there is any general emphasis put on oral, it is usually on listening comprehension, and not enough on either. Consequently, when faced with a real oral situation in the target language, students have trouble understanding native speakers and getting themselves to be understood by them. Indeed, when acquiring a second language, it is not only important to know how the language works, i.e. to figure out the grammar rules, the conjugations, and to learn the vocabulary but also must be able to speak it. And it is often when it comes to oral production that students encounter difficulties because not knowing how to pronounce the words, they mispronounce them, they do not articulate them correctly, or they transfer the intonation patterns of their mother tongue to the language they are learning. This final chapter deals with the prosodic challenges which the FL student faces, especially that related to that of intonation. Standard French and American English differ widely as far as stress, rhythm and intonation are concerned. Therefore, when learning French as a foreign language, native speakers of American English not only have problems with the utterances of some phonemes, but also they have even more difficulties when it comes to utter a complete sentence with its correct prosody. The three major components of intonation will be discussed in turn starting with stress, then rhythm and finally intonation

patterns. It concludes with reflections on the shortfalls of the teaching of French prosody in the FL classroom.

1. American English Stress versus Standard French Stress

1.1 Definition of Stress

Before enumerating the differences in stress patterns between the two languages, it would help to define stress and understand its function in a language. The phenomenon of stress does exist in every language but its function differs somewhat from language to language. In most languages, it makes a syllable within a word or a group of words more salient. Paul Garde (1968, p. 6) states that stress has a distinctive function in French that can be compared to nasality, or voicelessness, and must therefore be part of the inventory of the distinctive features of the French language. Stress may also be defined in terms of the greater effort that enters into the production of a particular syllable as opposed to another syllable. The two major correlates of stress are intensity (realized perceptually as loudness in some languages, or as duration, i.e. length in others) and pitch. Stress has a different function in American English compared to Standard French, and the two languages will be studied separately for that reason.

1.2 American English Stress

In American English, pitch is the main cue to stress in an utterance kept reasonably close to normal (meaning no exclamation for instance). When a native speaker of American English utters a sentence, the stress is recognized because of the pitch of the voice; the voice rises where there is a stress on the word. In American English, there is at least one stressed syllable in every non-function word, and sometimes several stressed syllables as will be explained. Also in

American English, stress is free meaning that the language has great variability in stress position. However, some rules apply as far as place of stress is concerned:

a. Two-syllable word

American English follows the basic rule of Germanic languages, whereby two-syllable words have their stress on the first syllable:

carpet ['kɑ:pɛt]

window ['wɪndəʊ]

Any word of two syllables ending in “re”, “er” = [ə] is automatically stressed on the first syllable, since [ə] is never stressed: metre, marker.

But stress falls on the second syllable if there is a weak prefix: before, again

Some disyllabic words modify the normal stress pattern according to their grammatical category. Nouns are regular and the stress tends to remain on the first syllable: rebel ['rɛbəl], annex ['ænɛks]

However, the corresponding verbs undergo a shift of stress: to rebel [rɪ 'bɛl], to annex

[ə 'nɛks]

Certain past participles, normally monosyllabic, become disyllabic when used as adjectives:

aged ['eɪdʒd] ['eɪdʒɪd]

beloved [brɪ 'lʌvd] [brɪ 'lʌvɪd]

Finally, there are some disyllabic words that are stressed on the second syllable for no apparent reason: canal [kə 'næl], banal [bə 'næl], lapel [lə 'pɛl].

b. Prefixes

Phonetically, there are two types of prefixes classified as weak or strong. A weak prefix may be described as a prefix whose original meaning has been so weakened as to lose all semantic value and the prefix has “been absorbed into the word.”

Weak prefixes:

a- : away [ə 'wei], again [ə 'gen]

ab- : absorb [əb 'zɔ:b], abuse [əbju:s]

ad- : advice [əd 'vais], adhere [əd 'hiə]

be- : begin [bi 'gin], become [bi 'kʌm]

com- : combine [kəm'baɪn], command [kə 'ma:nd]

con- : continue [kən 'tɪnju:], control [kən'trəʊl]

de- : defeat [di 'fi:t], declare [di 'kleɪ]

des- : despair [dis 'peə]

dis- : disclose [dis 'kləʊz], destroy [dis 'strɔɪ]

for- : forbid [fə 'bɪd], forget [fə 'ɡet]

en- : enlist [ɪn 'lɪst], enjoy [ɪn 'dʒɔɪ]

em- : employ [ɪm 'plɔɪ], embrace [ɪm 'breɪs]

in- : induce [ɪn 'dʒu:s], include [ɪn 'klu:d]

pre- : pretend [pri 'tend], predict [pri 'dɪkt]

pro- : pronounce [prə 'naʊns], produce [prə 'dʒu:s]

sur- : surpass [sər 'pɑ:s], survive [sər 'vaɪv]

Strong prefixes:

Strong prefixes are stressed either because they have retained their semantic value or because they are two-syllable words and therefore need to bear a main or subsidiary stress.

inter- : interplay [ˈɪntəpleɪ] , interact [ɪntəˈrækt]

over- : overtake [ˈəʊvəteɪk], overcome [ˈəʊvəˈkʌm]

pre- : predestine [ˈpriːˈdestɪn], premeditate [ˈpriːˈmedɪteɪt]

sub- : subvert [sʌbˈvɜːrt]

trans- : transcend [trɑːnˈsend], transmit [trɑːnˈsmɪt]

out- : outlive [aʊtˈlɪv], outdo [aʊtˈduː]

fore- : foretell [fɔːˈtɛl], forecast [ˈfɔːkɑːst]

circum- : circumvent [sɜːkmˈvent]

under- : undergo [ˌʌndəˈgəʊ], underfill [ˌʌndəˈfɪl]

vice- : viceregal [vaɪsˈrɪɡl]

arch- : archbishop [ɑːtʃˈbɪʃəp]

Included in the strong prefixes are all the negative prefixes:

un- : undo [ʌnˈduː]

in- : indecent [ɪnˈdisɪnt]

im- : immature [ɪməˈtʃʊə]

il- : illegal [ɪlˈiːɡl]

ir- : irrelevant [ɪˈrɛləvnt]

mis- : miscount [mɪsˈkaʊnt]

Thus, prefixes seem to be playing an essential role in stress and in establishing stress patterns, but not all words are governed by a prefix. However, certain nouns of two syllables have stress on the prefix where one would have expected the prefix to be weak:

Comfort, comment, detail, envy, exile, invoice, surface, preface, promise, etc...

It should be noted, however, that when there is a shift in stress, there is a general tendency in American English for the stress to move towards the beginning of the word. However, most polysyllabic words will either have a prefix that plays a role or an ending that exercises some influence on the main stress.

c. Endings

The normal stress pattern for three-syllable words is: ¹ _ _ _ , and never _ _ _ ¹. In American English, one never finds a word with two weak syllables before the main stress. Thus words of three syllables are usually stressed on the first syllable: memory ['meməri], harmony ['hɑ:məri].

But this pattern can change with a prefix, as mentioned above. Indeed, in three-syllable words, one has to look at the stem and/or the prefix to apply a stress pattern:

collect – recollect

destine – predestine

The stress pattern of a word can also be altered by the presence of an ending. Just as there are weak and strong prefixes, so too are there weak and strong endings.

Weak endings:

The ending “-en” has no effect on stress, whether it is produced:

- in a verb form = mistaken [mɪs 'teɪkən]
- in an adjective = beholden [bi 'həʊldən]

- in a noun = maiden [meɪdn̩]

The endings -ar(y), -er(y), -or(y), whether in nouns or in adjectives, have no effect on the stress pattern. Therefore, the stem always retains the main stress.

consul – consular

imitate – imitator

The following endings are all weak:

-age: beverage [ˈbevərɪdʒ]

-ance: constance [ˈkɒnstəns]

-ancy: constancy [ˈkɒnstənsɪ]

-ence: diligence [ˈdɪlɪʒəns]

-ency: currency [ˈkʌrənsɪ]

-esy: courtesy [ˈkɜ:təsi]

-ecy: prophecy [ˈprɒfəsi]

-acy: accuracy [ˈækjʊərəsi]

-ive: restive [ˈrestɪv]

All nouns ending in the following suffixes maintain their original stress pattern, on the stem:

-dom: kingdom [ˈkɪŋdɒm]

-hood: boyhood [ˈbɔɪhʊd]

-ism: criticism [ˈkrɪtɪsɪzəm]

-ment: agreement [ə ˈɡri:mənt]

-man: Englishman [ˈɪŋlɪʃmən]

-ness: politeness [pə 'laɪtnɪs]

The same goes for adjectives ending in:

-able: miserable ['mɪzrəbəl]

-ible: infallible [ɪn 'fælɪbəl]

-ful: beautiful ['bju:tɪfəl]

-ish: yellowish ['jeləʊɪʃ]

-less: fathomless ['fæðmələs]

-ous: calamitous [kə 'lɑ:mɪtəs]

Strong endings:

Strong endings attract the main stress thus moving it from its usual position on the stem to the syllable immediately preceding the latter. In most cases, the presence of a written "i" or other vowel must be noted. For example, if instead of a verb ending in "-ate" like debate, we have "-iate", the stress will systematically precede this ending.

Verb forms:

-ify: electrify

-iate: alleviate

-ish: establish

Adjectival forms and Noun forms:

-ic: scientific

Word-Ending followed or not by a consonant:

-ia: inertia, superficial

-ua: intellectual

- ie: lenient
- iou: mysterious
- uou: ingenuous
- ion: sophistication
- ium: millenium
- ior: superior
- ity: calamity

Attention must be drawn to the juxtaposition of two strong endings. In this case, the main stress will automatically be attracted to the syllable preceding the second ending.

- ic + -ity = electric, electricity
- ior + -ity = superior, superiority
- ic + -ion = electric, electrification

Accented Endings

Some words with the following endings have their main stress on this syllable.

- ee: refugee [refju'dʒi:]
- ee + consonant: canteen [kan'ti:n]
- oo: kangaroo [kæŋgə'ru:]
- oo + consonant: balloon [bə'lʊ:n]
- elle: gazelle [gə'zɛl]
- ess: caress [kə'res]
- ette: cigarette [sɪgə'ret]
- et: cadet [kə'det]
- ade: parade [pə'reɪd]
- ique: antique [an'ti:k]

-esque: grotesque [grə'tesk]
 -ese: Chinese [tʃaɪ'ni:z]
 -esce: acquiesce [akwi'ɛs]
 -escent: phosphorescent [fɒsfə'resnt]
 -escence: acquiescence [akwi'ɛsnɪs]
 -ocracy: bureaucracy [bjʊə'rɒkrəsi]
 -ology: phonology [fə'nɒlədʒi]
 -ography: geography [dʒɪ'ɒgrəfi]
 -itis: bronchitis [brɒn'kɑ:tɪs]
 -osis: hypnosis [hɪp'nəʊsɪs]
 -ine: sardine [saɪ'di:n]

Some borrowed words have retained their “Frenchness” and are still stressed on the last syllable: machine, routine, fatigue, expertise, personnel, canal, naive, moustache, police, etc...

d. Compounds

To make the difference between certain compounds and their corresponding clauses, for instance a “black bird” (referring to the color of the bird) and a “blackbird” (referring to the type of the bird), American English relies on stress. Usually it is the first element of the compound that is higher in pitch, but there are some rules to follow.

- In compounds of two nouns, if the first noun indicates the matter of material from which the second is made, the stress falls on the two nouns: gold-coin, gold-dust, apple tart, etc..

- In compounds in which each element describes a different characteristic of the same person or animal, the two elements will be stressed: boy-scout, hen-sparrow, etc..
- Same with noun phrases involving adjective: a ¹French ¹teacher (He is French and he is a teacher) as opposed to a ¹French teacher (He teaches French).
- In many compounds or juxtaposed nouns in which the relationship between the two elements or words is one of belonging, both will be stressed: ¹town ¹hall, ¹school ¹yard, ¹week¹end, etc...
- The two elements will also be stressed in compounds composed of:
 - . head = ¹head ¹master
 - . end = ¹end ¹house
 - . bottom = ¹bottom ¹drawer
 - . top = ¹top ¹gear
 - . back = ¹back ¹door
 - . front = ¹front ¹door
 - . ground = ¹ground ¹floor
- Compounds containing a participle will also have a stress on each element: ¹old ¹fashioned, ¹good ¹looking, ¹hand ¹made, ¹out ¹going, etc...

With regard to emphatic stress (called “accent d’insistance” in French), American English tends to keep the emphasis on the same syllable as the logical stress. The term “emphasis” is used when there is an especially forceful stress upon a syllable. However, emphasis can affect any element, regardless of the position in the utterance, and it usually arises from the speakers’ needs to produce a contrastive effect, to insist on one element of the sentence. As already noted, in American English, emphasis most often coincides with stress, thus reinforcing it and producing an effect of even greater than normal prominence.

The fact that the stress in American English is so fluctuating is the main source of problem for native speakers of American English, since in the target language, namely French, stress is fixed. Indeed, American learners will tend to stress Standard French words like they stress American English words. They might also stress every word, whereas not all the words are stressed in the French language. Therefore, teaching stress really seems to be of importance in the proper acquisition of French by American students.

1.3 Standard French Stress

Standard French stress is referred to as “tonic stress”, and is the normal French stress when one speaks without emotion, with no sign of affectivity, or without insisting on one or several words.

As opposed to pitch, which is main cue in American English, stress in French is cued by intensity. The syllable that is stressed in a French word is more “dwelt on”, more “intense”, but the pitch of the voice remains the same as for the other syllables. As far as pitch is concerned, its use in French is really negligible, and in a “rhythmic group”, every syllable, except the last one, has the same strength of articulation, as opposed to American English. Pierre Delattre (1938, p.141-145) talks about *duration* as being the element most closely associated with stress in French, stating that on average, group final syllables are nearly twice as long as non-final syllables. Pierre Léon (1962) also describes the stressed vowels (or syllables) as being twice as long as the unstressed ones. He also mentions that if followed by [r], [z], [v] or [ʒ], the stressed vowel is even longer. Indeed, *pire* [pi:ʁ] is longer than *pic* [pik], and *cage* [ka:ʒ] is longer than *cap* [kap]. But these variations in length are not really as important in either language, since vowel length alone is not distinctive. With regards it should be noted that it is fixed and always falls on the last syllable of the “rhythmic group”. Stressed and final syllables are one and the same thing in French, and therefore unstressed

syllables can only precede the stressed syllables since, with no exception, the prominence is always on the last syllable in a group.

French is also opposed to American English in the fact that stress in American English is lexical, meaning that each word keeps its individuality and therefore its stress, no matter what its position is in the sentence. Whereas in Standard French, the word loses its individuality on behalf of the group; consequently, as the rhythmic group grows, the stress keeps on shifting and is always found on the last syllable. Here, one cannot talk about word stress, but group stress, or rhythmic group stress (*see 2. Rhythm*).

Here is an example to illustrate the shifting of stress in French:

Monsieur / Monsieur *Jean* / Monsieur Jean Dupont

As far as the emphatic stress goes in Standard French, there is a tendency to shift the stress towards the beginning of the word as in *Impossibilité*, or *imPOssibilité*. The emphatic stress can also be on every syllable of a word, like in *RE-MAR-QUABLE*, or it can only affect the first consonant of a word: *FFFormidable*, *éPPPouvantable*. Paul Garde (1968) labeled this latter type of emphasis as “accent d’insistance affectif” since the consonantal phoneme which is prolonged cannot be the center of a syllable and is not an integral part of the word. Garde also defines another type of stress, the “accent d’insistance intellectuel.” This one is used to mark opposition between two terms and is realized by a reinforcement of intensity on the first syllable of the stressed element.

For example, “Ce n’est pas un e ouvert, c’est un e fermé.”

The place of stress differs for the two types of emphasis (“procédés d’insistance”). In words beginning with a vowel, the “accent d’insistance intellectuel” falls on the first syllable, whereas the “accent d’insistance affectif” falls on the second. Yet, when a word begins with a consonant, both “procédés d’insistance” occur in the same place, that is on the initial syllable. One must bear in mind that these two “procédés d’insistance” are added to the main stress and do not substitute for it.

1.4 Summary of American English and Standard French Stress differences

American English

Main correlate of stress
= PITCH

Stress is FREE

Stress tends to be on the first
syllable

Emphasis is normally on the
same syllable as the word stress

Standard French

Main correlate of stress
= DURATION

Stress is FIXED

Stress is always on the last
syllable of a word or group of
words

Emphasis may shift stress
towards the beginning of
words.

2. American English Rhythm versus Standard French Rhythm

2.1 Definition of Rhythm

Rhythm is a basic feature of speech that clearly involves the notion of stress since the rhythmic impulse is marked by points of emphasis. Rhythm arises out of the periodic recurrence of some sort of movement, producing an expectation that the regularity of succession will continue. It also lets the listeners know when an utterance is finished. Because American English stress and Standard French stress differ, so will their rhythm pattern as will be explained in the following two sections

2.2 American English Rhythm

The unit upon which the rhythm of spoken American English depends is the foot, which is based upon the more or less rhythmic bursts or quanta of air which come out of the lungs during any short stretch of speech or tempo. Each of these pulses

of initiator power has about the same duration and presumably involves about the same power output. Each foot consists either of a single salient syllable alone (also called “ictus”) or of a salient syllable followed by one or more non-salient or weak syllables (also called “remiss”). Each foot begins by the salient syllable which may or not be followed by weak syllables. Feet are gathered under the term tone group: a tone group consists of one or more feet, a foot consists of one or more syllables, and a syllable consists of one or more phonemes. Thus, the tone group carries the intonation pattern in American English (Pritchard, 1984, p.74-76)

Kenneth Pike (1945, p.34) described American English as characterized by a stress-timed rhythm. The features of this type of rhythm are as follows:

- a sentence or part of a sentence with a single rush of syllables interrupted by a pause is a rhythmic unit.
- The units tend to follow each other in such a way that the lapse of time between the beginning and end of the prominent syllable in each rhythmic unit is somewhat uniform
- The stresses are evenly spaced but they are followed by uneven numbers of syllables. This evenness of stress spacing can only be achieved by crushing together the syllables of longer units in order to get them pronounced within the time limitation.
- The crushing together of syllables is associated with abbreviation and obscuring of vowels, leading to frequent vowel-centralization.

In the next part, we show that the French language works differently as far as rhythm is concerned, and that these differences can be a source of problems for native speakers of American English learning this language.

2.3 Standard French Rhythm

Standard French utterances are not divided into feet but into rhythmic groups. Pierre Léon (1962, p.85) defines these as a group of words which represents an idea and forms a sense unit: *“Un groupe rythmique est un groupe de mots qui représente une idée. Il forme une unité de sens qui coïncide généralement avec une clause grammaticale. On peut dire à cet égard que l’accent français est syntaxique.”* For example, there are three rhythmic groups in:

“/Voulez-vous me donner / le gros dictionnaire / qui est sur la table?/”

One important characteristic of Standard French is that the number of rhythmic groups is affected by the speed of utterance. Normally, a stress occurs on the last non-silent syllable of each rhythmic group and the other syllables within the group are unstressed. However, if the syntagma is uttered at a rapid rate, the number of rhythmic groups and therefore the number of stresses diminishes and the stress is displaced towards the end of the new rhythmic group. The following sentence: /Il est venu / me voir / a Paris./ could be said in three rhythmic groups with three stresses, or in one rhythmic group with only one stress on the last syllable of Paris. A rhythmic group can thus be very long or very short, and problems can arise as to where one group ends and another begins:

- Vite
- Toujours
- Il fait exceptionnellement beau

The tonic stress is always placed in the last vowel pronounced, except when the word ends in a mute e, in which case the tonic stress falls on the vowel before the mute e. Here are some examples:

entre, table quatre

As it has already been mentioned, as the rhythmic group is extended by the addition of one or more words, the tonic stress is displaced towards the end of the group and the words which were formerly stressed lose their stress in favor of the new tonic syllable. Here is an illustration:

Approchez Approchez-vous Approchez-vous de moi

According to Pierre Léon (1962, p. 71-72), in sentences with two rhythmic groups, the higher pitch level is always at the end of the preceding rhythmic groups. And in sentences with three or four rhythmic groups, the highest pitch level is either at the end of the first or the second group. This elasticity in rhythmic structures can be noted as one characteristic of the French language. The French rhythmic groups are never very long and are usually made up of three to seven syllables. Kenneth Pike, who described American English as a stress-timed rhythm language, characterizes Standard French as a syllable-timed rhythm language. And it makes sense since the latter is divided into rhythmic groups as defined by Leon. The features of this type of rhythm are as follows:

- Standard French uses a rhythm more closely related to the syllable than to the stress, and it is the syllables rather than the stresses which tend to come at more or less evenly recurrent intervals.
- Phrases with extra syllables take proportionally more time to utter.
- Syllables or vowels in syllable-timed languages are less likely to be modified or shortened than in stress-timed languages.

When comparing Standard French rhythmic groups with American English feet, it must be noted the latter violates word boundaries, whereas Standard French rhythmic groups never do.

American English: /Yes,/ I'll leave you my ad/dress/ Here the foot breaks up the word "address."

Standard French: /Oui/, je vous laisserai / mon adresse.

The French sentence is divided into semantic groups that do not cross constituent boundaries. From this remark, one can conclude that the division of American English utterances into feet cannot correspond to the division of Standard French sentences into rhythmic groups, and that consequently a native speaker of American English will have difficulties segmenting French sentences correctly. The two languages process information in different ways, and syntax is handled differently in each language.

2.4 Summary of American English and Standard French Rhythm differences

American English

American English is organized on the basis of feet and tone groups.

American English feet can violate word boundaries.

American English unstressed vowels tend to be strongly centralized.

American English stressed syllables are characterized by pitch jump and increased delayed pitch change.

Standard French

Standard French is organized in rhythmic groups which form "semantic units" (*idées*).

Standard French rhythmic groups do not cross constituent boundaries.

Pause placement is not permitted within rhythmic groups.

The articulation is much more explicit and tense.

Standard French unstressed vowels tend to be weakly centralized.

Standard French stressed syllables are characterized by intensity.

Standard French tends to produce successive groups of equal or nearly equal syllable count.

French native speakers tend to produce consistently smaller rhythmic groups.

Standard French has a tendency toward open syllabicity.

3. American English Intonation versus Standard French Intonation

3.1 Definition of Intonation

Intonation can be defined as a general melodic contour which is distributed over sentences or parts of sentences, and which conveys meaningful contrasts within phrases, rather than giving lexical meaning to words. It is usually identified with pitch variation, but in Standard French, intensity is the factor that contributes in a major way to the realization of prominence. As seen in the two preceding sections, American English and Standard French differ as far as stress and rhythm are concerned; consequently both languages will also have a different intonation pattern that native speakers of American English should be aware of when learning French as a second language. Pierre Delattre (1966, p.1-14) considers the function of intonation as a dual one. First, intonation operates as a signal of grammatical structure, allowing speakers to tell one logical mode of expression apart from another, like questions, commands, affirmation, etc... Secondly, it allows speakers to communicate personal attitudes, such as surprise, curiosity, impatience, fear, joy, etc...

The first important factor that will change the intonation pattern from American English to French is the place of stress in the two languages; as seen previously, stress in American English is fluctuating whereas it is fixed and always on the last syllable in Standard French. Therefore, the melodic contour of an identified sentence will be different in these languages, but when uttering a French sentence, a native speaker of American English will tend to reproduce the intonation pattern he knows. The second factor that creates problems is that of rhythm, since American English uses the system of tone groups and feet of the same length, whereas Standard French divides every utterance into rhythmic groups whose length differs and is always determined by the meaning of the sentence. Thus, in American English, meaning is more conveyed by musicality,

whereas it is conveyed by structure in Standard French. Here is a simple example to illustrate this last point:

American English: I did it.

Standard French: Je l'ai fait.

If, in Standard French, the speaker wants to convey the idea that he alone, and no one else, did it, he will have to change the structure and say: "C'est moi qui l'ai fait." On the contrary, in American English, the structure will remain the same but the musicality of the sentence will change to become: "I did it." Consequently, it is pitch in American English that indicates meaning.

Intonation patterns usually fall into four groups: declaratives, interrogatives, parenthetics and exclamatives. To represent these four intonation contours, Pierre Delattre used four pitch levels the top level (#4) representing the upper reach, the bottom (#1) level that of the lower reach, and level #2 being the usual level of the voice on the musical scale. According to Pierre Léon, the unified pitch is characteristic of unstressed syllables; the rising pitch indicates continuity, interrogation or some exclamations; the lowering pitch indicates endings, command or some exclamations. The intonation levels being approximately the same, the two languages will be studied together.

3.2. American English versus Standard French intonation

In this part, different Standard French intonation patterns will be described and contrasted with their American English counterparts.

a. Declarative sentences

A declarative states a fact and usually uses the levels 2/3/1, in Standard French. A declarative sentence in Standard French can be divided into two parts: the first part is like a "question" at the end of which the stress is placed; the second part

could be called the “answer” that completes the first part. Thus, in *Je vais au cinéma* (I go to the movie theatre),

Question: *Je vais* (where?), the highest pitch is on the verb.

Answer: *au cinéma*.

There are therefore two rhythmic groups.

In American English, the sentence “I am going to the movies” is divided into tone groups comprising three feet. Because of this difference in the division of the same utterance, the same sentence will have a different intonation pattern in each language.

In Standard French, the rhythmic groups are articulated around the stress: before the stress, the rhythmic groups go crescendo, and they go decrescendo after. There is usually a pitch fall after the stress. If the sentence is relatively short and does not contain any important word, it is only made up of one rhythmic group. For instance: *Je ne sais pas* (I don’t know).

If the sentence has two rhythmic groups, then the highest pitch level is found at the end of the first rhythmic group: *Je ne sais pas / ce qu’il faut faire* (I don’t know | what to do)

If the sentence has three rhythmic groups or more, then the highest pitch level can either be found at the end of the first rhythmic group or at the end of the second one.

For example: *Je ne sais pas / ce qu’il faut faire / pour lui plaire*.

(I don’t know what to do to please him)

b. Interrogative sentences

In Standard French, interrogative sentences use the levels 4 to 2. The Standard French interrogative sentence does not always go crescendo at the end. Indeed, for it to go crescendo it needs to be short and in the affirmative. Therefore, the intonation of the interrogative sentence changes depending on whether it is

affirmative, with an inversion, with an interrogative word, or with an interrogative expression.

- *Short Affirmative form:* the stress is placed at the end of the sentence.

For example: Tu vas au cinéma? (Are you going to the movie?)

- *Long Affirmative form:* when there are more than one rhythmic group, the stress is placed on the word the speaker wants to emphasize. The first stress should be at the end of the first rhythmic group, and the second stress can either be at the end of the second one or the third one as in the following example:

Tu vas au cinéma / avec tes amis / ce soir?

(Are you going to the movie with your friends tonight?)

- *Inversion:* the stress is placed at the end of the inversion, and the end of the sentence is a little crescendo.

For example: Es-tu chez toi ce soir? (Are you at home tonight?)

- *With an interrogative word, the contour depends on the type of word:*

* **Adverb:** the stress is placed on the adverb and the end of the question is slightly crescendo

Où l'as-tu rencontré la première fois? (Where did you meet him the first time?)

* **Pronoun:** the intonation pattern is the same as with an adverb.

Qui vous a dit ça? (Who told you that?)

* **Adjective:** the adjective depends on the noun it goes with, and the stress is placed on the noun. The stress can also be placed on the interrogative adjective

but in this case there is not much level difference between the noun and the interrogative adjective.

Quels cours suis-tu? (What classes do you have?)

* Interrogative expressions like *Est-ce que?* *Qu'est-ce que?* The stress is placed on the interrogative expression.

Est-ce que tu viens demain?

Qu'est-ce que tu fais cet après-midi? (What are you doing this afternoon?)

c. *Exclamative sentences*

Exclamation is the inverse of interrogation; thus, instead of going crescendo, the pitch will go decrescendo.

Oh, mon Dieu! (Oh, my God!)

As can be noted, intonation patterns differ in the two languages, yet this crucial difference is rarely ever taught.

4. *Is there a shortfall in the teaching of French as a second language?*

It seems that stress, rhythm and intonation are factors that should be taken into account in the teaching of a second language, whether it is Standard French, or other. However, research by Daniel LePetit (1992) indicates that current foreign language learning manuals have no chapters dedicated to these important linguistic features. It would even appear that the latter are completely left out of consideration. Why? Indeed, why do teachers want to have a communicative classroom if students do not even know how to say a sentence correctly and will not be able to get themselves to be understood by native speakers of the target language? The actual practice of teaching the second language appears to be

paradoxical since communication is desperately desired in the classroom, yet at the same time no grammar is taught explicitly, in a way that would help students to improve their production - or reproduction - in the target language. Learning a second language can be an immensely enriching experience, but more emphasis should be put on the acquisition of a new way of expressing oneself. When speaking a foreign language, the learner should feel like he/she is acting as another person. One cannot speak the way he/she speaks in his/her native tongue, since - as seen throughout this last chapter - speaking Standard French involves knowing where to put the stress, how to divide utterances into rhythmic groups, and be able to utter sentences with new intonation patterns. When correct Standard French "intonation" is taught, it is most of the time confined to teaching learners the correct articulation of segments, while the intonation of sentences is neglected. Kenneth Pike (1945) points out that intonation is extremely powerful semantically and that people tend to react more strongly to intonational meaning than to lexical meaning, because they assume that intonation represents the speaker's true intentions. And it must be noted that if this is the case for native speakers of the same language, then it is obvious that there is the possibility for the learner of a second language to be misunderstood or to be unintelligible when speaking that language. Indeed, it is easy to be misunderstood when one intends to question, but ends up stating something else and waits endlessly for an answer that will never come. This may seem a really far-fetched example, but it does really take place in the classroom. Thus, there should be a good balance between oral production and grammar acquisition so that, for instance, when native speakers of American English learn Standard French, they can hear and make the distinction between the Passé Composé tense and the Present tense through stress recognition:

Je mange [ʒəmãʒ] with the stress on [ã]

J'ai mangé [ʒəmãʒe] with the stress on [e]

However, the question might remain unanswered for a long time, because teaching stress, rhythm, and intonation patterns of the target language would probably mean teaching them first in the native tongue. Indeed, for adults, the acquisition of a second language happens through their first language, and the latter is the reference they use because this is what they know.

Conclusion

This study of the pedagogical challenges in the teaching of French phonemics to American students leads us to consider that there are some shortcomings in the teaching of French as a foreign language. The methods of foreign language teaching that are presently used in the United States encourage teachers to create a communicative classroom in which students are immersed in the target language. French, and only French is spoken, every material is taught in the target language, and students are allowed to use only the target language to express themselves and to ask for some information, like the meaning of a word, or a point they did not understand. But no time is spent on working on production of speech sounds, or on recognizing new phonemes. Yet, as we have seen throughout this study, although Standard French and American English share a lot of phonemes, the latter differ in the way they are produced, and many are new to the American students' ear. As we have seen, consonant phonemes do not represent a real difficulty for American students. Their production differs, but it is actually different because of the very different articulation of vowel phonemes in Standard French. Indeed, French vowel speech sounds are more articulated and produced with more tension and opening of the mouth, and the production of consonants depend on the preceding and following vowels. Thus, there is usually a great lack of articulation in the utterance of French sentences by American students, since the latter are not used to applying as much muscular tension as native speakers of French do. The result of this is that they "americanize" French words and sentences and they have a hard time making themselves understood by native speakers. Consequently, more emphasis should be put on the teaching of the production of French speech sounds and their articulation in complete sentences. And the teaching of the melody of French utterances should not be omitted, since we have noted that Standard French and American English also differ as far as stress, rythm, and intonation go.

Nevertheless, there are means that are used to improve students' production of a foreign language, and we should not neglect them. Indeed, many schools have a language lab in which students can come and practice their pronunciation, they usually repeat separate phonemes, words, then complete sentences. The emphasis is also put on stress, rhythm and intonation. Students repeat sentences trying to say them with the correct melody. Yet, probably not enough emphasis is put on the recognition of phonemes. And it is necessary to emphasize that the correct production of a speech sound will happen only if the speech sound is heard and recognized first.

It goes without saying that, in practice, if there were a good balance between the acquisition of grammar rules, vocabulary, and phonemics, students should somehow be able to speak the foreign language properly and be understood. Still, some more factors should be taken into account. Indeed, learning a foreign language means making the effort to accept that there is not only one pronunciation for a word. Let's take the word "train", which has exactly the same spelling in Standard French and in American English, but a completely different pronunciation: Standard French "train" [trɛ̃], American English "train" [treɪn]. American students will first have to understand and to accept the fact that in Standard French, they cannot say [treɪn], or they will not be understood. Here, there are psycholinguistic factors that also need to be taken into account when teaching or acquiring a foreign language. Some students will unconsciously refuse to recognize new phonemes, and so they will keep on pronouncing French words and sentences as if they were speaking American English. They will not make the effort to try to produce new speech sounds, and they will stick to the phonemes they know and are able to produce. This is a common problem, and it might be due to the little consideration given to phonemics in the language classrooms. How can teachers expect their students to have a correct pronunciation in the target language if pronunciation is not mentioned and not corrected in class? Indeed, it must be noted that during the many oral activities performed in class in

which the students are put in a communicative setting in the target language, the pronunciation of students is not corrected, usually because there is no time. So, should the teacher make time? Sure. Is it possible? Not really, since the programs are too loaded. The mistake is to assume that students will work out the pronunciation themselves, and that just by listening to the teachers speak only French in the classroom, they will be able to recognize the new phonemes and reproduce them. But, as explained in this study, this is not possible. To be able to pronounce Standard French properly, students need to figure out the differences between their native tongue and the target language. This thesis re-opens the continuous debate dealing with the methodology of teaching foreign language. Foreign language teaching methods change along with the research done on the topic; yet, linguists should now reconsider teaching phonemics in the foreign language classroom in the form of dialogue.

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Appendix

Manner of Articulation

Diagram of the American English consonants system

Place of Articulation

	Bilabial		Labiodental	Interdental	Alveolar	Palatal	Velar	glottal
Stop	p	b			t	d	k	g
Fricative			f	v	θ	ð	s	z
Affricate							tʃ	dʒ
Nasal							n	ɲ
Lateral Liquid							l	
Lateral Retroflex Glide							r	
		w					j	

Manner of Articulation

Diagram of the Standard French consonants system

Place of Articulation

	Bilabial		Labiodental		Interdental	Alveolar		Palatal	Velar	Uvular
Stop	p	b				t	d		k	g
Fricative			f	v		s	z	ʃ	ʒ	
Affricate										
Nasal		m					n	ɲ	ŋ	
Lateral Liquid							l			
Lateral Rhotic										ʁ
Glide		w						j		

Diagram of American English vowels

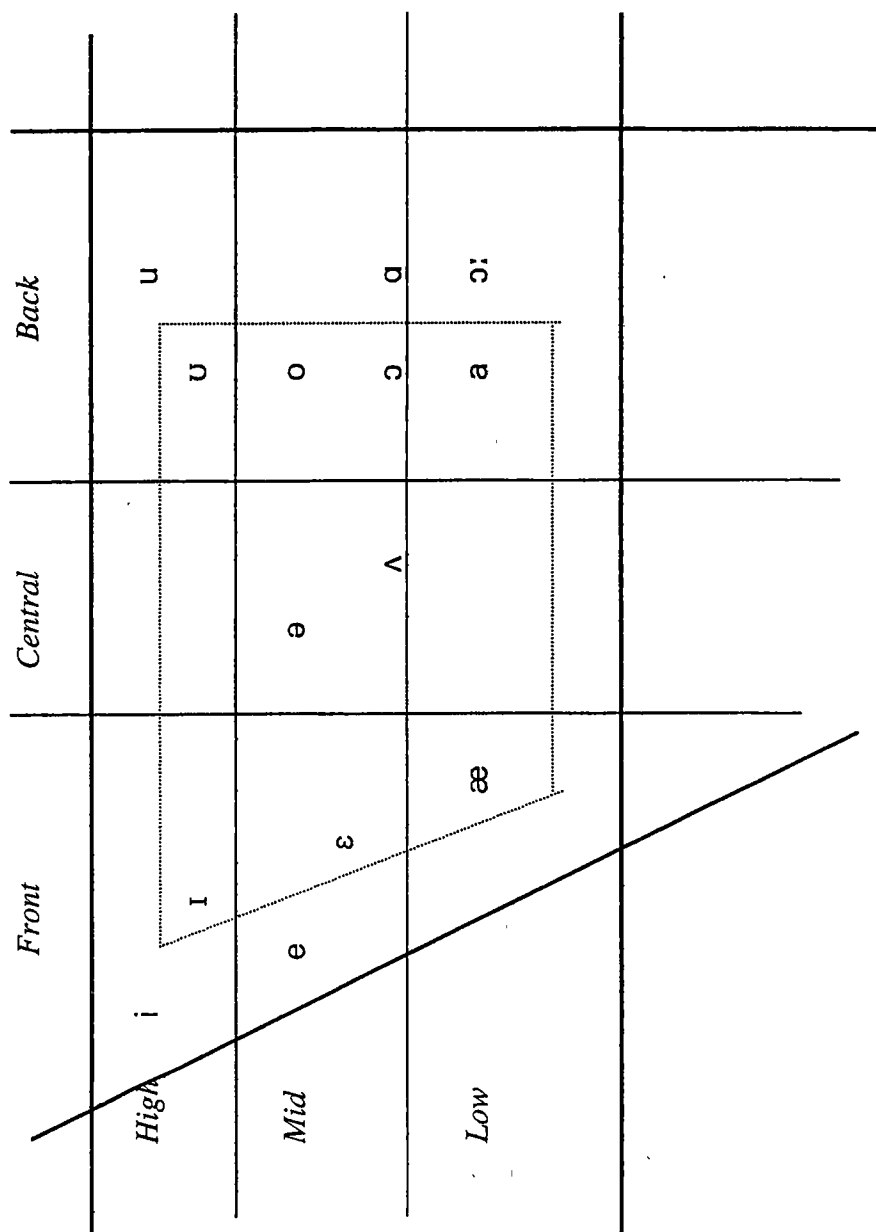
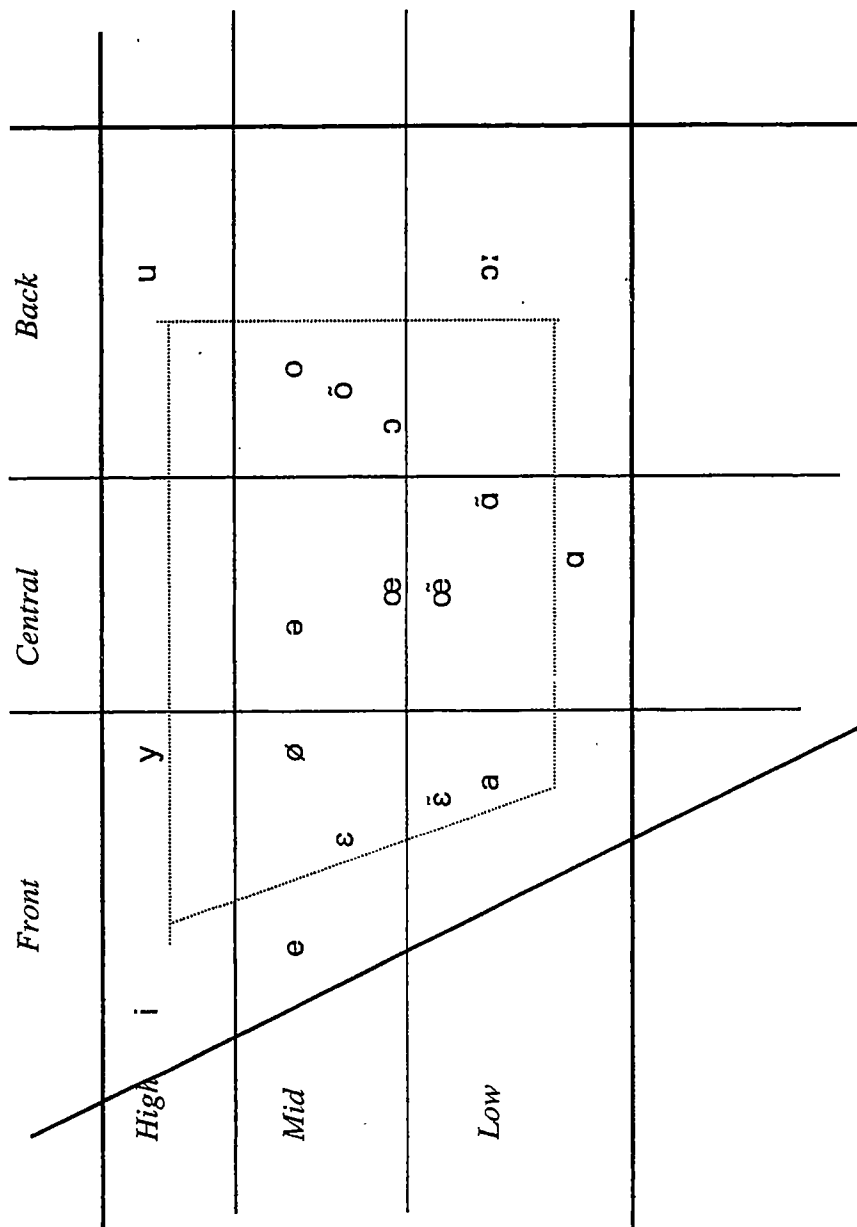


Diagram of Standard French vowels



The System of Vocalic Oppositions of Standard French

	Front unrounded vowels	Front rounded vowels	Back unrounded vowels	Back rounded vowels
<i>Very closed</i>	[i]	→ [y] ←		→ [u] ←
<i>Closed</i>	[e]	→ [ø] ←		→ [o] ←
<i>middle</i>		[ə]		
<i>Open</i>	[ɛ]	→ [œ] ←		→ [ɔ] ←
	↙ [ɛ̃] ↘			
<i>Very open</i>	→ [a]		→ [ɑ] ←	

* The arrows represent the oppositions that can be used to correct the American English pronunciation of learners of French as a second language.

This comparative study of American English and Standard French vowels leads to the last part of the chapter on vowels, that of the problems that French spelling can cause when it comes to reading and pronouncing Standard French.

Vita

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