
3.0. Introduction.

In this chapter, a close look will be taken at two processes in French: the deletion of schwa and the change: high vowel → glide (semivocalization). It will be shown that the various phenomena of schwa-deletion and semivocalization, which at first sight appear to be of a disparate character, can be accounted for by the assumption of two phonological rules, one for schwa-deletion and one for semivocalization. These two rules will be formulated without an environment, but will be subject to two conditions. The assumption of rules without environment which are subject to certain condition has proved to be useful in syntax, (see, e.g., Chomsky & Lasnik (1977).

3.1. French Schwa-deletion.

3.1.0. Introductory remarks.

Dell (1973; 1980), Selkirk (1978) and Vergnaud and Halle (1978) have given accounts for the phenomena of schwa-deletion in French. Of these three accounts, the one by Dell is by far the most complete as far as the data that have to be accounted for are concerned. But unfortunately, Dell's proposals seem to be only observationally adequate, because his rules do not represent important generalizations. In all, he needs no less than ten rules, some of which include quite complicated environments. Dell himself writes quite revealingly (1973, p.195; 1980, p.159) that the dialect of French he describes (italics mine) is his own idiolect, and that there may be considerable differences between speakers even if they have very much the same background. These differences are according to him "too considerable to be ignored or treated as accidental vagaries around a fictitious 'average pronunciation'."

Unfortunately this approach has not provided us with much insight into what regularities or laws govern the phenomena a schwa-deletion which
at first sight appear to be of a disparate character. The first thing one notices is that only schwa, and no other vowel, can be deleted in French (apart from three isolated cases). By positing his ten rules, Dell treats this fact as a mere accident. This arouses suspicions that an important generalization has not been captured, and the reader will see below, in section 3.1.2., that more such suspicions will arise. But first, I will treat in section 3.1.1. the only two analyses of French schwa-deletion phenomena to my knowledge that are of a principled character: the metrical analyses of Selkirk (1978) and of Vergnaud and Halle (1978). After having exposed the limitations of these analyses, I will give another principled account, involving one of the most simple phonological rules theoretically possible. It will be shown that the differences in idiolect can often be accounted for by differences in the 'possible syllable' for individual speakers.

3.1.1. The metrical proposals.

3.1.1.1. Selkirk.

Selkirk (1978) uses the notion of foot (the term is borrowed from Libermann (1975) and Libermann & Prince (1977). The foot is a higher order unit composed of syllables, like the syllable is a higher order unit composed of segments. The principles governing the composition of feet in particular languages are thought to be partly universal, partly language-specific.

According to Selkirk, French is different from English whose feet normally consist of two, perhaps three, syllables. But in French, the feet consist generally of one syllable (Selkirk mentions that the traditional distinction between syllable-timed languages like French and stress-timed languages like English can perhaps be viewed as following from the difference in the general definition of foot in the two languages). But there are cases in which the French foot can consist of two syllables, because, according to Selkirk, in addition to a
general principle that makes a foot out of each syllable, a second principle is at work, according to which a foot that consists of a syllable whose second element is a schwa can be merged with the preceding foot, cf. the principles of French Foot Formation in (1) ($\xi$ is the symbol used for foot):

(1) Selkirk's French Foot Formation:

I. The simple Foot

\[
\begin{align*}
\sigma & \\
C_0 & \ x & \ x & C_0 & \Rightarrow & C_0 & \ x & \ x & C_0 \\
& & & & & & & & & \text{OBL}
\end{align*}
\]

II. The Derived Foot

A. $\xi$

\[
\begin{align*}
C_0 & \ x & \ x & C_0 & \Rightarrow & C_0 & \ x & \ x & C_0 \\
& & & & & & & & & \text{OBL}
\end{align*}
\]

B. $\xi$

\[
\begin{align*}
C_0 & \ x & \ x & C_0 & \Rightarrow & C_0 & \ x & \ x & C_0 \\
& & & & & & & & & \text{OPT}
\end{align*}
\]

Rules (I), (IIA) and (IIB) apparently apply in the given order. (IIA) is differentiated from (IIB) in two ways: (IIA) operates between word boundaries, and is obligatory, while (IIB) has the entire utterance as its domain, and is optional.

Somewhat later in her article (p. 7), Selkirk gives a rule of schwa-syncopes, which refers to the notion of foot:

(2) Selkirk's $\varepsilon$-syncope:

\[
\varepsilon \rightarrow \emptyset / [\ldots \underline{VC} \underline{VC} \ldots] & \text{OBL}
\]

This rule accounts for the deletion of schwa in forms like those in (3):
64.

(3)a. souvenir /suvˈnɪr/ [suvnir] 'to remember'
   b. promène /prɔˈmɛn/ [prɔmɛn] 'walk'
   c. promener /prɔˈmɛn/ [prɔmɛn] 'to walk'

The rule cannot delete the schwas in forms like those in (4):
(4)a. couleuvre /kuləˈvʁ/ [kuləvr] 'kind of snake'
   b. exactement /ɛgzakˈtamos/ [ɛgzaktəm] 'exactly'

In (4a), the schwa can be deleted depending on other factors, in particular the stress pattern of the sentence, as indicated by Dell (1973) and others, cf. my account of this phenomenon in section 3.1.2.2. below.

The deletion of schwa in forms like the ones in (3) is obligatory because both rule (IIA) of (1) (which forms bisyllabic feet in the forms of (3) and the schwa-syncope rule in (2) are obligatory. However, if a word boundary occurs between a syllable containing a schwa and the preceding syllable, the deletion of schwa is optional, because in that case a bisyllabic foot can only be formed by application of rule (IIB), which is optional, and the SD of the rule of schwa-syncope in (2) properly includes a bisyllabic foot. The sentence in (5) thus has five possible realizations, which are displayed in (6):

(5) Il a envie de te revoir /ɪl əˈviːdəˈtʁɔvwar/ 'he feels like seeing you again'

(6)a. [ɪləˈvidəˈtʁɔvwar]
   b. [ɪləˈvidɔˈtʁɔvwar]
   c. [ɪləˈvidəˈtʁɔvwar]
   d. [ɪləˈvidəˈtʁɔvwar]
   e. [ɪləˈvidəˈtʁɔvwar]

Selkirk also makes use of the French Foot Formation in order to account for two other phenomena in French: stress assignment and the change of ë, æ to ç in certain environments, among which closed syllables.

For stress assignment she simply posits the rule: 'stress the last foot in a word', cf. (7):
(7) $\xi \rightarrow [+\text{stress}]$

She then gives two examples of the functioning of this rule (p.8), cf. (8):

(8a) mari 'husband'

(8b) ouvre vite 'open quickly'

In the formulation of rule (7), no mention of $\bar{o}$ needs to be made, because the realization of stress on the first syllable inside the feet in forms like (8b) follows automatically from the fact that it is in some sense the 'nucleus' of the foot or 'supersyllable'. Put in terms of the framework of Liberman & Prince (1977), the syllable on the left is stressed because it is the strong or 5 of a 5-W pair.

For the change of $\bar{o}, \bar{a}$ to $\xi$, Selkirk posits the rule:

(9) $\{\bar{o}\} \rightarrow \xi / \begin{array}{c} \xi \\ \xi \end{array}$

This rule can account for the alternation $\bar{o}/\xi$ and $\bar{a}/\xi$ in the pairs of (10):

(10a) cédait [sed$\xi$]/ cède [s$\xi$d] 'gave in/gives in'

b. célébrait [selebr$\xi$]/ célébre [sel$\xi$br] 'celebrated/famous'

c. insérait [isere$\xi$]/ insère [i$\xi$r], insertion [isere$\xi$] 'included/includes, inclusion'

d. sèvrait [sèvre$\xi$]/ sèvre [s$\xi$ve] 'weaned/weans'

This rule can also account for the occurrences of $\xi$ in forms like those in (11), where it is not in a closed syllable:

(11a) céderez [sed$\xi$re] 'would give in'

b. sèvrez [s$\xi$ve] 'will wean'

c. (elle est) célèbre donc [sel$\xi$brad$\xi$] 'so (she is) famous'

d. sèvre-le [s$\xi$vrle] 'wean it'
Selkirk concludes that she has given a unified account of the phenomena involving schwa in French by using a prosodic approach: according to her, the special status of French "mute" e follows from its special status in prosodic structure.

However, below I will demonstrate that this conclusion is overly optimistic.

3.1.1.2. Inadequacies and limitations of Selkirk's proposal.

In this subsection, I will give instances of schwas that are maintained in places where, according to Selkirk's proposal, they should be deleted, and of schwas that are deleted in places that Selkirk's proposal does not account for. It will be shown that in these latter cases, the deletions of schwa have certain features in common with schwa-deletions that Selkirk does account for. In other words, it will become clear that a generalization has not been captured.

The first instance concerns the apparent optionality of the deletion of schwas which according to Selkirk's proposal of French Foot Formation would be part of the second syllable of a bisyllabic foot, whose syllables are part of the same word. Vergnaud & Halle (1978, section 5.2.) give three different phonetic realizations of the form in (12), cf. (13):

(12) tu devenais /tydɔ̃vənɛ/ 'you became'

(13)a. [t̪ydɔ̃vənɛ]
   b. [tydɔ̃vənɛ]
   c. [t̪ydɔ̃vənɛ]

Selkirk's proposal can only account for (59a), because rule (IIA) of the rules of French Foot Formation in (1) obligatorily makes a foot out of the first two syllables of /dɔ̃vənɛ/, and the rule of schwa-syncope in (48) in also obligatory. How can this situation be dealt with if one wishes to maintain the essence of Selkirk's proposal? (13c) could be
accounted for by making the rule of Schwa-Syncope optional. In that case
the rule cannot account anymore for the obligatoryness of the schwa-
deletion in (3b), /pr^m^n/ [pr^m^n], but this is not a problem in itself,
because a rule deleting the final schwa is needed anyhow for the deletion
of schwa in words like (4a) /kul^v^r/ [kul^v^r], cf. my treatment of this
phenomenon in section 3.1.2.2. (below).

It is more difficult to accommodate Selkirk's proposal in order to
account for (13b). It could be accounted for by not assuming (IIA) but
only (II^b). Bisyllabic feet would then only optionally be formed out
of two monosyllabic feet, the second of which has a schwa as its vowel.
Another possibility would seem to reverse the order of rules (IIA) and
(II^b). But in both these cases other problems arise: stress assignment in
(7) would not be able to account for the stress in (14):
(14) il s^vre /il^s^vr/ [il^svr] 'he means'

In (14), the first schwa of the underlying form has been changed to £
by application of rule (9). If one assumes only rule (II^b), which is
optional, no bisyllabic foot would need to be formed out of /s^vr/,
and the stress assignment rule in (7) would assign stress to the
final syllable of the word, which has a schwa as its vowel. This is clearly
the wrong result. (as indicated by Selkirk, the final schwa is deleted
depending on stress assignment, thus the stress assignment rule
will have to apply before the deletion). The reversal of the order of
rules (IIA) and (II^b) would present the same problem. Because of the
optionality of (II^b), a possible outcome would be:
(15) [il^svr] [s^vr]

Rule (7) would assign stress to the second foot in the form in (15),
which again would mean stressing the final syllable containing schwa.
It has to be concluded, then, that Selkirk's proposal cannot be adapted
to account for the deletions of schwa of the type displayed in (13b),
unless the rule of stress assignment (7), which occupies a central place in Selkirk's proposal, is dropped.

Another type of instances that is problematic for Selkirk's proposal is the possible deletion of schwa in forms like the ones in (16) and (17), versus the non-deletion of schwa in (16)⁴:

(16)a. pudiquement /pydik mə/ [pydikmə] 'chastely'
b. bombeament /bɔ bɔmə/ [bɔbɔmə] 'bombing'
c. froidement /frwadəmə/ [frwadəmə] 'coldly'

(17)a. débarquement /debark mə/ [debarkmə] 'debarcation'
b. escarpement /eskarp mə/ [eskarpmə] 'steep slope'
c. heurtement /orɛrmə/ [orɛrmə] 'collision'
d. renversement /rɔvərmə/ [rɔvərmə] 'reversal'
e. énervement /enɛrvmə/ [enɛrvmə] 'excitement'
f. émergement /emɛrmə/ [emɛrmə] 'emergence'
g. écortement /ekɔrmə/ [ekɔrmə] 'flaying'
h. sveltement /svɛltmə/ [svɛltmə] 'slimly'
i. buralquement /byrlɛskmə/ [byrlɛskmə] 'burlesquely'
j. manifestement /manifɛstmə/ [manifestmə] 'manifestly'

(18)a. probablement /pr3babləmə/ [pr3babləmə] 'probably'
b. simplement /simpləmə/ [simpləmə] 'simply'
c. aveuglement /avʊgləmə/ [avʊgləmə] 'blindly'
d. encerclement /ɛŋkərkləmə/ [ɛŋkərkləmə] 'encirclement'
e. librement /librəmə/ [librəmə] 'freely'
f. éprenement /aprəmə/ [aprəmə] 'rudely'
g. tendrement /tændrəmə/ [tændrəmə] 'tenderly'
h. autrement /ɔtʁəmə/ [ɔtʁəmə] 'differently'
i. maigrement /mɛɡrəmə/ [mɛɡrəmə] 'meagrely'
j. médiocrement /medikoɾmə/ [medikoɾmə] 'in a mediocre way'
k. ivrement /ivrəmə/ [ivrəmə] 'in a drunk way'
l. exactement /ɛgzaktəmə/ [ɛgzaktəmə] 'exactly'
Selkirk's proposal can only account for the deletion of schwa in the forms in (16). It cannot account for the fact that also in the forms in (17), the schwa can be deleted. In the underlying forms in (17), the schwa is preceded by a liquid+obstruent cluster or an /s/+obstruent cluster, whereas the SD of the rule of Schwa-Syncope in (2) only has one consonant preceding the schwa. If one takes a close look at the differences between the forms in (16) and (17) (where the schwa can be deleted) on the one hand, and the forms in (18) on the other, one notices that the consonant or consonants that precede the schwa in the forms in (16) and (17) constitute a possible coda in French, while the consonant cluster in the forms in (18) do not form a possible coda (cf. section 2.2.).

This leads to the conclusion that it is not unlikely that the notion of 'possible syllable' plays an important role in the processes of schwa-deletion in French, and may indeed be a major conditioning factor. Apart from the fact that Selkirk's proposal does not account for the deletion of schwa in the forms in (17), it seems that she has failed to capture an important generalization.

Apart from the problems concerning the deletion of schwa, another objection may be raised against Selkirk's proposal. For this we must look once again at the underlying form in (12) tu devenais /tydövænɛ/. According to Selkirk's rules of Foot Formation in (1), the division in feet must be as in (19):

\[
\begin{array}{ccc}
\text{[ty]} & \text{[dövæ]} & \text{[nɛ]} \\
\varepsilon & \varepsilon & \varepsilon & \varepsilon
\end{array}
\]

Rule (9), the rule changing \(\varepsilon, \varphi\) to \(\varepsilon\) if these vowels are preceded by a consonant and followed by non-null material within the same foot, would have to apply to the foot \([dövæ]\), making it \([dɛvæ]\). The phonetic form, however, cannot be \([dɛvæn\varepsilon]\). Other forms to which rule (9)
apparently does not apply can be found in (20):

(20)

a. derechef /dɛʁɛf/ \[dɛʁ(ɛ)f\] \([dɛʁ(ɛ)f]\) 'once more'

b. démesure /dɛmɛsr/ \[dɛm(ɛ)sr\] \([dɛm(ɛ)sr]\) 'excess'

c. développer /dɛvlop/ \[dɛv(ɛ)p\] \([dɛv(ɛ)p]\) 'to develop'

d. revenir /rɛvɛʁ/ \[rɛv(ɛ)ʁ\] \([rɛv(ɛ)ʁ]\) 'to come back'

In the forms in (21), a foot can optionally be formed out of the two syllables containing schwa (by virtue of rule (IIB) of (1)). Rule (9) would have to apply subsequently, but would produce the wrong outcome:

(21)

a. je ne crois pas /ʒɛn(ɔ)krwaʁpa/ \[ʒɛn(ɔ)krwaʁpa\] \([ʒɛn(ɔ)krwaʁpa]\) 'I do not believe'

b. tu le reverras /tylɛʁɛʁaʁ/ \[tylɛʁ(ɛ)ʁɛʁaʁ\] \([tylɛʁ(ɛ)ʁɛʁaʁ]\) 'you will see him again'

I see no way that rule (9) could be modified in order to account for its non-application to the forms in (20) and (21). The rule has been devised by Selkirk replacing the well-known rule of Closed Syllable Adjustment (which changes e, ë to e in closed syllables), in order to account also for the phonetic forms in (11). Because of the counterexamples in (20) and (21), rule (9) has to be rejected and one may fear that the occurrences ë in the phonetic forms in (11) can only be accounted for by a morphological rule, that historically may have a phonetic motivation.

As a conclusion to this criticism of Selkirk's proposal, it can be said that Selkirk's proposal can only account for a fairly limited number of cases of schwa-deletion in French, that she has apparently obscured certain generalizations that can be made, and that the metrical rule she proposes in order to account for the phenomena of the alternations e/ë and ë/ë is empirically inadequate. It has furthermore been shown that if one wishes to broaden Selkirk's analysis in order to account for more cases of schwa-deletion, another feature of her proposal, viz. the rule of stress assignment, cannot be maintained.
3.1.1.3. Vergnaud & Halle.

Vergnaud & Halle (1978, 5.2.) propose an account for certain types of schwa-deletion in French in which they "lean heavily on the solution advanced by Selkirk (1978) (...)" (p.5-7). According to their proposal, full vowels and schwas in the context CC are represented by branching nodes, while other vowels may or may not be branching. As an illustration, they give all possible representations of *tu devenais*, given here as (22):

(22) /ty d ønɛ/  
   a.   
   b.   
   c.   
   d.   

They assume that it is the branching or non-branching character of rimes that is relevant for foot formation, and that feet are not sensitive to the branching character of any other constituents of the syllable (p. 5-5). Furthermore, they assume that in French words a non-branching syllable is paired into a binary foot with its neighbour on the left and that this pairing is done by scanning the word from right-to-left in a maximal fashion (p. 5-9). In the case of (22), the following sequences of feet are formed:

(23) /ty d ønɛ/  
   a. 
   b. 
   c. 
   d. 

The line in each one of the representations in (23) separates the foot level from the syllable level. Vergnaud & Halle posit as their rule of 'e-mu elision' the rule:

(24) \[ \emptyset \rightarrow \emptyset / \]

Vergnaud & Halle can thus account for the following three phonetic forms of tu devenais:

(25)
- a. \[ [\text{tyd} \text{d} \text{v} \text{n}] \]
- b. \[ [\text{tyd} \text{v} \text{n}] \]
- c. \[ [\text{tyd} \text{v} \text{n}] \]

3.1.1.4. Inadequacies and limitations of Vergnaud & Halle's proposal.

The shortcomings of the proposal by Vergnaud & Halle are much the same as the ones of Selkirk's, as will be shown in this section.

First a word must be said about the data given by the authors on page 5-8. They contrast the words in (26) in which schwa-deletion is possible, with those in (27), in which according to them, schwa-deletion is not possible (p. 5-7, 5-8):

(26)
- a. souvenir \[ [\text{suv} \text{(t)} \text{n} \text{r}] \] 'souvenir'
- b. jalousement \[ [\text{j} \text{luz} \text{(t)} \text{m}] \] 'jally'
- c. passera \[ [\text{p} \text{a} \text{s} \text{(t)} \text{r}] \] 'will pass'
- d. volera \[ [\text{v} \text{o} \text{l} \text{(t)} \text{r}] \] 'will fly, will steal'

(27)
- a. parvenir \[ [\text{p} \text{a} \text{v} \text{n} \text{r}] \] 'to arrive'
- b. exactement \[ [\text{e} \text{gz} \text{a} \text{k} \text{t} \text{m}] \] 'exactly'
- c. percera \[ [\text{p} \text{e} \text{r} \text{s} \text{r}] \] 'will pierce'
- d. soufflera \[ [\text{s} \text{u} \text{f} \text{l} \text{r}] \] 'will whistle'

These data are, however, incorrect. (27a) and (27c) can be pronounced without schwa. For (27a) confirmation of this fact can be found in Martinet & Walter (1973) (who in fact do not list [parv\text{n}ir], but do list
For (27c) Dell proposes his rule \( \varepsilon \)-FUT (see note 1). Again it should be noted that the group of consonants preceding the schwa in the forms in which the schwa can be deleted (27a,c) form a possible French coda, whereas the group of consonants preceding the schwa in forms where it cannot be deleted (27b,d) do not.

Secondly, it should be noted that because of the fact that only schwas preceded by only one consonant may be non-branching, bisyllabic feet cannot be formed in forms like (14), repeated here as (28):

(28) il sèvre /iljɛvr/ j_ilsēvr/ 'he means'

This means that Selkirk's rule of stress assignment in (7) cannot assign stress to the syllable containing \( \varepsilon \), but will assign stress to the syllable containing schwa. Also, in forms with only one intervocalic consonant preceding the schwa like (29)

(29) fine /finə/ [fin] 'delicate'

a bisyllabic foot is only optionally formed according to Vergnaud & Halle's proposal, because a schwa preceded by only one consonant may or may not be branching. This means that stress will not be unequivocally assigned to the first syllable in the underlying form in (29).

Thirdly, Selkirk's rule (9), which changes \( \varepsilon \) to \( \varepsilon \), will not be able to change the leftmost schwa in the underlying form in (28) into \( \varepsilon \), because it is not followed by material within the same foot as rule (9) requires. In the case of only one intervocalic consonant as in (30)

(30) il mène /ilmɛn/ [ilmɛn]

a bisyllabic foot is only optionally formed (exactly as in (29)), so rule (9) cannot always apply, which it should.

It must be concluded that although Vergnaud & Halle declare that their proposal 'leans heavily' on Selkirk's, it in fact deprives Selkirk's
analysis of a major part of its motivation, viz. the accounts of the phenomena concerning the distribution of stress, as well as the alternations $\varepsilon/\varepsilon$ and $\partial/\varepsilon$.

3.1.2. An alternative proposal.

Having shown the inadequacies of the proposals by Selkirk and Vergnaud & Halle, I will proceed by formulating a new proposal in order to account for the phenomena of schwa-deletion in French. I will assume only one rule of schwa-deletion, to which certain conditions will be applicable. Thus the fact will be expressed that only schwa, and no other vowel, can be deleted in French (apart from the three isolated cases mentioned in note 2). As a matter of fact it is this fact alone that is expressed by the rule:

(31) Schwa-deletion:

\[ \varepsilon \rightarrow \emptyset \]

As the reader will notice, rule (31) is formulated without environment. Instead of formulating an environment for this rule, I will assume that this rule is member of a class of rules without environment (of which, as will be shown in section 3.2, also the rule of Semivocalization is a member), to which the following conditions are applicable:

(32) The Syllabification Condition:

The output of the environmentless rules must be exhaustively syllabifiable.

(33) The Markedness Condition:

The environmentless rules may not apply if the syllabic markedness value of their output would be higher than that of their input, they can apply if the syllabic markedness value of their output is equal to that of their input, they should apply if the syllabic markedness value of their output is lower than that of their input. 5

3.1.2.1. Motivation for the Syllabification Condition.

First the Syllabification Condition in (32) will be treated. This condition does not need to be stated as an independent condition,
because it is in fact a consequence of the persistent character of
the syllabification mechanism. In section 2.3.2., motivation was
provided for the assumption that syllabification is persistent once the
initial syllabification has applied. In addition, it was shown in
section 1.4.1. that the rule of Schwa-deletion is applicable at a place
in the derivation where the syllabic structure is already present. Hence
the syllabification mechanism automatically applies to the output of the
rule of Schwa-deletion (as we will see in section 3.2., the rule of
Semivocalization must be ordered after Schwa-deletion, thus the syl­
labification mechanism must also apply to the output of that rule).
The Syllabification Condition in (31) follows then from the straightforward
assumption that if the syllabification mechanism fails to
syllabify a given string, the further derivation of that string is
blocked.

We have already seen the working of the Syllabification condition in sec­
tions 3.1.1.2. and 3.1.1.4., in which it was shown that in the cases
mentioned on these sections, the schwa cannot be deleted if the group
of consonants preceding it do not form a possible coda. Another instance
of the working of the condition can be found in the forms in (34) and (35)
(the examples are taken from Dell (1973) p. 231):

(34) insistera /ɛsistər+ə/ [ɛsist(ə)ra] 'will insist'
(35) soufflera /suflər+ə/ [sufləra] 'will whistle'

In the phonetic form in (35), the schwa is obligatorily present, because
fl does not constitute a possible French coda (except when in utterance­
final position, see section 3.1.2.2.) and lr is not a possible French
onset.

Additional motivation for the Syllabification in (32) is provided
by the forms in (36) and (37), which are taken Dell (1973) p.229:

(36) Henri devrait partir /hɛʁi dər+ər+təpəʁ+ər/[ɔrid(ə)vrijpartir]

'Henri would have to leave'
(37) Dacques devrait partir /dak$data+r+$part+ir/ [dakdata[r(partir] 'Jacques would have to leave'

The difference between these forms is that in the case of (36), the syllable containing schwa is immediately preceded by a vowel (abstracted away from the word boundary), whereas in (37) it is preceded by a consonant. The result of the deletion of schwa in the underlying form would be the consonant sequence kdv$r. This sequence cannot be analyzed in a possible coda followed by a possible onset, hence the derivation is blocked by the Syllabification Condition. In (36) on the other hand, the deletion of schwa results in the consonant sequence dv$r, which is analyzable in a possible coda (d) followed by a possible onset (vr).

The Syllabification Condition is partially reflected in the output condition OLICONS proposed by Dell (1976, p.85; 1980, p.215):

(38) OLICONS: \[+son]-nas [+cons] [+cons]

This condition replaces the condition in Dell's rule E-FUT prohibiting OL clusters in the input of this rule (see note 1). and it also accounts for the fact that the impossibility of (40b) as phonetic realization of (39):

(39) astre nouveau 'new star'

(40)a. [astr$nuvo]

b. * [astrnuvo]

(According to Dell the underlying form is: /astr#nuvo/ and an optional epenthesis rule is applicable to this form. In the case of non-application of this epenthic rule the derivation is blocked by OLICONS. OLICONS does not block the derivation of astre /astr/, pronounced in isolation or at the end of a sentence, in the case of non-application of the epenthesis rule. As a result, the phonetic form can be both [astr] and [astr].)
Dell's condition OLICONS can be dispensed with by assuming the Syllabification Condition, which as we have seen does not need to be stated independently (in contrast with OLICONS), but follows from the assumption of the persistent character of the syllabification mechanism.

3.1.2.2. Motivation for the Markedness Condition.

Concerning the working of the Markedness Condition, I will give here examples of cases in which the rule of Schwa-deletion is made obligatory by the working of the Markedness Condition, then of cases in which Schwa-deletion is optional, and finally of a case in which the working of the Markedness Condition prohibits the deletion of schwa.

First three cases of obligatory schwa-deletion, i.e. cases in which the Markedness Condition blocks the derivation of the string in case of non-application of the rule of Schwa-deletion will be exemplified. Our first example concerns the form in (41):

(41) l'or /lɒr/ [lɔr] *[lɔr] 'the gold'

The resulting syllabic markedness values of the phonetic forms in the case of application and non-application of Schwa-deletion can be seen in (42):

(42)a.  

\[
\begin{array}{c|c|c}
0 & R & 0 \\
1 & 1 & \hat{S}R \\
\end{array}
\]

\[0 + 1 + 1 = 2\]

b.  

\[
\begin{array}{c|c|c|c|c}
0 & R & 0 & R \\
1 & 1 & 1 & \hat{S}R \\
\end{array}
\]

\[0 + 0 + 1 + 1 + 2 = 4\]

The Markedness Condition prohibits the derivation of the form in (42b), in which Schwa-deletion has not applied, because its syllabic markedness value is higher than that of the form in (42a), in which Schwa-deletion has applied. Another example can be found in the form in (43):

(43) jolie maison /ʒoliOmez/ [ʒɔliOmez] *[ʒɔliOmez] 'bonny house'

The resulting syllabic markedness values of the phonetic forms in the
case of application and non-application of Schwa-deletion can be seen in (44):

(44)a. 
\[ \begin{array}{cccccc}
\text{\textbullet} & \text{\textbullet} & \text{\textbullet} & \text{\textbullet} & \text{\textbullet} & \text{\textbullet} \\
0 & 1 & 0 & 1 & 0 & 3 \\
\end{array} \]
\[0 + 0 + 0 + 1 + 0 + 0 + 0 + 0 + 5 \text{ (number of syll.)} = 6\]

b. 
\[ \begin{array}{cccccc}
\text{\textbullet} & \text{\textbullet} & \text{\textbullet} & \text{\textbullet} & \text{\textbullet} & \text{\textbullet} \\
0 & 1 & 0 & 1 & 1 & 3 \\
\end{array} \]
\[0 + 0 + 0 + 0 + 0 + 4 \text{ (number of syll.)} = 4\]

The Markedness Condition prohibits the derivation of the form in (44b), because its syllabic markedness is higher than that of (44a).

The third example of obligatory schwa-deletion has already been mentioned as (53) in chapter 2, and is repeated here as (45):

(45) elle est petite 
\[ \begin{array}{cccccc}
\text{\textbullet} & \text{\textbullet} & \text{\textbullet} & \text{\textbullet} & \text{\textbullet} & \text{\textbullet} \\
0 & 0 & 0 & 0 & 0 & 3 \\
\end{array} \]
It has been hypothesized in section 2.5.2. that the second t in this form has been retracted to the preceding syllable by a specified resyllabification which overrules the general syllabification principle of syllabification to lowest possible markedness. This hypothesis was made analogous to similar proposals for English and Danish. Further motivation is provided by the form in (45). The assumption that the second t in this form has been retracted to the preceding syllable makes it possible to account for the obligatory deletion of schwa here. Compare the two syllabic markedness values ensuing from deletion and non-deletion of schwa respectively:
The markedness condition blocks the derivation of the form in (45b), because its syllabic markedness value is higher than that of (45a). (In the form in (44), also the first schwa can be deleted (optionally), but that is not of concern to us here).

We should now look at the form in (53) of the previous chapter, repeated here as (46):

(46) astre /astrə/ [astr(ə)] 'star'

In this form the deletion of the schwa is optional. The optionality is here not a consequence of the working of the markedness condition, but of the fact that the specified resyllabification under the influence of stress is optional in the case of two consonants following the rightward boundary of the stressed syllable. Thus the two possible syllabic configurations for this form are:

(47)a.   
\[ \text{O R O R O R} \]
\[ \hat{\text{a}} \text{ s t r} \]
1 +0 +0 +0 +0 +1 +4 (= number of syll.) = 6

(47)b.   
\[ \text{O R O R O R R} \]
\[ \hat{\text{a}} \text{ s t r} \]
1 +0 +0 +0 +0 +1 +1 +0 +5 (= numb. of syll.) = 8

In the form in (47b), the schwa has been obligatorily deleted, analogous to the deletion of schwa in (44), but in (47a), the deletion of schwa is not possible (recall the impossibility of empty nuclei postulated in section 2.2.). It is the fact that both (47a) and (47b) are possible
syllabic configurations associated with the form in (46), that makes the deletion of schwa in (46) optional. As mentioned in section 2.5.2, syllabic configuration as in (47b) constitutes a violation of the syllable template and in this case even of the sonority hierarchy. Indeed it is only in cases like these that codas like the one in (47b) can occur, i.e. and the end of the prosodic unit across which the syllabification takes place. Compare (48a,b) and (49a,b):

(48)a. probable /prɔbəbl/ [prɔbəbl(ə)] 'probably'
   b. probablement /prɔbəbləmənt/ [prɔbəbləmənt] 'probably'

(49)a. (ce train est) le vôtre /lɛvɔtʁɛ/ [lɛvɔtʁɛ] '(this train is) yours'
   b. vôtre train /vɔtʁɛtʁɛ/ [vɔtʁɛtʁɛ] 'your train'

(Another possible phonetic form in (49b) is: [vɔtirɛ], but that is not of concern to us here). The forms in (48a) and (49a) display a optional schwa-deletion analogous to that in (46), but in (48b) and (49b) the deletion of schwa is not possible, because the schwa is not preceded by a stressed syllable, hence the resyllabification rule (51) of the previous chapter has not been able to apply.

We now come to cases in which the working of the Markedness Condition makes the deletion of schwa optional. Most of the forms in which the deletion of schwa is optional have the following structure:

(50) X C o V C ə Y

The deletion of the schwa in these cases decreases the number of syllables by one, but adds a segment to the rime of the preceding syllable, the result being:

(51) X C o V C Y

The result of the deletion of schwa in cases like these is that the syllabic markedness value remains the same, because decreasing the
number of syllables by 1 means decreasing the syllabic markedness values by 1, but adding a consonant to the rime increases it by 1. The Markedness Condition thus predicts that the deletion of schwa in cases like these is optional. Examples can be found in the form (13a, b, c), (16a, b, c), (20a, b, c, d) and (36) (above).

Another example in which schwa-deletion is optional can be found in the form in (34), repeated here as (52):

(52) insistera /ɛsɪstə+ra/ [ɛsɪst(ə)ra] 'will insist'

The Markedness Condition would normally block the deletion of schwa in this form, because the deletion would cause the onset of the last syllable of the form to be doubly filled, which increases the markedness value by 2, while the decrease in the number of syllables is only one, so the overall increase in the syllabic marked value is 1.

Cases like these, however, are accounted for by the provision made for obstruent+liquid clusters made in section 2.5.1., by which such clusters are assigned markedness value 1 instead of 2. The above case provides additional motivation for this provision.

Finally, I will give an example in which the deletion of schwa is blocked by the working of the Markedness Condition. For this, we must consider the underlying form in (12), repeated here as (53):

(53) tu devenais /tyudəvəʃə/ 

The three possible phonetic realizations given in (13a, b, c) are repeated here as (54a, b, c):

(54)a. [tyudəvəʃə] b. [tyudəvəʃə] c. [tyudəvəʃə]

The form is (55), however, is impossible:

(55) *[tyudəvəʃə]

This derivation of this form is blocked because its syllabic markedness
is higher than those of (54a,b,c), cf. (56) and (57):

(56)  
\[
\begin{array}{cccccc}
& & R & R & R & R \\
& & t & y & d & v \\
\end{array}
\]

0 + 1 + 2 + 0 + 2 (= number of syllables) = 5.

(57)  
\[
\begin{array}{cccccc}
\sigma & \sigma & \sigma & \sigma & \sigma & \sigma \\
R & R & R & R & R & R \\
& t & y & d & v & n \\
\end{array}
\]

(57)a.  
\[
\begin{array}{cccccc}
& & R & R & R & R \\
& & t & y & d & n \\
\end{array}
\]

0 + 0 + 0 + 1 + 0 + 0 + 0 + 3 = 4

(57)b.  
\[
\begin{array}{cccccc}
& & R & R & R & R \\
& & t & y & d & v \\
\end{array}
\]

0 + 1 + 0 + 0 + 0 + 0 + 0 + 4 = 4

3.1.2.3. Remaining problems concerning schwa-deletion.

I will treat here shortly four cases in which the theory outlined in this chapter does not give the right predictions. In two of these cases possible solutions will be given.

The first case concerns examples like the ones in (26a,b,c,d), repeated here as (58a,b,c,d) with their underlying forms:

(58)a. souvenir /suvDNIR/ [suv(ò)nIR] 'souvenir'

b. jalousement /jaluz+DMIR/ [jaluz(ò)mIR] 'jalously'

c. passerà /pasAR+a/ [pas(ò)ra] 'will go through'

d. volera /volaR+a/ [vol(ò)ra] 'will fly, will steal'

Although Vergnaud & Halle give here the schwa-deletion as optional, it is obligatory according to Dell (1973; 1980) and most of the native
speakers I have been able to consult. Indeed for most speakers of standard French, the deletion of schwa seems to be obligatory if only one intervocalic consonant precedes the schwa, and if there is no word boundary between that consonant and the preceding vowel.

The obligatoriness can be accounted for in two ways. The first one is that the markedness value of the rime does not increase by 1, but by a lower value. This amounts to saying that the decrease of the syllabic markedness value in the forms in (58) caused by the decrease in the number of syllables is not completely compensated by the increase of the markedness values of the rimes preceding the schwa. Another solution would be to postulate a resyllabification applying every time a full vowel is followed by a schwa. This means that the idea of a specified resyllabification proposed in section 2.5.2. is enlarged to include also resyllabifications under the influence of secondary stress. The schwa then finds itself in a syllable of which the onset is empty. The deletion of the schwa decreases the syllabic markedness of the form as is the case in the forms in (43) and (46), cf. (59a,b,c,d):

(59)a. 

\[ \begin{array}{c}
\sigma & \\
0 & 0 & 0 & 0 & 0 \\
| & \sigma & | & | & | \\
\sigma & 0 & 0 & 0 & 0 \\
\end{array} \]

\[ +1 +1 +0 +0 +3 = \text{(number of syll.)} = 5 \]

(59)b. 

\[ \begin{array}{c}
\sigma & \\
0 & 0 & 0 & 0 \\
| & \sigma & | & | \\
\sigma & 0 & 0 & 0 \\
\end{array} \]

\[ +1 +0 +0 +2 = 3 \]

The idea of a syllabification according to this principle has been put forth by Basboll (1978).
The contrast between the obligatoriness of the schwa-deletion within one word and the optionality of the schwa-deletion if the syllable preceding the schwa belongs to a different word, can be the result of the fact that a word boundary can be optionally analyzed as a boundary for syllabification. In the case it is a boundary for syllabification, it is consequently also a boundary for the computation of the syllabic markedness values, because the notion of syllabic markedness developed in section 2.3.3. crucially relates to syllabification. In that case the deletion of schwa would be forbidden, and in the opposite it would be obligatory.

A second problem concerning schwa-deletion has been noted by Dell (1973,p.232; 1980,p.208). It concerns the forms:

(60) a. hésiteriez /ezitə+riez/ [ezitərje] \* [ezitrje] 'would hesitate'
    b. volerions /volə+ri+onz/ [volərjɔ] \* [volrjɔ]'would fly, would steal'

The problem here is that the schwa in these forms cannot be deleted, while it can in the corresponding forms of the futur:

(61) a. hésitez /ezitə+rez/ [ezit(ə)rez] 'will hesitate'
    b. volerez /volə+rez/ [volə(ə)rez] 'will fly'

For this problem a straightforward solution can be found. It must be assumed that the morphemes -ions, -iez contain underlyingly a glide instead of a high vowel. Evidence for this can be found in the minimal pair:

(62) a. à Lyon /a+lijɔ/ [aljɔ] \* [aliɔ] 'in Lyons'
    b. allions /a+lijɔz/ [aljɔ] \* [aliɔ] '(we) went'

While the form in (62a) can be pronounced both with a high vowel and a glide (the second pronunciation being the result of the application of the rule of Semivocalization, to be treated in section 3.2.), the form in (62b) can only be pronounced with a glide, because it contains a glide underlyingly. The impossibility of the deletion of schwa in
The forms in (60) follow from the assumption that the morphemes -ions, -iez contain a glide underlingly. The deletion of schwa in (60a) would cause the onset of the last syllable in this form to become tri.

This is an unpermissible onset, because the syllable templates proposed in section 2.2. do not allow for an onset consisting of three segments (except if the first and second segments are an s and an obstruent respectively), thus the derivation is filtered out by the Syllabification Condition. The deletion of schwa in the form in (60b) is blocked by the Markedness Condition. Deletion of the schwa would increase the syllabic markedness value of the form:

(63)a. \[ \begin{array}{c}
\sigma \\
\text{0 1 3} \\
\text{0 +0 +0 +1 +0 +0 +3 (number of syll.) = 4}
\end{array} \]

b. \[ \begin{array}{c}
\sigma \\
\text{0 1 1 1} \\
\text{0 +1 +2 +0 +2 (number of syll.) = 5}
\end{array} \]

I will come back to the problems involving the verb-endings -ions, -iez in section 3.2.4.

The third problem concerning schwa-deletion is the fact that the deletion of the schwa in the negative particle ne takes precedence over the deletion of another schwa. This fact is noted by Dell (1973,p.255; 1980,p.236). Compare the forms in (64) and 65):

(64) je le demande /ʃe.nɛ.dəmɑ̃dɛ/ [ʃe.nɛ.dəmɑ̃dɛ] [ʃe.nɛ.dəmɑ̃dɛ] 'I ask it'

(65) je ne demande pas /ʃe.nɛ.dəmɑ̃dɛ.pas/ [ʃe.nɛ.dəmɑ̃dɛ.pas] 'I do not ask'

In (64) either the schwa in le or the one in demande can be deleted, but in (65) only the schwa in ne can be deleted. To this problem (for which Dell has formulated a rule that seems entirely adhoc, I see no solution. It can only be stated that the schwa in ne is more
accessible for deletion than other schwas.

The fourth problem concerns the deletion of schwa in syllables in utterance-initial position, cf. the forms in (66):

(66)a. venez ici /vənέζi/ [venεsi] 'come here'

b. te fais pas de bile /te fεзα paζибε/ [te fεпaζε] 'don't worry' (slang)

In these cases, the deletion of schwa appears to violate the Markedness Condition and, in the case of (66b), even the Syllabification Condition. I see unfortunately no solution to this problem.

3.2. Semivocalization.

3.2.0. Introductory remarks.

In this section it will be shown that a very simple rule that is formulated without an environment, can account together with the Syllabification Condition and the Markedness Condition, for the phenomena in French concerning the alternation high vowel/glide.

The most elaborate proposal concerning this alternation made thusfar, de Kok & Spa (1978; 1980) will be used as an illustration in order to show that the present proposal accounts for the phenomena in question in a principled and natural way. First, a summary of the proposal by de Kok & Spa will be given.

3.2.1. de Kok & Spa.

In their 1978 article, de Kok & Spa propose the following rules (p.68-69):

(67) DIER: [+cons] → [-cons]/ $C_2$ [ \[+voc -round\] ] OBL

(68) SEMI-VOC: [+voc] → [+cons]/ [\[+high -mid -stress\] ] V OPT

In addition to these two rules they propose the following global constraint:

(69) OLISEM:

\[
\left[ \left[ -\text{son} \right]_{1} [+\text{cons}]_{1} [+\text{high}]_{1} -\text{nas} \right] \cup \left[ \left[ -\text{son} \right]_{1} [+\text{cons}]_{1} [+\text{high}]_{1} -\text{mid} \right]
\]
This condition reads in words (p.70):

"if at the underlying level a syllable boundary is followed by the sequence: one or more obstruents, one or more non-nasal sonorant consonants (eliquid or glide), and a closed vowel, then the syllable boundary must also be followed by this sequence at the surface level."

The ordering of the rules is DIER, SEMI-VOC (de Kok & Spa (1978) note 3). Some examples of the application of DIER as given by the authors (1978, p.69) are:

(70)a. Adrien  
    -> adriɛ  'Adrien'

b. grief  
    -> griɛf  'grievance'

c. vivre  
    -> vivriɛ  'would live'

Some of the examples of the application of SEMI-VOC are (p.70):

(71)a. tuer  
    -> tye  'to kill'

b. skier  
    -> skje  'to ski'

c. il y a  
    -> il j a  'there is'

Some of the examples of sequences that are forbidden by OLISEM are (p.70):

(72)a. trouver  
    -> trou  'to punch a hole'

b. influence  
    -> influɛs  'influence'

c. appuyer  
    -> aplje  'to lean'

Not forbidden by OLISEM are (p.71):

(73)a. truite  [tʁyʁtɛ]  'trout'

b. proie  [prwe]  'prey'

c. groin  [ɡʁwɛ]  'muzzle'

(Apart from these three rules, de Kok & Spa also propose an apenthesis rule, which inserts a homorganic glide after a high vowel, thus allowing for phonetic forms as: [ɡʁifɛ], [skje̝], [ɛflyʁɛs]. This rule, however, is not of concern to us here.)

3.2.2. A criticism of the proposal of de Kok & Spa.

The proposal by de Kok & Spa may at first glance arouse suspicions
because there are two rules that work in each other's opposite direction: while DIER converts a glide into a homorganic high vowel, the rule of SEMI-VOC changes a high vowel into a homorganic glide. It also seems strange that the authors assume underlyingly a glide for the forms in (70a,b), while the phonetic forms always display a high vowel. The astute reader taking a closer look at the proposal will also notice that the rules of DIER and SEMI-VOC together with the global constraint OLISEM express three facts in all:

(i) no glide can be preceded by a tautosyllabic OL cluster;

(ii) in other cases there exists a free alternation high vowel/glide in prevocalic position;

(iii) there are exceptions to the statements in (i) and (ii) formed by words whose phonetic forms always display a glide preceded by an OL cluster.

De Kok & Spa have managed to express these facts by constructing two rules, one of which is optional while the other is obligatory and contains the environment: $0L_1$ (in its revised version, see note 11), and the global constraint OLISEM. Unfortunately this proposal, however observationally adequate, does not have very much explanatory power. It obscures the fact that a glide preceded by tautosyllabic OL cluster constitutes a violation of the notion of 'possible French syllable', which as we have seen in section 2.2., can only have an onset consisting of two segments (except in the case of cluster of three segments of which the first and the second are an $a$ and an obstruent respectively). This fact in itself explains why there can be no glide that is preceded by an OL cluster. The exceptions provided for by OLISEM can be explained in a natural way by the assumption of certain diphthongs entirely being dominated by the nucleus. This assumption has been made by Kaye and Lowenstamm and in connection with this assumption they proposed the Nuclear Integrity Constraint (see section 1.2.3.). In section 2.2.3., I have stipulated that these diphthongs are single phonemes.
In connection with this stipulation I proposed the Branching Nucleus Constraint\(^{13}\). Part of the facts for which de Kok & Spa formulate their proposal are thus simply a consequence of syllabification.

3.2.3. An alternative proposal.

I will now formulate my own proposal which consists of one rule, which is formulated without environment. As mentioned in the introduction to this chapter and in section 3.1.2., this rule will be part of a class of rules that is subject to two conditions, the Syllabification and the Markedness Condition, which have been formulated in section 3.1.2.. I will formulate the rule as follows:

\[(74)\) Semivocalization:

\[
\begin{bmatrix}
+\text{voc} \\
+\text{hi}
\end{bmatrix} \rightarrow [-\text{voc}]
\]

I will now give examples of cases in which the Syllabification Condition and the Markedness Condition determine that the rule of Semivocalization is obligatory, optional or forbidden.

The Syllabification Condition forbids the application to the following underlying forms:

\[(75)a.\) Adrien /adriɛ/ [adriɛ] \text{"}adriɛ\text{"} 'Adrien'

\[(75)b.\) grief /ɡriɛf/ [ɡriɛf] \text{"}ɡriɛf\text{"} 'grievance'

These forms have been used by de Kok & Spa as an illustration of the working of their rule DIER (see (70a,b). Unlike de Kok & Spa, I assume an underlying structure with a high vowel. As already pointed out out in the previous section, an onset consisting of an obstruent+liquid+glide cluster violates the notion of 'possible French syllable'. Also, an obstruent+liquid cluster cannot be split up into two different syllables (see section 2.5.1.), thus, in the case of (75a), a syllable structure with a coda filled by the obstruent followed by an onset consisting of a cluster of the liquid and the glide is not possible.
Hence the Syllabification Condition blocks the further derivation of the string if the rule of Semivocalization applies to the underlying forms in (75). For problems connected with the form in (70c), I refer the reader to section 3.2.4.

An example of a case in which the Markedness Condition makes the application of the rule of Semivocalization obligatory can be found in (76):

(76) Paris-Ouest /pari^ust/ [pari_wst] 'Paris-West'

The Markedness Condition blocks further derivation of the string in the case of non-application of the rule of Semivocalization, because the application of the rule decreases the syllabic markedness value of the form, cf. (77a,b):

(77)a. O O O O O
     0 +0 +0 +0 +1 +0 +1 +0 +1 +2 +4 (=number of syll.) = 8

b. O O O O O
     0 +0 +0 +0 +0 +0 +0 +2 +3 (=number of syll.) = 5

Examples in which the rule of Semivocalization applies optionally are easy to be found, and are essentially of the form: XC {y} VY.

Cf. the forms in (78):

(78)a. l'ouest /li^uest/ [luest]~[luest] 'the west'
    b. nier /ni+e/ [nie]~[nje] 'to deny'
    c. nuage /nyaʒ/ [nyaʒ]~[nyaʒ] 'cloud'
    d. tu as vu /tya^v/ [tyavy]~[tyavy] 'you have seen'

In these cases the syllabic markedness values resulting from application and non-application of the rule of semivocalization are the same, cf. (79):
(79) a. \[ \begin{array}{c|c|c|c|c} \hline & & & & \\
R & R & R & R & \hline 0 & 1 & \emptyset & \text{est} & \hline \end{array} \]

\[ 0 + 0 + 1 + 2 + 2 \ (\text{number of syll.}) = 5 \]

b. \[ \begin{array}{c|c|c|c|c} \hline & & & & \\
R & R & \emptyset & \text{est} & \hline 0 & 1 & \hline \end{array} \]

\[ 2 + 2 + 1 \ (\text{number of syll.}) = 5 \]

No clear cases can be found in which the Markedness Condition prohibits the application of Semivocalization, because in those cases the syllabic markedness value of the forms should be increased. For this to be the case, the increase in the markedness value of the onset caused by the complication of the onset may not be counterbalanced by a loss in markedness value caused by the disappearance of an empty onset and a decrease in the number of syllables. In all such cases however, e.g. in the case in which a high vowel is not followed by another vowel, the phonetic forms resulting from the application of Semivocalization are also filtered out by the Syllabification Condition.

Still a word must be said about the specification [-stress] in the formulation of the rule of SEMI-VOC proposed by de Kok & Spa. This specification is needed in order to avoid the application of SEMI-VOC in words like the ones in (80):

(80) a. antieuropen /\text{\textipa{ati+prop\textae}}/ [\text{\textipa{atj\textae}}p\text{\textae}] 'anti-european'

b. miliampere /\text{\textipa{mili+ap\textae}}/ [\text{\textipa{milj\textae}}p\text{\textae}] 'miliampere'

In my proposal, the non-application of semivocalization in these cases follows from the assumption that the boundary between the two formatives in these words is a boundary for syllabification. In that case, the Syllabification Condition blocks the further derivation, because \text{\textipa{\textae}} and \text{\textipa{\textae}} are not permissible French codas.
3.2.4. The verb-endings -ions, -iez.

The alternation high vowel/glide in the verb-endings -ions, -iez display a different pattern than the other high vowel/glide alternations. In section 3.1.2.2, it was argued that these forms contain a glide underlyingly. However, there is one case in which these verb-endings show up with a high vowel at the surface: in the case that they are preceded by an OL cluster. An example can be found in (70c) and also in (81):

\[(81) \text{entrions} \quad /\tilde{e}t^r+\tilde{j}\tilde{o}/[\tilde{a}tri(j)]\] 'would enter'

(The optional \(j\) in the phonetic form here is the result of the application of an epanthesis rule, which is not of concern to us here.) For this fact, noted by de Kok & Spaa, no explanation can be provided in my theory. Of course the Syllabification Condition forbids the OLG cluster in the onset which would otherwise be the result if the high vowel would not have changed into a glide (which it apparently has) but a special rule must be devised converting a high vowel, which seems rather adhoc (there seems to be a relationship between the Syllabification Condition and the change glide\(\rightarrow\)high vowel, in the sense that the violation of the Syllabification Condition which would otherwise occur, seems to trigger the change glide\(\rightarrow\)high vowel; Formulating a separate rule for this occasion would obscure this relationship).

3.2.5. The question of underlying glides and the ordering of the rules of Schwa-Deletion and Semivocalization.

The question may be asked whether there are underlying glides in French at all. Kaye & Lowenstamm (1980) do not assume them, but hypothesize that the phonetic nature of a high vowel is determined by its place in the syllable. I think that underlying glides do exist, in the verb-endings -ions, -iez, but also in a fairly limited number of
other forms, which are mostly of foreign origin. Cf. the contrast between the forms in (82) and (83) (= (18a,c) of chapter 1):

(82)

(a) l’ouie /lɔ̃wi/ [lɔ̃wi] 'the gill'
(b) l’ion /lɔ̃jɔ̃/ [lɔ̃jɔ̃] 'the ion'
(c) l’huître /lɔ̃yitrə/ [lɔ̃yitrə] 'the oyster'

(83)

(a) le whisky /lɔ̃wiksi/ [lɔ̃wiksi] 'the whisky'
(b) le yaourt /lɔ̃jaʊrt/ [lɔ̃jaʊrt] 'the yoghurt'
(c) le huit /lɔ̃yit/ [lɔ̃yit] 'the (number) eight'

As is displayed by the underlying forms given here, I assume that the contrast in the application vs. non-application of Schwa-Deletion between the forms in (82) and those in (83) is due to the fact that in forms in which the deletion of schwa does not take place, there is underlyingly a glide, while in forms where Schwa-Deletion does apply, the schwa is followed by a high vowel.

Because of this, the rule of Schwa-Deletion must apply before the high vowel has turned into a glide, thus Schwa-Deletion must apply before Semivocalization. We have already seen in section 1.4.1. that Schwa-deletion has to follow Nasalization. Nasalization has to follow the initial syllabification because it crucially refers to syllable structure. In section 2.1.2. it was argued that the rule of truncation has to precede the initial syllabification.

We thus come to the following ordering of rules: Truncation, Initial Syllabification, Nasalization, Schwa-Deletion, Semivocalization.

3.3. Concluding remarks to chapter 3.

In this chapter, I have given a principled account of two syllable changing processes in French: the deletion of schwa and the change high vowel — glide. Both processes take place in various contexts. For each of these processes, a very simple rule has been formulated. In addition, two conditions have been formulated to which both
rules are subject. One of these conditions, the Syllabification Condition, does not need to be stated separately in the grammar, but follows from syllabification. By this condition alone, many facts are explained in a natural way, for which quite complicated rules had to be formulated hitherto. Also the other condition, the Markedness Condition, which has to be stated independently but which is also related to syllabification, can account for a great many facts that up to this moment were unexplained, or could only be accounted for by a fairly large number of disparate rules. The basic idea behind my analysis is that the processes of schwa-deletion and semivocalization are governed by the same principles that govern syllabification: the prohibition against violating the notion of 'possible syllable' and the tendency to achieve lowest possible syllabic markedness.

It has also been shown that the 'modular' approach (simplification of the rules as such, connected with the development of a system of (preferably language-independent) conditions, which has been paramount in EST syntax for the last few years, can also be fruitful in generative phonology.

Notes to chapter 3.

1. These rules are in the 1973 version of Dell's book (p.258-9):

   - ELIS: $\rightarrow \phi / ([-\text{seg}]) [+\text{syl}]$ OBL
   - V-E: $\rightarrow \phi / V$ OBL
   - PAUS: $\rightarrow \phi / VC_{o-\phi} \, S$ OBL
   - E-FIN: $\rightarrow \phi / VC_{o-\phi} \, S$ OBL
   - NE-EX: $\rightarrow \left[ \begin{array}{c} \text{rule INI} \\ \text{rule VCE,} \end{array} \right] / \left\{ \begin{array}{c} \text{\#}n\phi \neq C \\ \text{\#}n\phi \neq C \end{array} \right\} OBL$
   - INI-EX: $\rightarrow \left[ \begin{array}{c} \text{rule INI} \\ \text{\#}n\phi \neq C \end{array} \right] / \left\{ \begin{array}{c} \text{\#}n\phi \neq C \\ \text{\#}n\phi \neq C \end{array} \right\} OBL$
In the 1980 version of his book the formulations of some rules were somewhat altered and the output constraint OBLICONS was added (p. 239-41):

\[ \text{FIN-DEL} : V \rightarrow \emptyset / V C_0 \text{[+s]} \]

(replaces PAUS and E-FIN)

\[ \text{VCE}_1 : \emptyset \rightarrow \emptyset / V C_0 \text{[+s]} \]

\[ \text{VCE}_2 : \emptyset \rightarrow \emptyset / V C_0 \text{[+s]} \]

\[ \text{FUT-DEL} : \emptyset \rightarrow \emptyset / X_{+r+} \]

(replaces E-FUT)

OBLICONS: \[ ^{+\text{son}}[-\text{nas}]^{+\text{cons}} \]

2. These cases are: the obligatory deletion of the vowel in the feminine definite singular article \( /la/ \), the optional deletion of the vowel in the second person singular pronoun \( /ty/ \), both in pre-vocalic position, and the obligatory deletion of the \( i \) in \( /si/ \).

3. The first occurrence of the underlying form in (3b) is converted into \( E \) by virtue of rule (9) (below) according to Selkirk's proposal.

4. These data are from Juillard (1965), and have been checked with native speakers.

5. If one attempts to formalize this condition, the \( \alpha \) notation may be used, thus making the rule look much simpler than in (33):

Syllabification Condition (formalized):

\[ \text{if } S(\alpha A(R)) < S(\overline{\alpha} A(R)), \text{ then } ^{+\overline{\alpha}A(R)} \]

in which \( S = \) syllabic markedness value

\( A = \) application

\( R = \) member of the set of environmentless rules.

6. As already mentioned in section 2.1.2., French like Cairene Arabic syllabifies across word-boundaries. For the notion of 'possible French syllable' see section 2.2.

7. In Dell (1980) this condition is called OBLICONS.

8. According to Dell, a schwa can be deleted in the environment \( CC_{+r} \) only in the case of a future (the deletion is not possible if
CC = OL). He cites some forms that are not a futur in which a schwa in the environment CC cannot be deleted, e.g. fumisterie [fymistari] 'hoax'. According to Lerond (1980) and Dubois (1960) however, this form can also be pronounced without a schwa. It thus appears that there is no morphological conditioning involved here, contrary to Dell's suggestion.

9. For most speakers the deletion of the schwa in (60b) is obligatory.

10. i.e. rule NE-EX in note 1.

11. In de Kok & Spa (1980, p. 237) the formulation of this rule has been changed into:

$$[	ext{cons}] \rightarrow [\text{-cons}] / [\text{-son}]$$

On page 245 they explain that this formulation makes it possible to order the rules of DIER and SEMI-VOC in an intrinsic way, thus making possible the pronunciation of skiez /skiez/ as: [skje]. It should be remarked that in my theory (see section 3.2.3., this phonetic form can be accounted for by the fact that ski constitutes a possible French onset (by templates (12) and (13) in chapter 2).

12. In de Kok & Spa (1980, p. 245) the rules are ordered intrinsically (see note 11).

13. cf. (16) of chapter 2. It appears that u\v also belongs to the diphthongs in French that are exclusively dominated by the nucleus, along with wv, jc and u\v[v]. The reason for this is the possibility of (73c), as well as the fact that words like foin, moine, loin 'hay, less, far' are always pronounced as [f\v], [m\v], [l\v], and never as "[f\v], [m\v], [l\v], which would otherwise have been possible.