

<Aspiration in French>

Department of linguistics

xxx - xxx

Jeong, Sun Woo

1. Introduction

French (And probably many other Indo-European languages in general) is known to have a voice/voiceless distinction for the consonant phonemes. Therefore, during the process of learning French phonology, I was unable to find any systematic approach to the description and analysis of aspiration in French stops. I think such topic had been regarded as unnecessary or trivial because many occidental speakers of French consider aspiration as an additional, and purely optional feature which normally doesn't appear in standard French sounds. This is, in a sense, true. Until very recently, there had been hardly any environment where French consonants, including French stops, aspirated. This is because, as a principle, French consonants are not supposed to aspirate.

However, I was able to observe that the phenomenon of aspiration for the French voiceless stops : p, t, k, was recently taking place. For a foreign speaker like me who speaks a language which has three way phonemic distinction for the stops, including aspiration as a distinctive value(For example, for the Korean bilabial stops, there are three phonemes : 'ㅍ'[p], 'ㅍʰ'[pʰ], 'ㅍ̚'[p̚]), such aspirations were relatively easy to detect. Consequently, I was able to set up a hypothesis that the recent tendency of aspiration in French voiceless stops occurs in specific, fixed environments as allophones of originally unaspirated phonemes. My hypothesis for the environments where such aspiration appears was : 1) When stops occur before uvular fricative[ʁ], 2) When stops occur before high front vowels such as [i], [y]. I also hypothesized that the reason why these stops currently aspirates was because they were affected by English pronunciation through media, etc.

Through this paper, I will try to adjust and revise these previous hypotheses by collecting data from two consultants and analyzing it. I will also try to organize my observation of the environments into a coherent phonological rule. Then I will try to explain why such aspiration came to happen and when this tendency came to be unconsciously practiced by the speakers.

2. Data

To collect relevant data for my research, I employed two consultants. One was a bilingual French speaker who lived in France (Nancy) for 2 years. The other was a native French speaker who lived in France (Paris) for more than 25 years. Both consultants were less than 35 years old, because I had assumed that the phenomenon of aspiration in French stops was a relatively recent tendency which started to occur less than 10~20 years ago.

I gave them a sheet of paper to read, with sentences containing words which have voiceless stops in various environments. My phonetic transcription of their productions suggests that my first hypothesis (The voiceless stops would aspirate before uvular fricative[ɣ]) is correct, and the rule of aspiration proved to be highly productive. Both speakers pronounced the following words with high degree of aspiration in voiceless stops.

<data 1> pronunciation of the stops before uvular fricative[ɣ]

| [tɕ_] | [kɕ_] | [pɕ_] |
|--|--|--|
| rentrez[ɣat ^h ɕe]/[ɣat ^h ɕe] | criquet noir[k ^h ɕike noaɕ]/ [k ^h ɕike noaɕ] | première[p ^h ɕəmiɕ]/ [p ^h ɕəmiɕ] |
| petite rayure[pət ^h ɕi ^h ɕraɪɕ]/ [pət ^h ɕi ^h ɕraɪɕ] | cracher[k ^h ɕaʃe]/[k ^h ɕaʃe] | promenade[p ^h ɕomənad]/ [p ^h ɕomənad] |
| très[t ^h ɕe]/[t ^h ɕe] | crêpe[k ^h ɕep ^h]/[k ^h ɕep ^h] | prouver[p ^h ɕuve]/[p ^h ɕuve] |
| tricher[t ^h ɕiʃe]/[t ^h ɕiʃe] | craquer[k ^h ɕake]/[k ^h ɕake] | éprouver[ep ^h ɕuve]/ [ep ^h ɕuve] |
| traître[t ^h ɕɛt ^h ɕ]/[t ^h ɕɛt ^h ɕ] | écraser[ek ^h ɕaze]/[ek ^h ɕaze] | préserver[p ^h ɕezeɕve]/ [p ^h ɕezeɕve] |

I also observed that my second hypothesis : 'the voiceless stops would aspirate before high front vowels.' was correct. However, the degree of aspiration was notably weaker than the stops before [ɕ]. Therefore, it can be said that the aspiration certainly did occur before high front vowels, although such aspiration was relatively milder. This is why I marked the aspirations of the first set of data with ^h, and the second set of data with ^h. The second data are as follows:

<data 2> pronunciation of the stops before high front vowels [i], [y]

| [ti_] | [ki_] | [pi_] | [ty_] | [ky_] | [py_] |
|---|--|--|---|--|---|
| tirelire [t ^h iɕliɕ]/[t ^h iɕliɕ] | kiosque [k ^h iosk ^h]/ [k ^h iosk ^h] | pieuvre [p ^h ioɕvɕ]/[p ^h ioɕvɕ] | tu [t ^h y]/[t ^h y] | culotte [k ^h ylɔtə]/ [k ^h ylɔtə] | puer [p ^h ye]/ [p ^h ye] |
| tige [t ^h iɕ]/[t ^h iɕ] | | à pied [a p ^h ie]/[a p ^h ie] | | | |

There were also some interesting environments where I didn't expect aspiration to occur, but where the stops p, t, k aspirated.

The environments are as follows:

1) Before [u], the stops always aspirated for both of the consultants. The words which verified this environment were 'couler' [k^hule], 'Toulouse' [t^huluz], and 'poussière' [p^husiɛʁ].

2) Before [e],[ɛ],[ø],[ɔ] there were not many stops that aspirated, except for in the words 'pomme' [p^hɔm] for the second consultant, and 'cœur' [k^hœʁ], 'telle que' [t^hel kə], 'père' [p^hɛʁ] for the first consultant.

<data 3> pronunciation of the stops before vowels [e],[ɛ],[o],[ɔ]

| [pɛ_],[tɛ_],[kɛ_] | [pɛ],[tɛ],[kɛ] | [pø],[tø],[kø] | [pɔ],[tɔ],[kɔ] |
|--|--------------------------------|--------------------------------|---------------------------------|
| personne [pɛʁsən]/[pɛʁsən] | père [p ^h ɛʁ]/[pɛʁ] | peur [pøʁ]/[pøʁ] | pomme [pɔm]/[p ^h ɔm] |
| telle que [t ^h el kə]/[tel kə] | terre [tɛʁ]/[tɛʁ] | auditeur [oditøʁ]/[oditøʁ] | tort |
| quelle [kɛl]/[kɛl] | - | cœur [k ^h øʁ]/[køʁ] | corps |

3) At the end of the word, french stops almost always aspirated for both of the consultants, as in the examples like 'partie' [paʁt^h], 'parc' [paʁk^h], 'crêpe' [kʁɛp^h].

Stops before the rest of the French vowels such as [œ], [o], [a], [ɑ], and stops before the nasal vowels such as [ɑ̃], [ɛ̃], etc, did not aspirate.

I also didn't feel the need to observe the environments where vowels, [ʁ], or other sounds *precede* the voiceless stops. My reasons are as follows:

When a stop act as an onset of a syllable, it is generally influenced by the nucleus vowel, that is to say, the vowel that comes after the stop, and not the vowel or coda from the previous syllable.

Also, French stops cannot act as coda (only glides and nasals are possible) except in the last syllable of a word, because french has a tendency to maintain a canonically open syllable system. Even if the stop became a coda at the end of the word, such environment has already been explained by rule 3) 'At the end of the word, french stops almost always aspirate.'

Therefore, no other environments have to be observed.

Before moving on to the analysis, I also gave an attempt to observe the pronunciation of the French speakers from the past, that is to say, from the 1920s to the 1980s. I listened to the actors in old french films, and carefully observed the pronunciation of Edith Piaf (1915~1963), a renown chanson singer of France. It

became evident that there were no aspiration in voiceless stops of french in the past. For example, Edith Piaf pronounced the words in her chanson *prend*[prã], *pris*[pri], *entre*[ɑ̃tr], *tremolos*[tremolo] without aspiration. I also found out that french 'r' sound was previously pronounced as uvular trill[ʀ] by french speakers and not uvular fricative[ʁ]. Therefore, the standard 'r' sound in french seem to have undergone a change from [ʀ] to [ʁ].

3. analysis

From the data, I was able to observe that :

- 1) The stops before uvular fricative[ʁ] underwent strong aspiration.
- 2) There were mild~regular aspiration for the stops preceding high vowels [i], [y], [u]. Unlike my hypothesis, not only high front vowels but also high back vowel [u] influenced the previous stop sounds to aspirate.
- 3) stops at the end of the word were aspirated mild~regularly.
- 4) There were optional aspiration before mid vowels [e], [ɛ], [ø], [ɔ], and no aspiration before the back vowels and the rest of the vowels such as nasal vowels.
- 5) There had been no aspiration in french voiceless stops in the past(20s~80s), and the 'r' sound have undergone a change from [ʀ] in the past to [ʁ] in the present.

This change is important because I assume that such change has consequently produced the aspiration of french voiceless stops. Unlike the trill sound, frication noise involves the narrowing of the space between the tongue and the palate(roof of the mouth). Therefore, to facilitate the oncoming fricative sound, the stops coming before fricatives generally have a tendency to become affricates.

I assum that the present generation of the french speakers have perceived these affricated stops as aspirated ones, and started to aspirate the voiceless stops p, t, k preceding the fricative [ʁ]. This aspiration became trendy, and the french speakers have come to aspirate the stops preceding not only [ʁ], but also high vowels, which also involve a relatively tightened space between the tongue and the palate. I think this tendency is still continuing, because I observed some optional aspiration before mid-vowels.

Therefore, my previous assumption that the aspiration of french voiceless stops would be due to the influence of English seemed to be incorrect. Rather, aspiration seemed to be adopted as a modified form of frication because the 'r' sound in french have changed.

4. conclusion

By observing the environments of aspiration of french voiceless stops p, t, k, I was able to discover a diachronic rule which facilitated the eventual aspiration of the stops, and the resulting synchronic rules.

The diachronic rule would be the historical change of 'r' sound in french. As I have mentioned before, the standard 'r' sound which was originally a trill (most of the times uvular, but sometimes alveolar), became a fricative, probably because the dominant dialect in Paris came to favor the fricative [ʁ] as time passed by. The phonological rule would be as follows :

$$[r, \text{ʀ}] \rightarrow [\text{ʁ}]$$

Using features, the ultimate phonological rule would be something like :

$$\left[\begin{array}{c} C \\ + \text{trill} \end{array} \right] \rightarrow \left[\begin{array}{c} + \text{continuant} \\ - \text{high} \\ - \text{low} \end{array} \right]$$

This historical change resulted in synchronical rules in the present, and such rules are making french voiceless stops aspirate.

(i) Strong aspiration occurs before [ʁ]. The phonological rule would be :

$$[p, t, k] \rightarrow [p^{\text{h}}, t^{\text{h}}, k^{\text{h}}] / \text{ ___ } [\text{ʁ}]$$

In features, this rule can be expressed as :

$$\left[\begin{array}{c} C \\ - \text{continuant} \\ - \text{nasal} \end{array} \right] \rightarrow \left[\begin{array}{c} + \text{strong} \\ \text{aspiration} \end{array} \right] / \text{ ___ } \left[\begin{array}{c} C \\ + \text{continuant} \\ - \text{high}, - \text{low} \end{array} \right]$$

(ii) Mild~Regular aspiration occurs before high vowels or at the end of the word.

The phonological rule would be :

$$[p, t, k] \rightarrow [p^{\text{h}}, t^{\text{h}}, k^{\text{h}}] / \text{ ___ } [i, y, u] \\ \text{ ___ } \#$$

In features, this rule can be expressed as :

$$\left[\begin{array}{c} C \\ - \text{continuant} \\ - \text{nasal} \end{array} \right] \rightarrow \left[\begin{array}{c} + \text{mild} \\ \text{aspiration} \end{array} \right] / \text{ ___ } \left[\begin{array}{c} V \\ + \text{high} \end{array} \right] \\ / \text{ ___ } \#$$

(iii) Aspirations optionally occur before some mid vowels. The phonological rule would be:

$$[p, t, k] \rightarrow [p^{\text{h}}, t^{\text{h}}, k^{\text{h}}] / \text{ ___ } [e, o, \text{ɛ}, \text{ɔ}] \text{ (optional)}$$

In features, this rule can be expressed as :

$$\left[\begin{array}{c} C \\ - \textit{continuant} \\ - \textit{nasal} \end{array} \right] \rightarrow \left[\begin{array}{c} + \textit{mild} \\ \textit{aspiration} \end{array} \right] / \text{---} \left[\begin{array}{c} V \\ - \textit{high}, - \textit{low} \end{array} \right] \text{ (optional)}$$

We should also remember that aspiration came to take place in French voiceless stops in a changed form of frication.

5. remaining problems

There are some problems left to solve. The first problem is how to segmentalize the allophones. My conclusion was that aspiration produces two kinds of allophones, the one with a strong degree of aspiration and the other with a relatively milder degree of aspiration. Unfortunately, I cannot differentiate these two with the IPA symbols or with the +, - features. Therefore, the previous data and analysis had been marked with invented symbols such as ^{hh}.

The second problem is that I had forgotten to take into consideration the palatal semi-vowel sound [j]. This sound also involves a tightened space between the tongue and the palate, even more tightened than the high vowels, and has a high chance to make the preceding voiceless stops aspirate. I will have to verify this hypothesis some other time.

The third problem is that I did not have enough consultants to be able to clearly generalize the data. I would like to carry my research further when I get a chance to meet other consultants.