# Some notes on the French "e muet"

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## 1. Introduction

In this paper, I would like to present some notes on the French "e muet" which is also called as the French schwa. This is one of the most interesting subjects in the French phonology. It is quite difficult to analyse it because of its complex versions of pronunciation and also of its alternations with [e] or [ɛ].

My study will be focussed only on the "e muet" deletion : the one which is obligatory one and the one which must not be deleted. This is not a fresh or a brend new subject because many phoneticians and phonologues have already studied on this in several ways[※2] . In this study, I would like to review some of them and try to analyse its phenomena with the syllable structure. First of all, I'll describe its nature from the relation between its orthography and its pronunciation to point out its particularity. Secondly, I'll summarize some analyses of the former linguists along with evaluation. And finally, I'll try to make some suggestions on the "e muet" deletion within the syllable structure.

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## 2. The nature of the French "e muet"

In this section, I would like to describe the general particularity of the French "e muet".

### 2.1. Identity

It is called "e muet (Mute e)" because it is often deleted. You can hear, "Je sais [ʒəsɛ] (I know)" but also "[ʒsɛ]". It has also several other names such as "e féminin (feminin e)", "e instable (unstable e)" or more often "French schwa". In French grammar, it is called "feminin e" because morphologically it is used to differenciate a word in a masculin form from a feminin form such as in "aimé-aimée (loved)" which are both pronounced [ɛme]. In modern French, "e muet" serves to pronounce the final consonants usually not pronounced if there is no written final "e muet" as in "pote [pɔt] (buddy)" vs. "pot [po] (pot)".

There are also several dialectical, individual and contextual variations in pronunciation of "e muet". You can hear, "seul [sœl] (alone)" as well as "ceux [sø] (those)". For those "e muet" which are generally pronounced with schwa, [ə], as in "Je [ʒə] (I)" and "le [lə] (the)", you'll have also "Je sais [ʒœsɛ] (I know)" and "Prends-le [prɑ̃lœ] (Take it)" with an open vowel, [œ], in Paris, but in the Northen part of France, you'll hear the same sentences with a closed vowel, [ø].

### 2.2. Evidence as a phoneme

"e muet" is the schwa realizations as in "Je [ʒə]" and "le [lə]". In French phonology, it is argued whether we consider the "e muet" as an actual phoneme or not, because there is no word minimal pair with the "e muet".

But, if we can admit that the "e muet" has variants, a "zero phoneme"(which has no sound) which can be opposed to the other vowels, the "e muet" is also a phoneme. For example, as in "porte [pɔrt] (to take : pres. tense, 3rd pers., sing.)" vs. "porté [pɔrte] (pp.)" or "porta [pɔrta] (past tense)" and also lexically vs. "Porto [pɔrto] (Porto wine)". We have also lexical opposition as "le haut [ləo] (the upside)" vs. "l'eau [lo] (the water)" or morphological opposition as "le [lə] (the : singular)" vs. "les [le] (the : plural)". In these cases, it is obvious that "e muet" plays a phonological role.

### 2.3. General distribution

The initial "e muet" in the rhythm unit : "e" may or may not be deleted.

Je sais            [ʒəsɛ] or   [ʒsɛ]        (I know)

The final "e muet" in the rhythm unit : generally it is not pronounced.

| Je mange. | [ʒəmɑ̃ʒ] | (I eat) |
|---|---|---|

The internal "e muet" in the rhythm unit : there are two types.
- it is deleted after one consonant.

| la petite | [laptit] | (the little one) |
|---|---|---|
| trois semaines | [trwɑsmɛn] | (three weeks) |

- but it is pronounced after a consonant cluster.

| une petite | [ynpətit] | (a little one) |
|---|---|---|
| trente semaines | [trɑ̃tsəmɛn] | (thirty weeks) |

## 2.4. Contextual variations

It is usually pronounced after one obstruent consonant at the beginning of the rhythm unit:

| Que voulez-vous ? | [kəvulevu] | (What do you want ?) |
|---|---|---|

It is pronounced
- when it appears inside of the words if deletion can result in semantic confusion

| | dehors | [dəɔr] | (outside) |
|---|---|---|---|
| cf. | dors | [dɔr] | (to sleep : 3rd pers., sing.) |

- and within monosyllabic words with the article "le" :

| le onze | [ləɔ̃z] | (the eleven) |
|---|---|---|

The etymological influence has made to conserve the "e muet" before the words beginning with the historical "H aspiré (aspirated H)". This "H aspiré" has lost its aspiration in modern French but can be identify only with the "e muet" realization[693] .

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[693] In this case, French phoneticians observe that these words can be pronounced without a glottal sound between two vowels, but in fact, in Modern French pronunciation we sometimes hear a glottal sound between two vowels. The glottal sound here plays two roles : (a)it takes place of the missing consonant and makes the sequence as C + V ; (b) it enforces the role of the "e muet".

|               |           |                   |
|---------------|-----------|-------------------|
| le homard     | [ləɔmar]  | (the lobster)     |
| le haricot    | [ləariko] | (the haricot bean)|
| cf.  l'homme  | [lɔm]     | (the man)         |

## 3. Recent phonological theories

In this section, I would like to review three analyses proposed by Dell (1973 revised in 1985), Rialland (1986) and Spa (1987). Firstly, Dell has studied it within generative phonology framework and described it phenomena with segmental rules ; secondly, Rialland, within a syllable theory, suggests two different schwas in French : schwa as a full nucleus and schwa as a non-nucleus ; and finally, within a non-linear phonology, Spa argues for the necessity of two types of syllable structure : the one with schwa and the other for the other vowels.

### 3.1. Dell's analysis (1973 revised in 1985)

Within generative phonology Dell tried to describe the "e muet" deletion[94] and has suggested several rules which may be applied to different cases. The application of these rules are divided into two types : obligatory application rules and optional application rules.

The different cases are : (a) after a vowel and before a pause ; (b) final position in the polysyllabic word ; (c) internal schwas ; (d) epenthetic schwas ; (e) schwas in the contiguous syllables. According to Dell, the rules must be applied cyclically in order to get the right form in the surface structure. Let's consider some of his rules and make some remarks on his analyses.

### 3.1.1. Dell's rules for the schwa deletion

(1)   V-E (OBL)[95] :        ə    ->   ø   /    V_

"Schwa after a vowel must be deleted."

|                |             |                 |
|----------------|-------------|-----------------|
| remerciement   | [rəmɛrsimɑ̃] | (thanks)        |
| débarquement   | [debarkəmɑ̃] | (getting off)   |
| vous joueriez  | [vuʒurje]   | (you may play)  |
| vous parleriez | [vuparlərje]| (you may talk)  |

(2)   PAUS (OBL)[96] :       ə    ->   ø   /    VC$_0$_     §

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[94] Dell (1985 : 219-265) : in his terminology, "the schwa deletion" rules.
[95] V = vowel ; E = schwa ; OBL = obligatory rule
[96] PAUSE = pause ; § = pause ; C$_0$ = consonant

"Schwa before a pausemust be deleted if it is not the only vowel of the word."

|       | Elle est trop petite. | [ɛletroptit]      | (she is too small)     |
|-------|-----------------------|-------------------|------------------------|
|       | Elle est perverse.    | [ɛlepɛrvɛrs]      | (she is perverse)      |
| cf.   | Bats-le.              | [ba-lə]           | (beat it or beat him)  |
|       | Sur ce.               | [syrsə]           | (and than)             |

(3)  E-FIN$_1$(OBL)[*7] :       ə    ->    ø    /    VC_    #

"Schwa at the final position in the polysyllabic word, is deleted when it follows only one non-syllabic segment."

une vieille courtisane       [ynviejkurtizan]       (an old lady)

"petite roue (small tire)" and "petit trou (small whole)" are both [pətitru][*8] .

(4)  E-FIN$_2$ (FAC)[*9] :       ə    ->    ø    /    VCC_    #

"Schwa is optionaly deleted according to the speed of speech."

|                    |                        |                   |
|--------------------|------------------------|-------------------|
| Il boxe souvent.   | [ilbɔks(ə)suvã]        | (he fights often) |
| le texte du discours | [lətɛkst(ə)dydiskur] | (the speech text) |

This schwa deletion also depends on the number of syllables in the following words[*10] .

(5)  INI-EX (OBL)[*11] :    ə    ->    [- INI rule] /    $\left\{ \begin{array}{c} -son \\ -cont \end{array} \right\}$   _   #$_0$ $\left\{ \begin{array}{c} -son \\ -cont \end{array} \right\}$

(6)  INI (FAC) :         ə    ->    ø    /    §C_

"Schwa can be deleted optionally when it is preceded by only one consonant and if it is followed and preceded by a non-continu obstruent consonant.[*12] "

The rule (5) and rule (6) are ordered.

venez ici                    [v(ə)nezisi]           (come here)

| ce̲ travail est dur | [s(ə)travajedyr] | (this work is difficult) |
| de̲vant chez moi | [d(ə)vɑ̃ʃemwa] | (in front of my house) |
| de̲bout sur une table | [dəbusyryntabl] | (stand up on a table) |
| te̲ casse pas la tête | [təkaspalatɛt] | (don't worry) |

(7)   VCE$_2$ (OBL) :      ə   ->   ø   /      VC_

"Schwa must be deleted when it follows the only consonant which is not in the initial position."

| feuille̲ter | [fœjte] | (to turn a page) |
| ache̲teur | [aʃtœr] | (buyer) |
| souve̲nir | [suvnir] | (memory) |

(8)   VCE$_1$ (FAC) :      ə   ->   ø   /      V#$_1$C_

| costume de̲ sport | [kɔstymdəspɔr] | (sports wear) |
| terrain de̲ sport | [tɛrɛ̃d(ə)spɔr] | (sports ground) |

### 3.1.2. Remarks on Dell's analysis

Dell gives us a good description on the French schwa deletion. The problem comes from the description of SPE framework. In his analysis, rules are too many and there are arbitrary distinction between obligatory and optional rules. Besides, the relation of segmental orders and differents boundaries are involved : rhythm boundary, word boundary and morphophonological boundary.

In conclusion, there are too many rules and too much description. Also in order to explain the exceptions we need several other rules. And therefore the rule ordering becomes too much complicated.

Let's now turn to an another theory which seems more interesting.
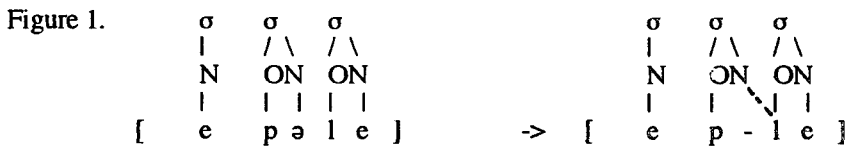
### -3.2. Rialland's analysis (1986)

Rialland, within a non-linear phonology, proposes two types of schwas : schwa nucleus (nuclear schwa) and schwa non-nucleus (non-nuclear schwa). Nuclear schwa is part of lexical item and subject to the deletion and there will be a compensatory lenghthening by a consonant. Non-nuclear schwa is an epenthetic vowel and its appearance needs a insertion rule.

### 3.2.1. Schwa nucleus

Schwa nucleus one is a part of lexical item which means a full vowel. The schwa nucleus is recognized by being able to change into [ɛ] or by the behavior of certain vowels which are in the preceding syllable where we can find [e] or [ə] even if the schwa nucleus is deleted and that means the nucleus position is saved and then the precedent syllable remains open. It can explain the cases of [e] or [ə] because they never appear in closed syllables. With these two different schwas, Rialland argues that there are consonants which can be lengthened to occupy the position of the deleted schwa[13]. According to her analysis, after the schwa deletion, the remainning onset consonant does not syllabify with the preceding syllable nor with the following syllable. She gives examples below : in column 1, no schwa is deleted and in the preceding syllable, we can find [e] and [ə][14] which means that they are open syllables.

(9) Rialland's examples :

|  | column 1 | column 2[15] |  |
|---|---|---|---|
| épe̲ler | [epəle] | [eple] | (to spell) |
| deve̲nir | [dəvənir] | [dəvnir] | (to become) |

Figure 1.

```
        σ   σ    σ                         σ   σ    σ
        |  / \  / \                        |  / \  / \
        N  O N  O N                        N  O N  O N
        |  | |  | |                        |  |  ʼʼ  |
    [   e  p ə  l e ]        ->        [   e  p -  l e ]
```

In her analysis, the schwa nuclei can be deleted and leave empty positions, which are filled with so-called syllabic consonants, a compensatory lenghtening by consonants.

### 3.2.2. Schwa non-nucleus

The other schwa which is non-nucleus, always follows the central vowel of lexical item. This schwa can appear according to contexts. It is a flowting segment, therefore it does not need a deletion rule but does need an insertion rule instead. This schwa non-nucleus appears like an epenthetic vowel and if it is not realized as [ə], it does not leave phonetical trace (which also means that there is no skeletal point). Also its presence or absence does not modify the vowel in the precedent syllable. It serves as a mark of certain boundaries.

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[13] Rialland (1986) calls them "syllabic consonants".

[14] [e] and [ə] never appear in the closed syllable in French : in the closed syllable position, there is a neutralization of /ə/, /e/ and /ɛ/ into [ɛ] by the "closed syllable adjustment rule".

[15] Column 1 and 2 both exist but column 2 is more frequent pronunciations.

(10) Examples[f)16] given by Rialland.

| | column 1 | column 2 | |
|---|---|---|---|
| légèreté | [leʒɛrte] | [leʒɛrəte] | (lightness) |
| appellerez | [apɛlre] | [apɛləre] | (will call) |
| pieusement | [pjøzmɑ̃] | [pjøzəmɑ̃] | (faithfully) |
| achèvement | [aʃɛvmɑ̃] | [aʃɛvəmɑ̃] | (closing) |
| chèvre | [ʃɛvr] | [ʃɛvrə] | (goat) |
| dentelle | [dɑ̃tɛl] | [dɑ̃tɛlə] | (lace) |
| rêve | [rɛv] | [rɛvə] | (dream) |

For example, "achèvement" and "dentelle" would be syllabified as in Figure 2.



Fig. 2. (a) ...

(b) ...
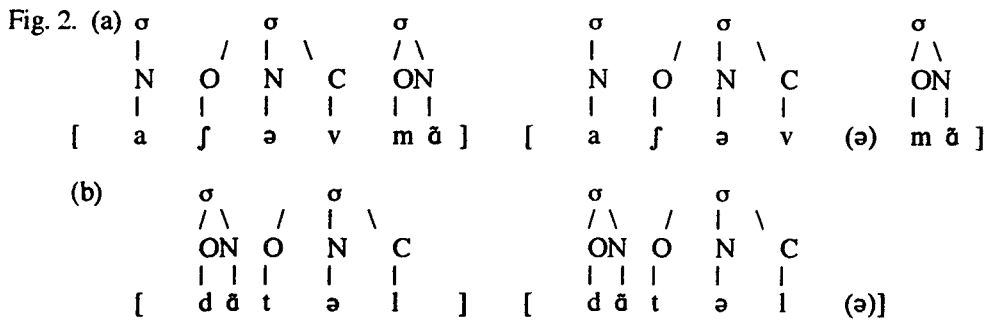
(ə) means here that schwa can be pronounced at this position.

### 3.2.3. Remarks on Rialland's analysis

Rialland's analysis is very interesting that she brought a non-linear phonological approach in French phonology, especially in the schwa analysis, but is not acceptable for some reasons[f)17]. As all the other vowels in French, a schwa can occupy different positions in a word. Therefore, there is no reason to isolate some of them under the name of "schwa nucleus and schwa non-nucleus". Also, we can find the cases where Rialland's two types of schwa undergo the same processes. For example, in "elision and syncope" phenomena in French :

| | schwa nucleus | | schwa non-nucleus | |
|---|---|---|---|---|
| Elision | /il#tə#a#vy/ -> [iltavy] ; | | /gardə#a#vu/ -> [gardavu] | |
| | il t'a vu (He saw you) | | garde-à-vous (attention) | |

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[f)16] In these examples, those which are in italic [ɛ] come from in fact /ə/ (cf. appelé [apəle] ; achevé [aʃəve] ; chevrier [ʃəvrje] ; dentelière [dɑ̃təljɛr]).

[f)17] Spa (1987 : 217-219).

Syncope    /fœjtə + aʒ/     ->     [fœjtaʒ] ;   /dɔnə + r + a/    ->    [dɔnra]
                feuilletage (turning pages)        donnera (to give : futur tense, 3rd., sing.)

In the expressions, [iltavy] and [fœjtaʒ], the absence of schwa comes from the deletion of the schwa nucleus ; and in [gardavu] and [dɔnra], we are in presence of non realization of schwa non-nucleus. Furthermore, there are cases where schwa nucleus does not undergo deletion and schwa non-nucleus does appear in the same phonological context as follow :

|  |  |
|---|---|
| schwa nucleus | schwa non-nucleus |
| [suflət + e] | [suflə + r + a] |
| souffleter (to insult) | soufflera (to blow : 3rd., sing.) |

And also the underlying structure of certain syllables with schwa nucleus contain the impossible final consonants in underlying structure in French :

/-z, -v, -ʒ, -ɲ, -n, -ʃ, -vr/[18] .

Besides the sound change of /ə/ and /e/ into [ɛ] are not only the problem of syllable structure as a closed syllable. We should consider them within morphophonemic level because they are morphophonological problems. And also there are contexts where [ɛ] (not resulting from /ə/) appears morphologically.

| | | |
|---|---|---|
| aime | [ɛm(ə)] | (to love) |
| allaite | [alɛt(ə)] | (to nurse with) |

The last phonological theory which I would like to examine is proposed by Spa in 1987.

### 3.3. Spa's analysis (1987)

This is a non-linear phonological approach in French based on syllable theory. Spa gives hypothesis that in French there are two different syllable structures according to syllables containing whether or not a schwa : the syllable with a full vowel and the syllable with a schwa. He proposes some phonotatics and special filters for consonant clusters.

### 3.3.1. A full vowel syllable

A French syllable with a full vowel (other than a schwa) can be caracterized with the following syntagmatic rules.
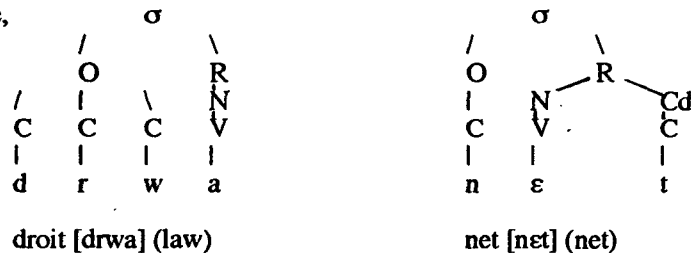
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[18] According to Spa (1987 : 219), there are only /-t/ and /-l/ which can follow a schwa nucleus.

(11) Spa's syntagmatic rules for a full vowel syllable :
(a) Rules :

(i)　σ　-> 　(O)　R　　　　　　　　　　σ = syllable

A syllable is formed with an optional onset　　O = onset
and an obligatory rhyme　　　　　　　　　　R = rhyme

(ii)　O　->　$C_1^3$

The onset can have upto three consonants.

(iii)　R　->　N　(Cd)　　　　　　　　　　N = nucleus

The rhyme is formed with an obligatory nucleus　　Cd = coda
and an optional coda

(iv)　N　->　V

The nucleus is composed with only one vowel

(v)　Cd　->　C

The coda is composed with only one consonant.

Figure 3. For example,

```
            σ                        σ
          /   \                    /   \
         O     R                  O    _R_
        /|\    N                  |   N    \
       C C C   V                  C   V     Cd
       | | |   |                  |   |      C
       d r w   a                  n   ε      |
                                            t
      droit [drwa] (law)         net [nεt] (net)
```

With this syllable structure, Spa notes as follow :

(b) These rules are available only in underlying structure.

(c) The order of consonants in the onset may follow universal hierarchy force[주19] and a filter may prohibit certain combinations of consonant clusters. There are some phonotactics for the onset formation :

(i) A hierarchy level for French consonants :

| Obstruents | force 0 | Nasals | force 2 |
| Liquides | force 1 | Glides | force 3 |

(ii) Filter (1)　　　　*( ... $X_a X_b$ ... )$_0$　　(a ≥ b, a + b = 2, 3)

"Consecutive consonants which have a and b force level cannot be onset cluster

- if a is bigger or equal to b
- if the sum of two values represent 2 or 3.

For example, in French, *jr, *wj, *rm are prohibited on the onset position.

(d) The onset (ii) in (a) is not a complete version. The sequences with /s/ are excluded. For example, the sequences /ps/, /sp/, /spl/, /st/, /str/, /sf/ have an extrametrical element.

Figure 4.

splendeur [splãdœr] (splender)
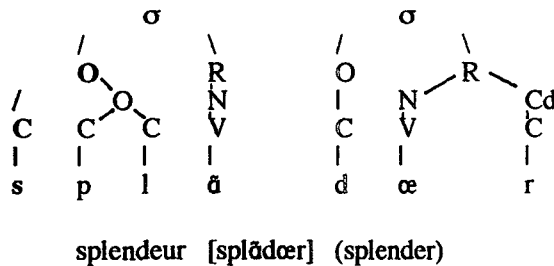
(e) Phonotactic constraints for the onset clusters :

(i)    * [ ] [ ] j                                          :    *stj, *trj, *plj

(ii)   $*\begin{bmatrix} + \text{cor} \\ <- \text{cont}> \end{bmatrix}\begin{bmatrix} + \text{son} \\ <+ \text{lat}> \end{bmatrix}$         :    *tl, *dl, *ʃl, *zr, *ʒr

(iii)  $*_{EM^{[20]}} \; [s] \; [ ] \begin{bmatrix} + \text{cons} \\ + \text{voc} \end{bmatrix}$         :    *stw, *spɥ

(iv)   $*_{EM} \; [s] \; k$                                  :    *sk, *skr

(v)    $*_{EM} \; [ ] \begin{bmatrix} - \text{son} \\ + \text{voice} \end{bmatrix}$         :    *sb, *sv, *pz

(vi)   $*_{EM} \; [s] \begin{bmatrix} - \text{son} \\ + \text{cont} \end{bmatrix} [ ]$         :    *sfr, *sfl

(vii)  $*_{EM} \; [s] \begin{bmatrix} - \text{son} \\ + \text{cont} \\ + \text{cor} \end{bmatrix}$         :    *ss, *sʃ

(viii) $*_{EM} \; [p] \begin{cases} [- \text{cont}] & (a) \\ \begin{bmatrix} \alpha \text{ ant} \\ - \alpha \text{ cor} \end{bmatrix} & (b) \end{cases}$         :    *pd, *pn, *pm

                                                           :    *pf, *pʃ.

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[20] *EM* = extrametric

(f) French coda can be formed with only one consonant : Spa argues for those codas in which we can find more than one consonant (upto three consonants) are just superficial clusters resulting from the schwa deletion. Such as in "cercle [sɛrkl] (cercle)", "vacarme [vakarm] (disturbance)", "astre [astr] (star)", etc. And also if we consider the intervocalic consonant clusters where there is no epenthetic schwa realization, it is clear that the coda has only one consonant. For example, "absent [apsɑ̃] (absent)", "amnistie [amnisti] (amnesty)", "acteur [aktœr] (actor)", "abdiquer [abdike] (hand over)", etc.

(g) As for the onset, there are some phonotatics for the coda :

(i)　*　$\begin{bmatrix} -\text{son} \\ +\text{cont} \\ +\text{voice} \end{bmatrix}$　　　　　　:　*-z, *-ʒ, *-v

(ii)　*　$\begin{bmatrix} +\text{cons} \\ +\text{nas} \\ +\text{cor} \end{bmatrix}$　　　　　　:　*-n, *-ɲ

(iii)　*　$\begin{bmatrix} +\text{son} \\ +\text{voc} \\ +\text{cons} \\ +\text{round} \end{bmatrix}$　　　:　*-w, *-y

(iv)　*-ʃ

(h) Spa proposes a special condition related with the coda and the following onset :
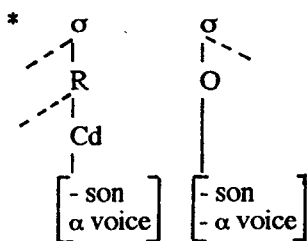


A [-son] consonant in syllable final position must have the same feature specification [voice] as the first consonant ([-son]) of the following syllable onset.

### 3.3.2. Syllable with a schwa

The main cause of Spa to distinguish two schwa types is that in the underlying structure, the relation between the onset and the nucleus is different according to the nuclei type. It is the same for the relation between the nucleus qnd the coda.

Therefore he proposes different syntagmatic rules for syllable with a schwa:

(12) Spa's syntagmatic rules for a schwa syllable :

(a) Rules :

(ii')  O    ->    $C_1^2$

The onset can have maximum two consonants.

(iii')  R    ->    N

The rhyme is formed with a nucleus and there is no coda.

With this definition, Spa notes remarks as follow :

(b) A different filter for the onset cluster :

Filter (2)    $* ( \dots X_a X_b \dots )_0$          $(a \geq b ; a + b = 2, 3 ; a + b \geq 4)$

"the schwa cannot be preceded by a cluster :
- if it is formed with an obstruent, liquid or nasal and then a glide.
For example, *pjə, *vwə, *tɥə, *njə, *rjə, *mwə, etc. are not possible.

(c) Besides the schwa syllable does not have extrametrical consonants : the sequences, /ps, sp, spl, st, str, sf/ can never be found in the same syllable with [ə].

(d) Onset phonotatics : only one which will be applied to schwa syllable,

$$* \quad \begin{bmatrix} + \text{cor} \\ < - \text{cont}> \end{bmatrix} \begin{bmatrix} + \text{son} \\ < + \text{lat}> \end{bmatrix}$$

According to Spa, because of the difference between two syllable structures, we have realization or non realization of schwas in the surface structure.

### 3.3.3. Remarks on Spa's analysis

In my opinion, the idea of proposing solutions with syllable structures was a good start. But to propose two types of underlying syllable structure whether it contains or not a schwa seems too easy to say. It is too easy say that there is no schwa deletion or deletion but its underlying syllable structure is different. For example, in the sentence like "Qu'est-ce que c'est que ça ? [kɛskəsɛksa] (What the hell is this ?)", the two "que [kə] (that)" would have different syllable structures ?

He stipulates that schwa may not be a full vowel. Then what is the definition of a full vowel ? If a full vowel means a phoneme, we already know that the schwa is somewhat a full

vowel[주21] : it has opposition with other phonemes. And also its alternation with other vowels may be an evidence for its fondamental nature as a vowel.

## 4. Theory of charm and government (TCG)[주22]

All the analyses in the preceding section lead me to say that schwa deletion is indeed crucially related to the syllable structure as noticed Spa but differently from his analyses. In this section, now I would like to give an interpretation of "e muet" deletion and non-deletion within TCG framework, one of the non-linear approach in syllable phonology.

### 4.1. Schwa deletion revisited

One of the phonological problem comes from in fact, that we examine only the isolated data which is far from the speech reality. In my study, I propose to examine the data within "phonology and phonetics" interface level. Let's examine the examples below. In these sentences, the underlined "e" undergo schwa deletion but the "e" in bold do not :

(13) Data :

    (a)    La petite fille a pris le panier de fraises dans le jardin.
          [laptitfij ⤴ aprilpanjedfrɛz ⤴ dɑ̃lʒardɛ̃ ⤵]
          (The little girl has taken the strawberry basket in the garden.)

    (b)    Il faut que j'aille chercher le chien de mon amie de Paris.
          [ilfokʒajʃɛrʃɛlʃiɛ̃ ⤴ dmɔnami ⤴ dpari ⤵]
          (I have to go to find the dog of my friend from Paris.)

    (c)    Qu'est-ce que vous dites de cette petite remarque ?
          [kɛskə ⤴ vudit ⤴ dəsɛtpətitrəmark ⤵]
          (What would you say on this little notice ?)

    (d)    Prenez-le mercredi ou vendredi à partir de dix heures.
          [prəneləmɛrkrədi ⤴ uvɑ̃drədi ⤴ apartirdədizœr ⤵]
          (Take it on wednesday or on friday from ten o'clock.)

In these sentences, we can observe the following points.

(14) Some remarks on the given data :

---

[주21] Cf. section 2 in this paper.
[주22] KLV (1985) and Lee (1993).

(a) Surface consonant clusters :

- [CC] type :    (i) obstruent + liquide :     pr, tr, dr

              (ii) liquide + obstruent :    lp, lʒ, rd, lf, rʃ, lʃ, rk, rt

              (iii) obstruent + nasal :    dm

              (iv) obstruent + obstruent :   pt, tf, df, zd, kʒ, dp, sk, td, tp

- [CCC] type :    (i) liquid + obstruent + liquid :    rkr

               (ii) obstruent + obst. + liquid :    dfr

(b) "e muet" deletion : - when :

    (i)    [ ... VC_ ... ]    : ex. "La petite fille   ..."

    (ii)   [ ... V_ ... ]    : ex. " ... amie ..."

    (iii)  [ ... _] #    : ex. " ... remarque." ; " ... heures."

- result : deletion produces superficial consonant clusters.

(c) "e muet" non deletion : - when :

    (i)    [ ... VCC_ ... ]   : ex. "Qu'est-ce que ... ?"

    (ii)   # [ CC_ ... ]    : ex. "Prenez ... ."

- result : deletion results in impermissible consonant cluster, *[CCC]

## 4.2. Schwa and the relevant French syllable structure

As I have noticed, "e muet" deletion and non deletion must be crucially related to the syllable structure and to the resyllabification in which consonant clusters may play an important role as well as the government relation between adjacent positions.

(15) The internal representation of schwa :

    We can represent "e muet"

    (a) first with traditional phonetic features :    [ə]     = $\begin{bmatrix} - \text{ROUND} \\ + \text{BACK} \\ - \text{HIGH} \\ - \text{ATR} \\ - \text{low} \end{bmatrix}$

    (b) with elements of TCG :

            ROUND  ---------------   v⁰  -------------------
                               |

            BACK   ---------------   v⁰  -------------------
                               |

            HIGH   ---------------   A⁺  -------------------
                               |

                                 x
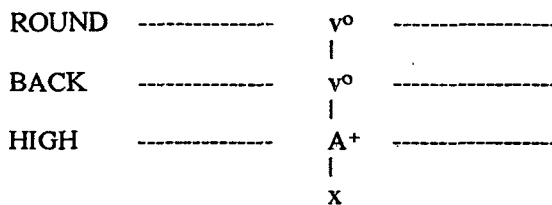
There are three lines in vowel formation each representing its hot feature, ROUND ($U^o$), BACK ($I^o$) and HIGH ($A^+$). In French, the lines ROUND and BACK are seperated[주23]. If the hot feature is not involved, the cold vowel ($v^o$) takes place.

The relevant French syllable structure may have the branching Onset and Rhyme with a non-branching Nucleus. There are three levels in the internal syllable structure : Constituent level, skeletal points and segmental level. The segments are represented by elements.

(16) French syllable structure within TCG :

```
        (a)              (b)              (c)              (d)

         O     ;          O       ;        R      ;         R
         |              /     \            N                N  \
         x             x       x           x                x     x
         |             |       |           |                |     |
         C            C₁      C₂           V                V     C
```
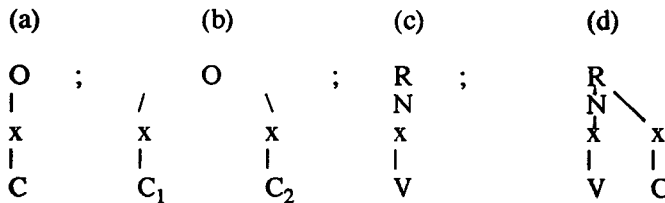
In order to understand the governing relation between constituents and segments, it is neccessary first to note on the phonological government from KLV(1985).

(17)  Phonological Government :
Governing relations must have the following properties :
(a) Constituent government : the head is initial and government is strictly local.
    The governing domains are : (where **x** in bold indicates the head)

```
   (i)        O            (ii)        N          (iii)      R
           /     \                  /     \                  N  \
          x  ->  X                 x  ->  X                 x -> x
```
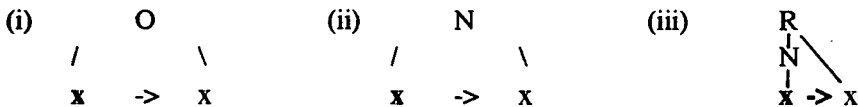
Under constituent government every branching constituent is a governing domain, and in order to be a governing domain the two conditions on directionality and locality must be respected.

(b) Interconstituent government : the head is final and government is strictly local.
    The interconstituent governing domains are : (the governors are printed in bold)

```
   (i)   R         O      (ii)   R    O    R     (iii)   O    R
         N  \      |             N    N    N             |    N
         x     [x <-x]          [x    <-   x]          [x <-x]
```

---
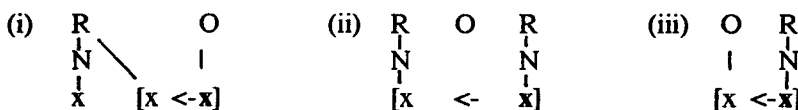
In (b-i) we have a sequence of skeletal positions which are respectively associated with a rhyme and following onset. According to the theory, there is always a governing relation between an onset and a preceding rhymal complement[주24] .

## 5. Conclusion

Now let's see how we can explain the "e muet" deletion and non-deletion in terms of government : syllable structure and phonological government play crucial role.

I would suggest the explanation of "e muet" phenomena as follows : in a natural speech, it seems that "e muet" may always be deleted as in the examples (a) and (b) in the data (13) and resyllabification takes place. For example, "La petite fille ...... ." may have the phonological processes as in (18) below :

(18) Phonological processes for the schwa deletion :

```
input :    O   R   O   R   O   R   O   R   ...  ...
           |   N   |   N   |   N   |   N   ...  ...
      #    x   x   x   x   x   x   x   x   ...  ...
           :   :   :   :   :   :   :   :
           l   a   p   ə   t   i   t   ə           ə deletion


           O   R   O   R   O   R   O   R   ...  ...
           |   N   ┼   N   |   N   ┼   N   ...  ...
      #    x   x   x   <-  x   x   x       ...  ...
           :   :   :       :   :   :
           l   a   p       t   i   t            resyllabification
                                                GD[주25]

output :   O   R   O   R   O   R   O   R   ...  ...
           |   N╲  O   R   |   N╲      R   ...  ...
      #    x   x  ╲x   N   x   x  ╲ x   N   ...  ...
           :   :   :       :   :   :
           l   a   p       t   i   t
```

But there is non-deletion when deletion violates the phonological government as in the examples (c) and (d) in the data (13). For example, "Qu'est-ce que vous ... ... ?" will be represented as in (19) :

---

[주24] A negatively charmed segment in the onset transsyllabically governs a charmless complement in the preceding rhyme.

[주25] GD = government domain.

(19) Phonological precesses for the schwa non-deletion :

```
input :    O   R   O   R   O   R   O   R   ...   ...
           |   N   |   N   |   N   |   N   ...   ...
       #   x   x   x   x   x   x   x   x   ...   ...
           :   :   :   :   :   :   :   :
           k   ε   s   ə   k   ə   v   u            ə deletion


           O   R   O   R   O   R   O   R   ...   ...
           |   N   ⊬   N   |   N   |   N   ...   ...
       #   x   x   x   <-  x   x   x   x   ...   ...
           :   :   :       :   :   :   :
           k   ε   s       k   ə   v   u            resyllabification
                                                    GD
output :   O   R   O   R   O   R   O   R   ...   ...
           |   N⟍  |   N   |   N   |   N   ...   ...
       #   x   x   ⟍x      x   x   x   x   ...   ...
           :   :   :       :   :   :   :
           k   ε   s       k   ə   v   u
```
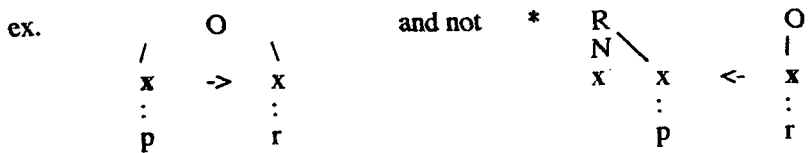
TCG can also explain the consonant clusters noted in the remarks (14).
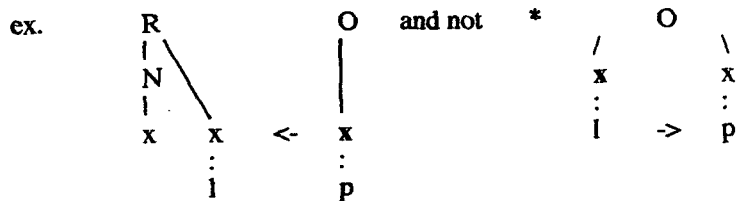
(20) TCG explanation for the consonant clusters :
(a) Let's consider the [CC] types first.
    (i) "obstruent + liquid" type (24a-i) : it's obvious that it can be syllabify as

```
ex.            O              and not   *   R           O
           /       \                        N ⟍         |
           x   ->   x                        x    x  <-  x
           :        :                             :      :
           p        r                             p      r
```

This is Constituent Government.

    (ii) "liquid + obstruent" type (24a-ii), "obstruent + nasal" type (24a-iii), "obstruent + obstruent" type (24a-iv) : it is obvious that it can be syllabify as

```
ex.     R            O    and not   *       O
        | \          |                /         \
        N   \        |               x           x
        |    \       |               :           :
        x     x  <-  x               l    ->      p
            :        :
            l        p
```

This is Interconstituent Government.

(b) There is no problem for [CCC] type in [r<u>k</u>r] and [d<u>f</u>r], because the underlined

obstruent position will govern the others as
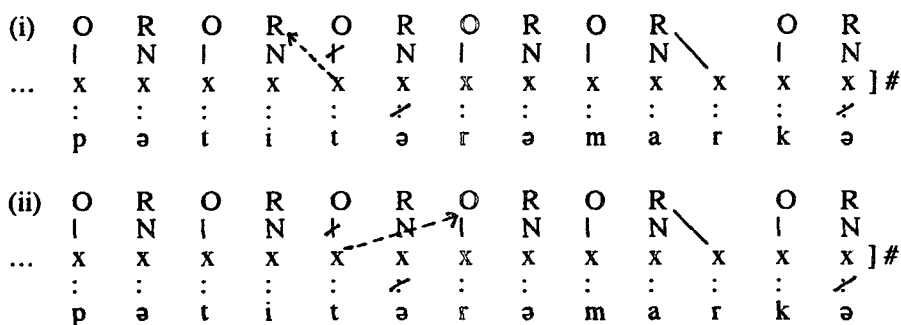
```
ex.     R               O
        N\
        |    \        /        \
        x     x   <-  x   ->    x
              :        :         :
              r        k         r
```
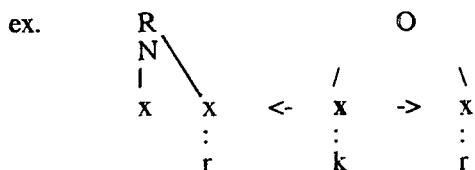
If we admit this kind of analysis of "e muet" deletion, there may remain some apparent problems, including (a) "e" deletion in [ ... _] # ; (b) "e" non-deletion in # [CC_ ... ] ; (c) how can be defined the government relation in consonant clusters, [CC] type "obstruent + obstruent" as in (14a-iv), namely, pt, tf, df, zd, kʒ, dp, sk, td, tp, etc. and (d) the syllabification of the [tr] sequence in (13c), " ... ... petite remarque ?". But these are only surface problems because they can be also explained by TCG[(f)26] . For the time being, not going into these problems in detail I'll just present the possible solutions for these problems : (a) with Coda Licensing Principle in TCG for the problem (a) ; (b) with Proper Government Principle for the problem (b) ; (c) with Charm Theory or with the complexity of internal structure of the concerning segments for the problem (c). And the problem (d) may not concern us. Considering it more closely we find that the [tr] sequence can not be syllabify as in (21-i) below because in the interconstituent governing domain, the position of [r] can not govern the position of [t]. If so, one possible solution would be the resyllabification of [t] into the following onset as in (21-ii).

(21) The ressyllabification of the [tr] sequence in (13c), " ... ... petite remarque ?"

```
(i)   O   R   O   R   O   R   O   R   O   R      O   R
      |   N   |   N   |   |   N   |   N   |   N    \   |   N
...   x   x   x   x   x   x   x   x   x   x   x    x   x   x ] #
      :   :   :   :   :   :   :   :   :   :   :        :   :
      p   ə   t   i   t   ə   r   ə   m   a   r    k   ə
```

```
(ii)  O   R   O   R   O   R   O   R   O   R      O   R
      |   N   |   N   |   N   |   N   |   N    \   |   N
...   x   x   x   x   x   x   x   x   x   x   x    x   x   x ] #
      :   :   :   :   :   :   :   :   :   :   :        :   :
      p   ə   t   i   t   ə   r   ə   m   a   r    k   ə
```

In conclusion, I have argued that a phonological theory firmly based on the phonetic reality should be taken into consideration, and a little theoratical expansion of TCG model, especially in the description of the internal structure of consonants, may prove very much helpful in phonological explanation.

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[(f)26] For the details on the theory, see Charette (1991) and Lee (1993).

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한글요약

불어의 "묵음 e (e muet)"에 관한 연구

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불어의 "묵음 e(e muet)"에 대한 정의를 내리기는 매우 까다롭다. 불어에서 "e"가 "묵음 e(e muet)"로 불리우는 이유는 "e"가 흔히 탈락되기 때문이다.

현재 "e muet"는 다음 발화체에서 볼 수 있듯이 열린음절에서만 나타난다. "Je/ le /re/de/man/de/ ce/ re/por/ta/ge/."[ʒə/lə/rə/də/mɑ̃/də/sə/rə/pɔr/ta/ʒə](나는 그 리포트를 다시 요구한다.: 이경우 실제 발화시 schwa 삭제 규칙이 적용된다.) 둘째, 접두사에 나타나는 "e muet"는 s의 중자음 앞에서 s가 유성음, [z]로 발음되는 것을 막기 위해 쓰인다. "ressembler[rəsɑ̃ble](닮다); ressentir[rəsɑ̃tir](느끼다)" 같은 경우. 세째, 몇몇 낱말의 경우 고어의 철자가 약화되어 "e muet"로 발음이 되고 있다. "monsieur[məsjø](미스터), faisan[fəzɑ̃](꿩), faisait[fəzɛ]("하다" 동사의 3인칭 단수 반과거형)" 등. 또 과거 문법학자들은 이를 "여성형의 E"로 불렀는데, 이는 형태론적으로 낱말의 여성형을 남성형과 구분짓기 위해 사용되고 있기 때문이기도 하다. 예를 들어, "aimé-aimée"(발음은 둘 다 [ɛme]로 동일하다: 사랑받는)의 경우. 현대불어의 구어체에서 "e muet"는 어말자음을 발음하기 위해 쓰이고 있다. 예를 들어, "pote[pot](단짝)-pot[po](항아리)".이러한 "e muet"는 발음상으로 지역적, 개인적 및 문맥적 상황에 따라 그 음색 자체가 매우 불안정하며 여러가지 음가(열린 œ 또는 닫힌 ø)로 나타난다. 예를 들어 "seul[sœl](홀로), ceux[sø](이것들)"에서와 같이 발음되며, 또한 원칙적으로 schwa, [ə]로 발음이 되는 "Je[ʒə]"와 "le[lə]"의 경우, Paris 지역에서는 "Je sais[ʒœ sɛ](나는 안다); Prends-le[prɑ̃ lœ](그것을 집어라)"로 발음을 하는 한편, 프랑스 북부 지방에서는 동일한 발화체를 [œ] 대신에 [ø]로 발음한다.

실제로 언어학적 측면에서 고려되는 "e muet"는 schwa로 나타나는 "Je[ʒə]"와 "le[lə]"의 경우인데, 불어 음운론에서는 schwa에 의해 대립되는 낱말짝이 없기 때문에 schwa를 음소로 인정할 것인가에 대해 논란이 있다. 그러나, 불어에서 schwa가 음운론적 역할을 한다는 사실은 다음과 같은 예에서 찾아 볼 수 있다. 첫째, 발음상으로 동사의 변화형에서 "porte[pɔt](들다: 현재형), porté[pɔrte](과거분사형), porta[pɔrta](단순과거형)" 등이 대립되며, 어휘 "Porto[pɔrto](포르토)"와도 대립된다. 둘째, 어휘적 대립 "le haut[ləo](위)/l'eau[lo](물)"와 형태론적 대립 "le[lə](정관사, 남성단수)/les[le](정관사, 복수)" 등에서 "묵음 e"는 분명히 음운론적 역할을 하고 있다.

본 논문에서는 이와 같이 음색이 복잡하게 나타나는 "e muet"의 문제를 리듬단위, 문맥적 분포 및 음절모형 측면, 즉 음성학 및 음운론적 측면에서 다양하게 분석하여 그 본질을 규명해 보고 "e muet" 탈락현상을 TCG (Théorie de Charme et de Gouvernement) 측면에서 새롭게 해석해 보았다.