

(Standard) French Phonology

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1 The Vowels¹

		Front		Central	Back
		unrounded	rounded		
Close	oral	i	y		u
Close-mid		e	ø	ə	o
Open-mid		ɛ (ɛː)	œ		ɔ
	nasal	ɛ̃	(œ̃)		ɔ̃
Open					ɑ̃
	oral				a (a)

Phoneme	IPA	French	English
/i/	/si/	si	if
/e/	/fe/	fée	fairy
/ɛ/	/fɛ/	fait	does
/ɛː/	/fɛːt/	fête	party
/ə/	/sə/	ce	this/that
/œ/	/sœːʁ/	sœur	sister
/ø/	/sø/	ceux	those
/y/	/sy/	su	known
/u/	/su/	sous	under
/o/	/so/	sot	silly
/ɔ/	/sɔːʁ/	sort	fate
/a/	/sa/	sa	his/her
/ɑ/	/pɑːt/	pâte	dough
/ã/	/sã/	sans	without
/õ/	/sõ/	son	his
/œ̃/	/bʁœ̃/	brun	brown
/ɛ̃/	/bʁɛ̃/	brin	sprig

Constraints

1. *[+syl +nas -front -back]

This constraint forbids central nasal vowels. French does have some nasal vowels, two front and two back. English lacks phonemic nasal vowels completely, in all places of articulation.³

2. *[+syl +low +front]

This constraint forbids front low vowels – or to put it another way, all front vowels are high or mid. Unlike French, English has at least one front low vowel (æ). It may have more, depending on how the vowels are classified.

3. *[+syl +back -round]

This constraint says that all back vowels must be rounded. In other words, it forbids unrounded back vowels. While French aligns with this constraint, English violates it at least once (ʊ), and possibly multiple times (ʌ and ɑ), depending on how the vowels are classified.

2 The Consonants²

Consonant phonemes of French							
		Labial	Dental/ Alveolar	Post- alveolar	Palatal	Velar	Uvular
Nasal		m	n		ɲ	(ŋ)	
Plosive	voiceless	p	t			k	
	voiced	b	d			g	
Fricative	voiceless	f	s	ʃ		(x)	
	voiced	v	z	ʒ			ʁ
Approximant	plain		l		j		
	labialised				ɥ	w	

Phoneme	IPA	French	English
/p/	/pu/	pou	louse
/b/	/bu/	boue	mud
/t/	/tu/	tout	all
/d/	/du/	doux	sweet
/k/	/ku/	cou	neck
/g/	/gu/	goût	taste
/f/	/fu/	fou	crazy
/v/	/vu/	vous	you
/s/	/su/	sous	under
/z/	/zo/	zoo	zoo
/ʃ/	/ʃu/	chou	cabbage
/ʒ/	/ʒu/	joue	cheek
/m/	/mu/	mou	soft
/n/	/nu/	nous	we, us
/ɲ/	/aɲo/	agneau	lamb
/ŋ/	/pɑʁkiŋ/	parking	parking lot
/l/	/lu/	loup	wolf
/ʁ/	/ʁu/	roue	wheel

Constraints

1. *[-cont -strid -nas -ant +cor +dist]

This constraint forbids palatal stops. French does not have phonemic palatal stops, and neither does English. There are two known palatal stops, a voiceless (c) and a voiced (j). A few languages that do include phonemic palatal stops are Hungarian, Icelandic, and Irish.⁴

2. *[-ant +cor -cont -strid]

This constraint says that all post-alveolar phonemes must be fricatives; or in other words, it forbids non-fricative post-alveolars. English, unlike French, has two phonemic non-fricative post-alveolars: tʃ and dʒ, which are post-alveolar affricates.⁵

3. *[-cont +strid +del.rel.]

This constraint forbids affricates. We saw above that French lacks the post-alveolar affricates of English, and here we see that in fact, it lacks this type of sound altogether.

3 Distributions

3.1 Allophony: Vowel Length

Vowel length is allophonic in French. The full system of vowel lengthening is exceedingly complex: /o/, /ø/, /ɑ/, and the nasal vowels are lengthened before all consonants, while other vowels are lengthened before /v/, /z/, /ʒ/, /ʁ/ (but *not* if they are in a diphthong or combination) or the cluster /vʁ/.

We have simplified this distribution significantly for the purposes of this presentation. In our simplified distribution, vowel length is still allophonic, but we are only concerned with vowel lengthening before voiced fricatives. This does account for a large portion of the actual distribution; but it does leave out the specific behavior of /o/, /ø/, /ɑ/, and the nasal vowels, as well the odd clustering parameters affecting voiced fricatives.

So, our simplified distribution says that vowels are lengthened before voiced fricatives. Some examples are:

[abit] habite	vs.	[li:vɛ] livre
[fæt] faites	vs.	[fɛ:ʁ] faire
[debyt] débute	vs.	[ʒy:ʒ] juge

For this distribution we want a general constraint:

*_{long} _{syl}

This constraint forbids any long vowels. It assigns one violation for any vowel that is not a short vowel.

We also need a contextual constraint, to override the general constraint when we *do* want long vowels:

*[-long +syl] [-syl -cont -son +strid +vce]

This constraint assigns one violation for every short vowel that comes before a voiced fricative. In order to obtain the result we want, which is vowels being long before voiced fricatives and short elsewhere (again ignoring some parts of the real distribution), we have to rank this contextual constraint higher than the general constraint. Including the faithfulness constraint (assign one violation for each change of vowel length from input to output), our overall ranking will look like this:

Contextual >> General >> Faithfulness
or
*[-long][vce fricative] >> *[+long] >> Faithfulness

This constraint ranking will correctly select for vowel length given our simplified distribution.

3.2 Allophony: Palatalization

Possibly due to the lack of affricates in French (or as an alternative formation to affricates), some speakers of French palatalize the phonemes /k/ and /g/, producing /c/ and /j/ instead. This occurs before the vowels /i/, /e/, /ɛ/, /a/, /ẽ/, and also at the end of a word.

One example is:

[kə] que vs. [ci] qui

For this distribution, our general constraint is:

$$*[-\text{ant} +\text{cor} +\text{dist}]$$

This constraint assigns one violation for each palatal sound.

Our contextual constraint is:

$$*[-\text{ant} -\text{cor} +\text{back}] \left\{ \begin{array}{c} [+syl -\text{back} -\text{round}] \\ \# \end{array} \right\}$$

This constraint assigns one violation for each velar sound that comes before an unrounded, non-back vowel, or before the end of a word. As in the last distribution, we rank our constraints to start at contextual and go down to Faith (assign one violation for each change of palatalization from input to output):

$$*[\text{velar}] \left\{ \begin{array}{c} V \\ \# \end{array} \right\} \gg *[\text{palatal}] \gg \text{Faithfulness}$$

It is important to note that while this constraint ranking will produce the correct result when looking at the phonemes /k/ and /g/ (and their palatalized counterparts), it does not have the degree of specificity necessary to be applied across the board (as it would rule out all palatal consonants, of which French has several). Therefore, further refinement of this constraint-based analysis is necessary.

References

- [1] https://en.wikipedia.org/wiki/French_phonology#Vowels
- [2] https://en.wikipedia.org/wiki/French_phonology#Consonants
- [3] <http://ic-migration.webhost.uits.arizona.edu/icfiles/ic/lsp/site/IPA/SSAE.html>
- [4] https://en.wikipedia.org/wiki/Palatal_stop
- [5] https://en.wikipedia.org/wiki/Palato-alveolar_consonant