AN EXAMINATION OF

VOWEL EPENTHESIS

IN SPANISH.

by

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ABSTRACT

AN EXAMINATION OF VOWEL EPENTHESIS IN SPANISH

This study attempts to provide a description of certain alternations of

Spanish Phonology involving the vowel [e] within the framework of generative

phonology outlined in Chomsky and Hall (1968).

In earlier studies of Spanish phonological structure, hypothesis about

the nature of the underlying processes have been proposed which identify

different rules of apocope, epenthesis (including 'prothesis', 'anaptyxis'

and 'paragoge'), diphthongization or monophthongization as the basic cause

for the alternations involving [e]. It is the purpose of this thesis to

show that a unified analysis, effected solely in terms of a 'block' rule of

epenthesis provides new insights into and generalizations about Spanish

phonology that would otherwise not be statable.

The aspects of Spanish phonology for which an epenthesis analysis is

proposed are:

    (a) <u>Prothetic [e]</u>:

        [<u>e</u>skribír] 'to write'   /skribir/

        [inskribír] 'to inskribe' /in-skribir/

    (b) <u>Definite Article</u>:

        [<u>e</u>l ómbre]   'the man'

        [la muxér]   'the woman'

        [a la muxér] 'to the woman'

        [al ómbre]   'to the man'

    (c) <u>Word-final [e]</u>:

        [pób<u>re</u>]   'poor'

        [pobrísimo] 'very poor'

(d) <u>Plural [e]</u>:

     [mésa]   'table'   [mésas]   'tables'

     [pán]   'bread'   [pánes]   'breads'

(e) <u>Diphthong-formation</u>:

     [podér]   'can'

     [pwéden]   'they can'

All the cases considered exhibit two allomorphs of the form /XYZ/ and /XZ/, where /Y/ is the possible epenthetic element, and /X/ and /Z/ may be the boundary /#/. Epenthesis rules '∅ ⟶ Y' are contrasted with apocope rules 'Y ⟶ ∅' because under comparable conditions, the two rules can yield apparently equivalent analyses.

$$/XZ/ \qquad\qquad /XYZ/$$

    Y   epenthesis   ∅   apocope

$$[XYZ] \qquad\qquad [XZ]$$

The well-documented case of prothesis allows us to set up some basic characteristics of epenthesis rules and of epenthetic vowels which are later identified in the description of the other [e]-involving alternations. Among these, are the interaction between epenthesis and stress-assignment, the redundant character of the vowel [e] in the environments under consideration and the effect of epenthesis on constraints on canonical structures at the phonemic and phonetic levels of representation.

Nonverbal lexical categories are defined in terms of morphological and phonological characteristics that can be evidenced in particular within an epenthesis framework. Furthermore, some historical aspects are examined in order to indicate more clearly the general validity of positing rules of the form ' ∅ ⟶ e ' in the synchronicdescription of Modern Spanish.

The postulation of a general EPENTHESIS rule to account for the alternations considered results in a clearer and more general description of the aspects of Spanish Phonology mentioned in (a) through (e) above. Where in previous analyses these different aspects have been described as being unrelated, in the present analysis, all these aspects are shown to be different aspects of the same underlying process.

The postulation of epenthetic vowels results in a reformulation of canonical constraints at the two levels of representation. These are stated in part and certain aspects of morphological compounding are thereby simplified. A reformulation of the Spanish Stress Rule is also necessary. This rule is compared to previous proposals and shown to be simpler and more descriptively adequate.

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Introduction

1-0.0 Scope of the thesis

There is in Spanish a generally accepted phonological rule (Foley, 1965;

Harris, 1969; Saltarelli, 1970) which introduces a vowel [e] before a word

initial sC cluster (where C stands for any segment of specification

[+consonantal]). The general form of the rule, which is usually called

'prothesis', can be formulated as follows:

(1) $\emptyset \longrightarrow e$ / # __ sC

it is seen to apply in the derivation of words like escribir 'write':

/skribir/ Phonemic Representation[1]

e   epenthesis (1)

[eskribír] Phonetic representation

In most of the recent literature on Spanish phonology, the problems

studied have centred around the behaviour of a vowel [e] in different parts of

the word. The purpose of the present study is to extend the epenthesis

analysis exemplified by Prothesis (1) from word-initial to word-medial and

word-final positions in an attempt to unify different aspects of Spanish

phonology which, so far, appear unrelated.

All the cases considered exhibit two allomorphs of the form /XYZ/ and

/XZ/, where /Y/ is the possible epenthetic segment and where /X/ and /Z/ may

be /#/, a special type of boundary that will be defined in 2-1.0. In some

cases, rules of the form '$\emptyset \longrightarrow$ Y' will need to be contrasted with rules of

the form 'Y $\longrightarrow \emptyset$' because, in identical allomorphic conditions, both

epenthesis and its opposite process apocope can be considered as possible

solutions for the same alternation:

/XZ/	/XYZ/
Y epenthesis	$\emptyset$ apocope
[XYZ]	[XY]

In all cases, the epenthetic element will be shown to be redundant, i.e. statable by rule, and, in all cases, language specific conditions as well as general theoretical principles will be considered in the motivation of a particular solution.

1-1.0 Other [e]-involving aspects of Spanish.

(a) The definite article [el]:

In chapter 2 it will be shown that the phonemic representation of this article is /l/ and that the [e] occurring in initial position must be introduced by rule, to account, among other alternations, for the allomorphs /el/ and /l/ seen in the forms [el kamíno] 'the road' and [al pwéblo] 'to the town' (where [al] is the contracted form of the preposition /a/ 'to' with the definite article /l/ 'the').

(b) Plural formation:

The Spanish plural morpheme /s/ has two realizations /s/ and /es/ depending on whether the singular ends in a vowel or a consonant, as seen in the following words:

> [péRo] 'dog'
> [péRos] 'dogs'
> [kalór] 'heat'
> [kalóres] 'heats'

This alternation has been treated as involving either apocope (Foley, 1965; Harris, 1969) or epenthesis (Saltarelli, 1970; Contreras, UM). A reexamination of the problem is necessary because of the nature of the thesis proposed here (1-0.0 above).

(c) Word-final [e]:

Certain Spanish nonverbal forms have two realizations, one ending in [e] and another without [e]:

[párte]   'part

[partisipánte]   'partaker'

[partído]   'game'

[póbre]   'poor'

[pobrísimo]   'very poor'

Because of certain apparent similarities and differences between the plural

[e] and the word-final [e] in the two classes of words exemplified below, (b)

and (c) will be considered together in Chapter 3.

[párte]   [pártes]

[kalór]   [kalóres]

(d) Diphthongization.

The phonological alternations accounted for as processes of 'diphthong-

ization (Foley 1965; Harris, 1969), 'monophthongization' (Normal and Sanders,

1977), 'Breaking-Raising and Epenthesis' (Brame and Bordelois, 1973, 1974)

will be studied to examine whether epenthesis or apocope is involved in order

to test the strong form of our epenthesis hypothesis.

In terms of the basic hypothesis outlined in this introductory chapter,

and within the general linguistic framework adopted for the analysis, both

solutions must be critically considered because the alternations are manifested

by two allomorphs, one with a vowel [e] and one without it (the glides [j] and

[w] being realizations of the same phoneme as the unstressed mid-vowels [e]

and [o] respectively):

[pwédo]   'I can'

[podémos]   'we can'

[sjénte][2]   'he/she feels'

[sentímos]   'we feel'

The alternation between diphthongs and mid-vowels is a general process

determined by phonological conditions and is therefore exemplified by items

of most lexical classes. In certain third conjugation verbs such as [sentír]

'to think', a three way alternation [e]/[i]/[je] results from the joint
application of diphthongization and of a morphologically determined rule which
accounts for the alternation [e]/[i] exhibited by the two forms [desír] 'to
say' and [dísen] 'they say'. In Chapter 4, an attempt will be made to offer a
solution for the three types of vocalic alternation mentioned in this section.

Because of the different effects of apocope and epenthesis analyses on
the formulation of the Spanish Stress Rule (SSR), a reformulation of this rule
will be made throughout the present thesis. Nonverbal lexical categories will
be defined in terms of morphological and phonological characteristics that can
be evidenced, in particular, within an epenthesis framework. Furthermore,
some historical aspects will be examined in order to indicate more clearly the
general validity of our conclusions across both the diachronic as well as the
synchronic aspects of Spanish phonology.

The data considered in the present analysis is equivalently representative
of "Spanish" as that presented in the literature mentioned in this thesis.
The data has been confirmed by native speakers of Spanish; in cases of
dialectal variation, a Mexico-City class dialect was prefered.

Footnotes:

[1] Following current trends in phonology, the analysis of phonological structure is carried out at two levels of representation. 'Phonemic representation' corresponds to the level described by Chomsky and Halle (1968) as 'systematic phonemic' and not to the level described by 'structural linguists'. Phonemic representations are the input to the phonological component, rules apply to these forms to yield 'phonetic representations'.

[2] For our purposes, the symbol [j] represents the semi-vowel of feature specification [-vocalic], [-consonantal]. This glide is opposed to the glide [w] by being [-back] rather than [+back].

Chapter 2

Epenthesis in initial position

2-0.0   A descriptively adequate analysis of Spanish requires the inclusion

of rule (1) in its inventory of phonological rules.

(1) $\emptyset \longrightarrow$ e / # _ sC

This rule adds a vowel [e] 'word'-initially when the first two segments are

consonants and the first is /s/. The lexical representations /skrib/ and

/spir/ occur in the data in (2) with two phonetic shapes.

(2)   [eskribír] 'to write'   [inskribír] 'inscribe'

[transkribir] 'transcribe'

[espirár] 'breath out'   [aspirár] 'breathe in'

[konspirár] 'conspire'

[inspirár] 'inspire'

[ekspirár] 'expire'

[suspirár] 'sigh'

When the stems are preceded by a derivational prefix and separated from it by

a boundary /+/[1], the rule of epenthesis does not apply and, thus, the [e] does

not appear before the /sC/.

/##in+skribir##/   /##skribir##/

e   epenthesis

[inskribír]   [eskribír]

Because of the application of epenthesis in the words eslavo 'Slavic' eslabón

'link', (1) must be reformulated as (3) to account for the occurrence of [e]

before /sL/ as well as before /sC/.

(3) $\emptyset \longrightarrow$ e / # _ s [+cons]

The first part of this chapter consists of a detailed presentation of this

case of epenthesis. The essential parts of the grammatical system required

for an adequate description of the [e]-involving alternations will be

presented using epenthesis (3) as an example. In part two, the morphology of nominal predeterminers is sketched and arguments for extending the process of epenthesis to another word-initial environment are presented in order to account for the allomorphs of the definite articles /el/ and /l(a)/.

2-1.0   The 'trading relations'[2] between the lexicon and the phonology must be described, because it is in terms of these that boundaries are assigned in most cases. Boundaries /#/ are assigned in Spanish to mark the concatenation of stems and inflections. Stems correspond closely to Aronoff's 'word' (1976): they are roots and derivational morphemes. In Spanish, derivational morphemes are prefixal, as in (2) above, or suffixal; inflectional morphemes are always suffixal.

Aronoff studies word formation in terms of structures such as English institution and excludes from the analysis the formation of words like institutions because of the presence of the inflectional plural morpheme /s/ which is not strictly a lexical morpheme. Since, in Spanish, there is a greater number of inflections than in English and since the analysis is phonological rather than lexical, a difference must be made between 'stem' and 'word'. Spanish institución will be considered to have a stem /institusjon/ and to be a word at the two levels of representation: /institusjon/ and [institusjón]. The plural structure will have the same stem as the singular: /institusjon/ but will be different from it, as a word, at the two levels of representation: /institusjon#s/ and [institusjónes]. The [e] increment seen in the phonetic representation [institusjónes] will be shown to be epenthetic in Chapter 3 and therefore need not concern us here.

To conclude, inflections such as the plural morpheme /s/ are part of the word but not part of the stem. The inflections, which, as mentioned above, are always suffixal, are always separated from the stem by a boundary /#/.

Aronoff calls this boundary a word-boundary; here we prefer to call it a

stem-boundary, reserving the name of word-boundary to the occurence of two

boundaries /#/, i.e. /##/.   Double /#/-boundaries occur when two words are

concatenated: /#gran##dolor/ 'great pain', and are also considered to occur

at the beginning and end of utterances: /##un##gran##dolor##/ 'a great pain'[3].

2-1.1   In Chomsky and Halle's model, described in The Sound Pattern of

English (1968) (henceforth SPE), there are two lexicons separated by the

syntactic component. The trading relations between the two lexicons and the

phonological component are mediated by the syntactic component, as seen in

Figure 1.

Figure 1
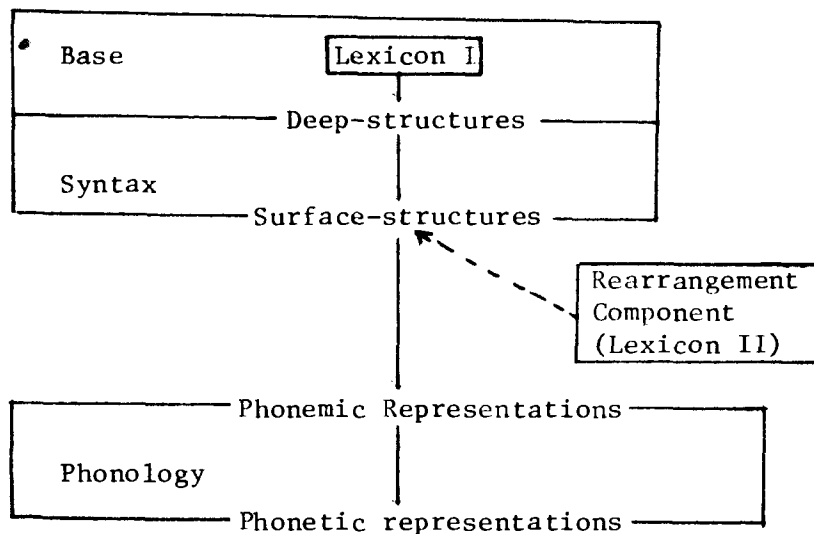
The two lexicons represented in Figure 1 must each have at least two

subcomponents: one must be a list of morphemes (or dictionary) and the other

a set of insertion rules, or formation rules. The rules in Lexicon I may be

of the type described by Aronoff (1976) as word formation rules. We will not

deal with them here. The rules will be formulated as interpretive rules of

the type of (4) below. These rules are modelled on Hooper's 'insertion rules'

(1976), after Hudson), but formulated differently. Rule (4) inserts the

plural morpheme /s/ of Spanish whenever the feature [+plural] appears in the output of the syntactic component.

(4)   [+plural] $\longrightarrow$ /s/

Our intent is to show that, in Spanish, inflections are stored in Lexicon II of Figure 1, and inserted by rules such as (4). The reason why a difference is made between stems and inflections, is because stems originate in Lexicon I and inflections originate in Lexicon II.

The reason why the two lexicons are separated in the SPE model is because stems are inserted pre-transformationally, and many inflections cannot be introduced until after transformations such as tense-concord, person, gender and number agreement have applied. In more recent syntactic models (e.g. Chomsky and Lasnik, 1977), lexical insertion need not be considered to apply pre-transformationally in the same way as specified in the Aspects model (Chomsky, 1965), but may be post-transformational. A logical consequence of this is that, if all lexical insertion is post-transformational, then, in a newer linguistic model, the positions of Lexicons I and II in the grammar must correspond to the position of Lexicon II only in Figure 1.

In the SPE model, it is possible to make a distinction between the origin of stems and that of inflections in terms of the position of the particular lexicon in the grammar. In a model such as Chomsky and Lasnik (1977) the same distinction must be made, but the reasons are different. Stem-formation (Aronoff's word-formation) can be carried out totally in terms of lexical rules but inflectional processes require the syntactic output for their application. Inflection insertion rules must also be, in this later model, interpretive rules such as (4).

Figure 2 can represent the types of trading relations that intervene in the generation of a correct phonemic representation. The syntactic component

is omitted, but it is understood to be present, since the division Lexicon I/II
must be maintained.

Figure 2

LEXICON I Roots and Derivational morphemes	LEXICON II Inflectional morphemes	LISTS
Stem Formation Rules	Morpheme Insertion Rules	Insertion and Combination Rules
/institusjon/	/s/	

/institusjon#s/	OUTPUT

The output in Figure 2 corresponds to the input to the phonological
component. In essence, the output from the lexicons is the phonemic
representation. To this structure phonological rules apply.

Instances of the boundary /+/ (c.f. p.7 ft.n.1) will not be mentioned in
representations unless it is required for expository purposes. The boundary
/#/, on the other hand, is of particular relevance to the process of word-
formation named 'epenthesis' which is the central issue under consideration
here.

2-1.2 Word-Structure Rules.

The rule of epenthesis (3) applies to underlying representations like
/stasjon/ 'station' resulting in forms like [estasjón].

(3) $\emptyset \longrightarrow$ e / #_s [+cons]

Following the definition of boundaries /#/ and /##/ as stem- and word-
boundaries respectively, (3) should be reformulated as (5) because this is a
rule of epenthesis that applies in word-initial position, as the more

particular name of the rule, Prothesis, indicates.

(5) $\emptyset \longrightarrow$ e / ## __ s [+cons]

Foley (1965) shows clearly that there are two prefixes in Spanish, /in/ 'negativizer' and /des/ 'oppositive', which permit the application of epenthesis in a position which phonetically is word-medial. In 2-0.0 above it was shown that the root /skrib/ undergoes prothesis in the word [eskribír] 'to write', but that prothesis does not apply when prefixes such as /in/ 'into' and /trans/ 'across' precede the same root: [inskribír] 'inscribe', [transkribír] 'transcribe'. In words like [inestáble] 'unstable' and [desesperár] 'despair', there is some evidence that the correct formulation of the epenthesis rule is (3) and that the two prefixes which permit its application must be separated from the stem by /#/: /in#stabl/ and /des#sperar/, and not by /+/ as in /in+skribir/ and /tran+skribir/. (3) will insert the epenthetic [e] in cases like [eskribír] as well as in cases like [inestáble].

Hooper (1976) proposes that cases of epenthesis in Spanish should be accounted for in terms of syllabic boundaries /$/, and not in terms of boundaries like /#/. Hooper distinguishes between phonetic and morphological boundaries. If epenthesis is a phonetic rule, as Hooper attempts to demonstrate, then it must be syllabic boundaries /$/ and not morphological boundaries that condition the application of the rule. In her model, underlying representations like /sperar/ are assigned syllabic boundaries, /$s$pe$rár$/. Since a syllable requires, by Hooper's definition, a vowel, the syllable /s/ of /$s$pe$rár$/ cannot surface in phonetic representations. Epenthesis of the 'minimal vowel' ([e] for Hooper) must apply resulting in an adequate syllable /es/, and the correct phonetic representation can now be generated: [esperár].

In cases of words like [esperár], it is possible to follow Hooper's method and assign boundaries in such a manner that an environment where epenthesis can apply is formulated. In the case of words like [desesperár] or [inestáble] boundaries /$/ must be assigned in such a way as to create syllables like /s/: /des$s$pe$rar/ and /in$stabl/, but in the case of words like [konstáble] and [inskribír] syllables like /s/ must not be created because epenthesis does not apply: /konstabl/ and /inskribir/. If epenthesis had to be explained in terms of syllables and boundaries /#/ to make the difference between [inestáble] and [konstáble]. It follows that if epenthesis must be explained in terms of syllable boundaries, and that the assignment of boundaries /$/ is done in terms of boundaries /#/, a solution which can explain epenthesis in terms of boundaries /#/ must be preferred since it is the boundary /#/ and not the boundary /$/ which is the basic cause for the application of epenthesis in words like [inesperádo] 'unexpected'. In the present model, the boundary /#/ has a morphophonemic status and it is this particular characteristic that distinguishes epenthesis from rules triggered by environments specified purely in terms of sequences of segments C, V, L, G.

Epenthesis (3) can, in fact, be compared to Morpheme Structure Rules rather than to 'low-level phonetic' rules. The reformulation (6) of (3) can be interpreted as a lexical redundancy rule. An unspecified matrix becomes the matrix representing the vowel [e] in some specific conditions.

$$(6) \quad [\ ] \longrightarrow e\ /\ \#\underline{\quad} \begin{bmatrix} +consonantal \\ +coronal \\ +anterior \\ +continuant \\ +strident \end{bmatrix} \quad [+consonantal]$$

Chomsky and Halle (1968:382) say that rules such as (6) "have been called 'morpheme structure rules' or 'lexical redundancy rules' and form a part of the readjustment component". (6) shares some characteristics in common with

Morpheme Structure Rules. These rules serve to estate the combinatorial

properties of segments and constraints on canonical forms. The interpretation

(6) of prothesis implies that, in Spanish, [VsCV] structures are preferrable

to canonical forms *[sCV], although these are acceptable in phonemic

representations. In other words, constraints on canonical forms must be

defined independently for phonemic and phonetic representations. That

epenthesis is not, in fact, a MS rule is evidenced by the interaction between

the stress rule and prothesis. Stress applies before epenthesis and therefore,

the segment [e] cannot be added by a rule belonging to the readjustment

component.

There are some particular environmental conditions, i.e. #__s [+cons],

which trigger a rule of prothesis. The rule of prothesis also represents a

particular structural constraint on canonical forms. An attempt will be made

throughout this thesis to show that epenthesis is a structural constraint

that operates at the level of the word and not of the morpheme as do MS-rules.

2-1.3 Epenthesis and stress.

The vowel [e] introduced by the rule of prothesis is unstressed because

this particular case of epenthesis is ordered after stress, as Harris has

shown (1970:929). Consider, for example, the verb estar 'to be'. Although

the verb has two phonetic syllables, like the verb amar 'to love', it

follows the stress pattern of monosyllabic verbs like dar 'to give', as can

be seen from the data in (7):

(7)	[estár]	[dár]	[amár]
	[estóy]	[dóy]	[ámo]
	[estás]	[dás]	[ámas]
	[está]	[dá]	[áma]
	[estámos]	[dámos]	[amámos]
	[están]	[dán]	[áman]

The apparently anomalous behaviour of stress in the verb estar can be
accounted for if the phonemic representation of the form is considered to be
/star/ and if, at the point where stress applies, this verb is monosyllabic:

/stan/	/dan/	/aman/	
á	á	á	stress
e			epenthesis
[están]	[dán]	[áman]	

The stress rule has to be ordered before epenthesis. If epenthesis were
to apply before the stress rule, estar would have two vowels instead of one at
the point where the stress rule applies, and the forms of this verb would then
follow, incorrectly the stress pattern of amar, resulting in forms like
*[éstan].

/stan/	/aman/	/dan/	
e			epenthesis
é	á	á	stress
*[éstan]	[áman]	[dán]	

In fact, if epenthesis were to be ordered before stress, the very existence
of the epenthesis rule would be in question. The only way that it can be
shown empirically that epenthesis exists, is by showing that other rules
must apply prior to the appearance of the epenthetic segment in the underlying
representation and that this results in a more general description.

Not all [e] vowels occurring word-initially before a cluster beginning
by /s/ can be shown to be epenthetic. There are words like [ésta] 'this (fem.)'
which have the vowel [e] stressed even though, in phonetic representation,
this vowel is in an environment which, except for stress, is identical to the
environment of the epenthetic [e] in the word [está] 'is'[4].

2-1.4 The Spanish Stress Rule (SSR), first version.

The verb stress rule will not be formulated in this thesis. The only stress rule that will concern us is the stress rule that applies to non-verbal forms. This rule will be described in greater detail in Chapter 3. The first version of this rule is represented in (8). The rule is formulated in such a way as to exclude verbs. Any type of inflection that may be attached to the stem and separated from it by the boundary /#/, as it was defined in section 2-1.0 above, is clearly non-stressable.

(8) V ⟶ [+stress] / __ Co (# X) ##

in [-Verb]

where X is not ∅

The stress rule (8) differs from the epenthesis rule (3) in the type of information used to specify the environments of application of the respective rules. The SSR requires, for its correct application, the information [-Verb] and is therefore morphologically determined. The epenthesis rule contains only information concerning phonological segments and boundaries. Following current trends in phonological theory (for particular interpretations of the same question, see Harris (1975) and Hooper (1974, 1976), rules of the type of (8) will apply before rules like (3).

The words in the left column of (9) are stressed by rule (8), and have their phonemic representations specified in the right column. The gender morphemes /a/ and /o/ are separated from the stems of the words by stem-boundaries /#/. Rule (8) interprets the gender morphemes as the information included between parentheses in (8) as X, therefore gender morphemes, in Spanish, are always unstressed.

(9)   [mésa]   'table, fem.'   /mes#a/

[késo]   'cheese, masc.'   /kes#o/

[négro]	'black, masc.'	/negr#o/
[négra]	'black, fem.'	/negr#a/

A consequence from the formulation of the SSR is that nonverbal forms are always stressed on a vowel that belongs to the stem, i.e. a root-vowel or a derivational morpheme-vowel. Although the SSR will be described in detail in Chapter 3, it is interesting to show that the consequence that word-final stressed vowels cannot be gender morphemes is borne out by the facts of Spanish: stressed word-final vowels are not gender morphemes.

Of the five vowels [a], [e], [i], [o] and [u] found in word-final position, [i] and [u] are clearly not gender morphemes.

[marabedí]	'Arabic coin'
[rubí]	'ruby'
[indú]	'Indian'
[perú]	'Peru'

Some words ending in [a] or [o] are stressed on the final vowel and should therefore not be gender morphemes. These words can be considered to be mostly proper names such as Paraná 'a river' and Panamá 'Panama'. Examples with [ó] are [kaló] 'name of Sp. slang' and [dominó] 'domino'. The words [papá] 'father' and [mamá] 'mother' must not have a gender morpheme because they are stressed and because the diminutives [mamasíta] and [papasíto] have both the final [a] of the basic form and the gender morpheme. It is a rule of Spanish that words with gender morphemes such as /mes#a/ table, never have in their diminutives two gender morphemes: *[mesasíta] is incorrect but [mesíta], with one gender morpheme, is the correct form.

The words ending in [e] cannot have a gender morpheme. The only word ending in a stressed [é] is [kafé] 'coffee'. This word is considered to have a phonemic representation /kafe/. The words ending with an unstressed [e], will be examined in detail in Chapter 3. Excluding this set, it becomes

evident that the SSR (8) applies to words ending in a vowel whether it is a

gender morpheme or not. In both cases the SSR places the stress on the

rightmost stem-vowel: /rubi/ ⟶ [rubí] and /mes#a/ ⟶ [mésa].

The same rule places the stress in words like [pastél] 'cake' and [aRós]

'rice'. These are the words ending in a consonant and having underlying

representations like /pastel/ and /aRos/; it is again the last stem-vowel

that is stressed.

The stress rule that places the stress on the penultimate stem-vowel of

words like [sábana] (/saban#a) and [kársel] (/karsel/) need not be formulated

in the present thesis. It is necessary to point out, however, that the

exclusion of gender morphemes from the domain of stress generalizes the

application of stress to two classes of words that phonetically are stressed

on different vowels if one counts from the end of the word[5].

Foley (1965) and Harris (1969) postulated a stress rule for Spanish

similar to the Latin stress rule. In the following section, an argument,

based on the interaction of epenthesis in initial position and stress, is

presented to show that the Latin Stress Rule (henceforth LSR) cannot account

for some basic facts of Spanish that are clearly explained by the SSR.

2-1.5 Foley (1965) proposed the LSR in conjuction with epenthesis as an

argument for the LSR. The word [eskwéla] 'school' is stressed on the

penultimate vowel of the word. Because this word is related to [eskolár]

'scholar', in Foley's system, the phonemic representation of [eskwéla] must be

/skŏla/, with a short /ŏ/ underlying the diphthong [wé].

Foley posited for Spanish two sets of vowels contrasting in the feature

[+/-length]. This is an opposition that existed in Latin but, which is not

found in Spanish phonetic representations. This opposition was necessary in

the 1965 model of Spanish because of the particular formulation of

diphthongization and of the stress rule. Diphthongization will be examined in detail in Chapter 4, and it will be shown that this 'abstract' feature postulated by Foley is not necessary to account for this particular case of vocalic alternation in Spanish. Until then, mid-vowels will be used to write underlying representations. An approximate form of the rule of diphthongization, proposed by Foley and later used by Harris, is shown in (10). The short mid-vowels diphthongize when stressed.

$$(10) \quad \begin{bmatrix} \breve{e} \\ \\ \breve{o} \end{bmatrix} \longrightarrow \begin{bmatrix} je \\ \\ we \end{bmatrix} / \underline{\hspace{3cm}} [+stress]$$

The LSR also requires for its formulation a distinction between short and long vowels. The case of the LSR that is of particular interest to us is one that requires the third last vowel of a word to be stressed if the second last vowel is short and is in an open syllable. For example, in Latin, the word [tempestátĭbus] 'tempest (abl. plur.)' is stressed on the antepenultimate syllable because the second last vowel is short and is followed by a single consonant. In contrast, the word [argéntum] 'silver (acc. sing.)' has a stressed penultimate vowel even though it is short. This is because the short vowel is followed by two consonants, the first of which forms a closed syllabe. Consider now the word [skólam] in Latin. The penultimate vowel is short and in an open syllable. This vowel is stressed because there are no other vowels preceding it in the word. In Spanish, the word [eskwéla] has an antepenultimate vowel in phonetic representation. By definition, the penultimate vowel is short since it diphthongizes. The short vowel is also in an open syllable. Normally, if the word-initial vowel [e] was part of the underlying representation, then the LSR would stress it and not the short [ŏ]. Since it is not stressed, Foley regards the initial [e] as epenthetic, and

thus, at the point in the derivation where the stress rule applies, there are only two vowels in /skŏla/ and the LSR stresses the penultimate vowel since there is no available antepenultimate vowel:

/skola/	/sabăna/	
ó	ā	LSR
e		epenthesis
wé		diphthongization
[eskwéla]	[sábana]	

As mentioned above, diphthongization in Spanish will be described in this thesis without recourse to the distinction of vocalic length. Consequently, it must also be possible to account for stress by a rule that does not require information concerning vocalic length.

Postulating a new stress rule for Spanish and, as will be done in Chapter 4, a new analysis of diphthongization, becomes necessary because a description of Spanish that does not postulate features that are not realized in phonetic representations is preferrable over a theory that uses abstract features. Foley posits ten phonemic vowels for Spanish. It is our claim that five vowels are sufficient to describe Spanish.

In terms of descriptive adequacy, epenthesis will account, in Foley's model, for the placement of stress in [eskwéla] 'school' and in [espwéla] 'spurr', but it will not in the words [abwéla] 'grand-mother' and [sarswéla] 'a type of dance'. These words have a short vowel in an open syllable, just like [eskwéla]. The difference is that they have an antepenultimate vowel and that under these conditions, the LSR should stress the antepenultimate vowel resulting in incorrect forms such as *[ábola]. In all these cases, the same pattern is followed, and epenthesis cannot be used to account for the behaviour of stress. These counterexamples demonstrate that the LSR cannot

account for all the data of Spanish. The SSR proposed in this thesis can
explain the behaviour of stress in all the cases mentioned in this section,
since in all cases it is the last vowel in the stem that is stressed:

/skol#a/	/spol#a/	/tačol#a/	/abol#a/	
ó	ó	ó	ó	SSR
e	e			epenthesis
wé	wé	wé	wé	diphthongization
[eskwéla]	[espwéla]	[tačwéla]	[abwéla]	

2-2.0 Epenthesis in the Definite Article

The analysis of this particular case involving epenthesis requires a
general overview of the morphological structure of the paradigms of some
predeterminers. Within this system, where all the forms follow the same type
of inflectional processes, the definite articles el and la, seem at first
sight, to be the realizations of suppletive morphs. However, we will attempt
to show that the differences exhibited by the article can be accounted for by
phonological processes and that the morphological structure and inflectional
behaviour are systematic at all levels of representation.

The postulation of an underlying representation /l/ and of the rule of
[e]-epenthesis (11) will serve to explain the article's apparent lack of
systematicity and the two types of alternations exhibited a) by the
'portmanteau' morphemes [al] 'to the' /a l/ and [del] 'from the' (/de l/),
and b) the occurrence of the 'masculine' article [el] before some inherently
feminine nouns such as [el águila] 'the eagle'.

(11) $\emptyset \longrightarrow$ e / ##__l##

2-2.1 Morphological structure of predeterminers.

The two inflectional rules in (12) will serve, for now, for the
discussion of the occurrence of particular gender morphemes with nominal

predeterminers. In Chapter 3, the rules will have to be changed in order to accommodate inflectional processes of nouns and adjectives.

(12). a. [+feminine] ⟶ /a/

b. [-feminine] ⟶ /o/

Rule (4), specified in 2-1.1 above, and repeated here for convenience, is the third inflectional rule required for the analysis. (4) introduces the plural morpheme /s/.

(4) [+plural] ⟶ /s/

The masculine singular form [el] of the definite article does not exhibit any inflections introduced by rules (4) or (12). This is not an idiosynchratic feature but rather the rule of distribution pertaining specifically to all nominal predeterminers and to the third person subject pronoun. The paradigms of the members of this morphological subset are presented in (14). Word-boundaries /##/ are specified only where necessary. Only stem-boundaries /#/ are of relevance for this particular analysis. Traditional accounts of the paradigms of predeterminers show that there exists a three-way distinction 'feminine'/'masculine'/'indefinite'. The 'indefinite' is included in (13), but is not considered in the analysis, as seen in (14), since it is of no further phonological interest.

(13)   [el]   /l/   'masc. sing.'

[la]   /l#a/   'fem. sing.'

[lo]   /l#o/   'indefinite'

[los]   /l#os/   'masc. plur.'

[las]   /l#as/   'fem. plur.'

(14)

Deictic I (degree 'one' of distance)   Deictic II (degree 'two' of distance)

[éste]	/est/		[ése]	/es/
[ésta]	/est#a/		[ésa]	/es#a/
[éstos]	/est#os]		[ésos]	/es#os/
[éstas]	/est#as]		[ésas]	/es#as/

Deictic III (degree III of distance)   Personal Pronoun, subj, III pers.

[akél]	/akel/[6]		[él]	/el/[6]
[akéya]	/akey#a/		[éya]	/ey#a/
[akéyos]	/akey#os/		[éyos]	/ey#os/
[akéyas]	/akey#as/		[éyas]	/ey#as/

Indefinite Article   Definite Article

[ún]	/un/		[el]	/l/
[úna]	/un#a/		[la]	/#a/
[únos]	/un#os/		[los]	/l#os/
[únas]	/un#as]		[las]	/l#as/

Deictics I and II have masculine singulars ending in [e] in phonetic
representation. In Chapter 3, it will be shown that this [e] is epenthetic.
For now, it is sufficient to show that the stems of masculines and feminines
in these two sets are identical, and that the masculine singulars are
characterized by the lack of inflectional morphemes. Deictics III and the
third person subject pronouns share the same characteristics as the two
previous sets of deictics. The issue of whether and how the /l/ and /y/
occurring in stem-final position must be linked by a phonlogical rule is not
of immediate relevance to the scope of this thesis. The relevant point
derivable from this analysis can be clearly seen in the paradigms of the
articles: no masculine singular takes a particular inflectional morpheme,
whereas all other forms do.

The phonetic [e] of the definite article in the masculine form [el] is added to the representation /l/ of the stem by rule (11):

$$/l/$$
$$e \quad \text{epenthesis}$$
$$[el]$$

One particular difference is seen between the paradigm of the definite article and the other paradigms in (14). The definite article is postulated here as a vowelless stem at the level of phonemic representations. Phonetically, it has a vowel but only because of rule of epenthesis. This rule could be called 'Prothesis', like the rule of epenthesis which applies before /s[+cons]/ and which was described in Part 1 above, since both of the environments correspond to stem-initial position. In both rules, /#/ boundaries are present in the environment, although differently specified; and only consonantal segments are mentioned.

$$(15) \quad \emptyset \longrightarrow e \ / \ \left\{ \begin{array}{l} \#\_\_ s \, [+cons] \\ \#\#\_\_ 1 \#\# \end{array} \right\}$$

The two sub-parts of (15) apply after stress. In 2-1.3 above, it was shown that the [e] of the verb [estár] 'to be' did not become part of the representation of the word until after the stress rule had applied. The definite article has always been characterized by its lack of stress.

All the stems of the morphemes of (14) have a vowel in their phonemic representations. It seems that the SSR can apply without any alternation to predeterminers as well as to nouns and adjectives. The rightmost vowel of the stems represented in (14) is the segment that in phonetic representation carries stress. The gender morphemes /o/ and /a/ are never stressed. The definite article is unstressed because it has a vowelless stem. Stress is

specified so as to apply to a segment having the two features $\begin{bmatrix} -\text{cons} \\ +\text{voc} \end{bmatrix}$. The

definite article [el] is /l/ at the point in the derivation where stress

applies. /l/ has the features $\begin{bmatrix} +\text{cons} \\ +\text{voc} \end{bmatrix}$ and therefore stress cannot apply to it.

/l/	/ l#a /	
		stress
e		epenthesis
[el]	[la]	

The forms of the definite article [la], [las], [lo] and [los] are also

not stressed, but in their case, it is because the vowels are gender morphemes,

and not because the vowel is epenthetic.

2-2.2 Other alternations of the definite article.

a) When the definite article /l/ is preceded by either of the prepositions

a 'to' or de 'from, of', the epenthesis rule does not apply and therefore no

[e] appears in phonetic representation. A morphologically determined rule of

'contraction' joins two morphemes separated by word-boundaries /##/. The

application of the rule is prior to epenthesis. It erases the boundaries, and

thus, excludes these particular forms from the set of words that epenthesis

applies to.

/l/	/a##l/	/de##l/	
	al	del	boundary erasure
e			epenthesis
[el]	[al]	[del]	

The language specific reasons why bry. erasure occurs between these morphemes,

and not, for example, between [pára] 'for' or [kon] 'with'[7] and the article

are hard to determine. The only important point is that contraction must apply

before epenthesis in order to block its application.

b) For the explanation of the following sets of alternations, a diachronic as well as a synchronic analysis is considered in order to make a point we consider to be of phonological interest.

(i) During Early Spanish (i.e. ca. tenth century), the paradigm of the definite article was that represented in (16-a) below. A 'spontaneous' rule of apocope applied to it, to derive the paradigm in (16-b). This rule of apocope dropped the initial [e] from all the forms of the definite article, although at first sight, it seems to have applied to all the forms except the masculine singular.

(16). a.   b.

	t1		t2	
[el]	/el/		[el]	/l/
[ela]	/el#a/		[la]	/l#a/
[elas]	/el#as/		[las]	/l#as/
[elos]	/el#os/		[los]	/l#os/

(where t is 'time-stage')

The system of (16-a) was constructed by inflectional processes identical to those that apply to the data in (16-b). If (16-a) is t1 and (16-b) t2, and t2 is closer to the present that t1, then there is a diachronic rule of apocope linking t1 and t2. This rule is represented in (17) alongside the epenthesis rule (11).
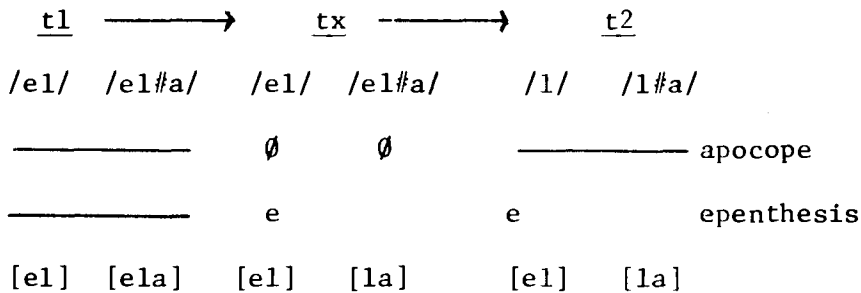
(11) $\emptyset \longrightarrow e$ / ## __ 1##

(17) $e \longrightarrow \emptyset$ / ## __ 1#

If there is a diachronic rule of apocope between t1 and t2, it can be deduced that at a point t_x , between t1 and t2 and different from t1 and t2, there was a synchronic rule of apocope identical to (17).

The formulation of the boundaries in (17) must be interpreted according to the definition given in 2-1.0 above. The /e/ that will undergo apocope is in word-initial position and precedes an /l/ which is in stem-final position. This rule is formulated specifically to apply to forms like /##el#a##/, but, because of its formulation, it will apply also to /##el##/.

The effect of apocope on the form /el/ is to generate a phonetically 'ungrammatical' form *\/l/. It is our thesis that it was the extension of the process of epenthesis, in the form of (11), that prevented the appearance of *[l] in phonetic representations. Suppose that at t1 apocope does not apply, but applies at tx on forms similar to those of t1. t2 is the resulting synchronic derivation. The only way that the form *[l] can be prevented from surfacing is by the application of apocope, followed by epenthesis in the same derivation at tx :

t1	⟶	tx	⟶	t2		
/el/	/el#a/	/el/	/el#a/	/l/	/l#a/	
————	————	∅	∅	————	————	apocope
————	————	e	e			epenthesis
[el]	[ela]	[el]	[la]	[el]	[la]	

(ii) In 'Modern Spanish', as in 'Early Spanish', the choice of the form of the article is dependent upon the gender and number of the noun in the Noun Phrase. There is one set of apparent exceptions, consisting of feminine nouns beginning with a stressed low vowel [á]. These nouns take [el] instead of [la] in the singular, and in the plural take the expected form [las].

(18).

[el ágila]	'the eagle'	[las ágilas]	'the eagles'
[el arma]	'the weapon'	[las armas]	'the weapons'
[el álma]	'the soul'	[las álmas]	'the souls'
[el árte]	'the art'	[las ártes]	'the arts'

[el árpa]   'the harp'   [las árpas] 'the harps'

[el áča]   'the ax'   [las áčas]   'the axes'

[el áŋkla] 'the anchor' [las áŋklas] 'the anchors'

The occurence of the 'masculine' article with these feminine nouns
cannot, without significant complications, be explained by some type of
lexical feature, since the same nouns, when plural, take the expected form of
the article.

The alternation is restricted to feminine nouns beginning with a stressed
[a]. If the vowel is unstressed, or if the word following the article is an
adjective, then the choice of article is as expected:

(19). [la aréna]   'the sand'   [las arénas]   'the sands'

       [la alegría] 'happiness' [las alegrías]   'happinesses'

       [la álta montána]   'the high mountain'

       [las áltas montanas] 'the high mountains'

The simplest explanation of the alternations seen in (18) would involve
a regular application of inflectional processes. The underlying representation
of [el álma] 'the soul' must be /la alma/ (word boundaries omitted). The
appearance in phonetic representations of [el] instead of [la] must be
accounted for by phonological rules. Besides the rule of epenthesis (11), the
rule of [a]-apocope (20) is required.

(20).   a $\longrightarrow$ $\emptyset$ / $\underline{\hspace{1cm}}$] ## [á   [8]

                $\begin{bmatrix} +\text{art} \\ +\text{def} \end{bmatrix}$ $\begin{bmatrix} +\text{Noun} \end{bmatrix}$

The derivation of the correct singular form is:

   /la alma/

      á   stress

   $\emptyset$ apocope

   e   epenthesis

  [el álma]

This derivation occurs in a synchronic grammar. At some point in the derivation, after the application of [a]-apocope, the underlying representation is /l/, and [e]-epenthesis applies. [e]-epenthesis is triggered by the underlying representation /l/. We have now found two sources for /l/. One, the definite article [el] (/l/), and the other, the definite article /la/, which followed by apocope becomes /l/. In the following section, a diachronic analysis of rule (20), in conjunction with [e]-epenthesis will serve to prove the existence of both rules.

(iii) The rule of [a]-apocope existed during Early Spanish. Bello (1966, p.70-71) provides evidence that this rule was more general than it is now. It applied before the vowel [a] regardless of stress, and applied also before adjectives or nouns[9].

t1	t2
[el aréna]	[la aréna]
[el álta]	[la álta]

The word [arena] was derived as follows:

/ela arena/

  Ø   apocope

[el aréna]

Stress was not a factor influencing the application of [a]-apocope[10]. At t1, the occurrence of a 'masculine' article before nouns beginning with a vowel [a] can be explained, as seen in the derivation above, without recourse to epenthesis. The phonemic representation /el#a/ simply underwent the loss of the gender morpheme. The resulting structure being [el]. As seen in the following derivations, at tx, when [e]-apocope (17) applied, epenthesis had to apply to produce the correct output:

```
t1  ────→  tx  ────→  t2
/ela alma/  /ela alma/ /la alma/

   ∅          ∅         ∅        /a/-apocope

_____       ∅      _____   /e/-apocope

_____       e        e        [e]-epenthesis

[el álma]   [el álma]  [el álma]
```
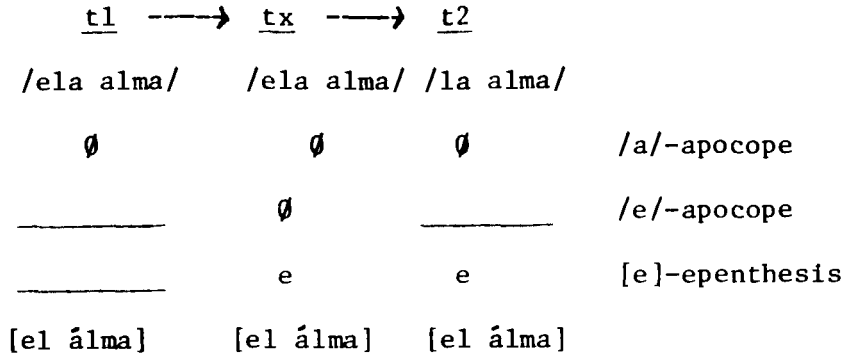
2-3.0 Summary

The principal aim of this chapter has been to describe the application
of the process of epenthesis in two stem-initial positions. The first case,
i.e. before /s [+cons]/, has repeatedly been mentioned in connection with
synchronic analyses of a generative type. From a diachronic perspective, this
case of epenthesis has been generally known as 'Prothesis'.

At t1, a word is [skŏla] 'school', at t2, it is [eskwéla]. If phonetic
representations are the only level of representation considered, then
epenthesis must be defined as the rule that applied at tx, linking t1 to t2:

```
t1  ────────→  tx  ────────→  t2
[skŏla]      ∅ ──→ e       [eskwéla]
```
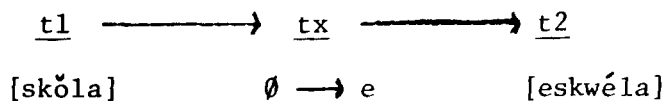
A diachronic analysis that does not consider synchronic requirements,
such as looking at linguistic processes at the two levels of representation,
is likely to turn out to be wrong.

The two types of analysis can be considered simultaneously in a diagram:

```
t1  ────────→  tx  ────────→  t2
/skola/      /skola/      /skola/

_____        e            e        epenthesis

[skóla]     [eskóla]     [eskwéla]
```
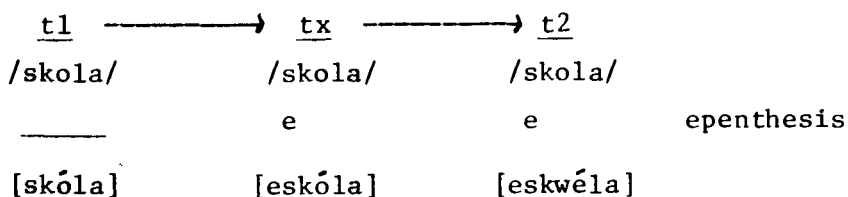
The only point that needs to be noted is that the behaviour of epenthesis with regard to the initial cluster /s[+cons]/ is identical at t̲x̲ and t̲2̲. A rule of epenthesis began to apply at t̲x̲[11] and continues to apply at t̲2̲. The possibility exists that t̲2̲ may develop to t̲3̲[12], where the epenthetic [e] becomes morphologized or lexicalized. It was argued in the first part of this chapter that, for certain dialects of Modern Spanish, an epenthesis analysis can be clearly established, and, therefore, that the synchronic analysis t̲2̲ must be preferred over t̲3̲.

$$\underline{t2} \longrightarrow \underline{t3}$$

t2	t3	
/skola/	/eskola/	
e	_____	epenthesis
[eskwéla]	[eskwéla]	
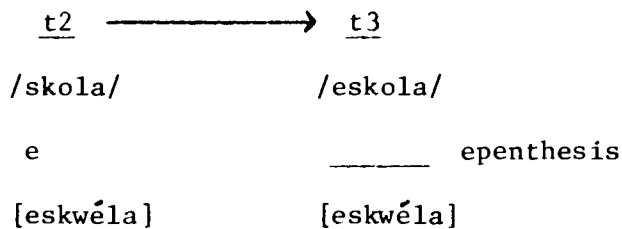
In 2-2.0, the alternations exhibited by the definite article were described in terms of epenthesis synchronically and diachronically.

In Modern Spanish, the paradigm of the definite article is regularized if /l/ is postulated as the phonemic representation of [el], making /l/ the stem common to all definite articles, cf. [la]. The 'Portmanteau' morphs were explained in terms of the junction of two morphemes, cf. /##a##l##/, /##de##l##/. The occurrence of [el] before feminine nouns was shown to be a case of apocope, i.e. 'elision'. This rule was more general in Medieval Spanish than in Modern Spanish. In Medieval Spanish, a form /el#a/ would undergo /a/-apocope (elision) whenever the next word began with the vowel /a/. This latter /a/ could be stressed or unstressed, and the word could be either a noun or an adjective. In Modern Spanish, it is harder to tell whether the occurrence of the article [el] before certain nouns is due to a rule of elision, but with knowledge of the rule of epenthesis, it is possible to

explain how elision could apply both before and after the loss of the initial /e/ in the definite article.

t1	────────⟶	t2	
/el#a##alm#a/		/l#a##alm#a/	
á		á	stress
∅		∅	/a/-apocope
———————		e	[e]-epenthesis
/el álma]		[el álma]	
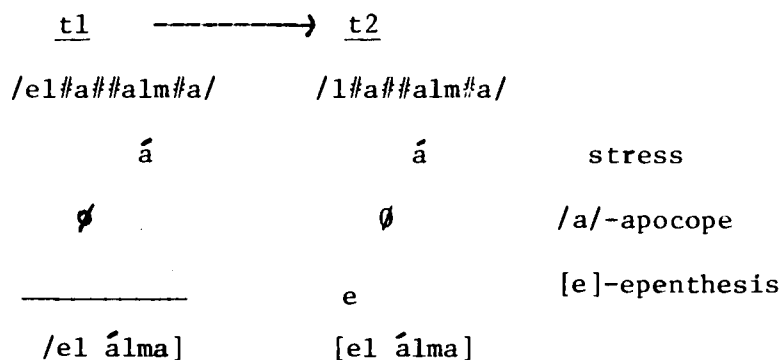
In this chapter, we have attempted to show how epenthesis applies in some initial environments. Certain characteristics of epenthetic vowels and of epenthesis rules have been described. In the following chapter, these characteristics will be used as guidelines in the description of stem- and word-final [e]-involving alternations.

Footnotes:

[1] The boundary /+/ is required in addition to the boundary /#/ because, as will become evident in 2-1.2, phonological processes behave differently depending on the type of boundary mentioned in the environment. /+/ is essentially a morpheme boundary. It is found word-internally between morphemes, derivational or inflectional whenever there is no evidence to postulate /#/.

[2] The set [A] of processes is required to generate a phonetic representation. Set [A] is the union of sets [B] and [C]. [B] is the set of phonological processes and [C] is the set of lexical processes. Each descriptive theory defines what is phonological and what is lexical. There are certain processes required for the derivation of phonetic representations which one theory will define as phonological and another they as lexical. Defining components and their interaction can be called a study of 'trading relations', although this term is better known in relation to the definition of the syntactic and semantic components during the period of the dispute between generative and interpretive semantics (cf. Chomsky, 1972).

[3] For example, the rule of word-final epenthesis is conditioned by /##/, and the rule of plural epenthesis by /#/. These rules are described in detail in Chapter 3.

[4] The phonemic representation of [ésta] is /est#a/. The initial [e] is redundant; if the stress argument was not required, then the underlying representation could be /st#a/. The stem would be morphologically stressed: /[+st # a/, and the epenthetic [e] would be stressed by a low level adjustment rule : [ésta].

[5] Stress placement on words like [sábana] 'sheet' and [kársel] 'prison' could be solved by one of the two following ways:

a) This subset of words is lexically subcategorized with a feature /S/ 'mnemonic for stress':/ ~~sabaŋ~~ / , / ~~karsel~~ /. The stress rule (i) will account for the two subclasses of Spanish words under consideration. Antepenultimate stress will apply first because it is triggered by a morphological feature (cf. p. 18).

(i)

$$V \longrightarrow [+\text{stress}] / \underline{\hspace{1cm}} \begin{bmatrix} \overline{\overset{s}{}} \\ C_o \quad V \quad C_o \\ C_o \end{bmatrix} (\#X)\#\#$$

in [-Verb]
where /X/ is not $\emptyset$

b) A word-medial epenthesis (anaptyxis) rule is another possibility worth considering, although more research needs to be done along these lines. Consider the paid of words [sábana] 'sheet' and [sabána] 'savanna'. Phonetically they differ only in the position of stress.

It is necessary, in any theory, to distinguish the two phonemic
representations. Foley, using the feature of length, posits the
phonemic representations /sabana/ 'sheet' and /sabana/ 'savanna'.
The Latin Stress Rule stresses the penultimate long /a/ in
[sabána] and the antepenultimate vowel in [sábana] because the
penultimate /a/ is short and in an open syllable. Description (a)
is similar in descriptive adequacy to Foley's solution. The only
difference being that the abstract feature is /S/ instead of length.

With an epenthesis solution it is possible to posit the
phonemic representations /sabn#a/ and /saban#a/. There is a rule
of vowel epenthesis that introduces the vowel [a], possibly a copy
of the stressed vowel, although, in words like [karsel] (/karsl/,
the consonants might exercise an influence on the choice of the
particular epenthetic vowel.

/saban#a/	/sabn#a/	
á	á	SSR
	a	epenthesis
[sabána]	[sábana]	

In this case, the SSR (8) will apply to the two forms, and
no special case will be required as in (i) above for those words
having stress on the antepenultimate phonetic vowel. Evidence for
the postulation of word-medial epenthesis rules is provided by the
diachronic evolution of words such as [álamo] 'poplar'. In Latin
the word had only two vowels, [álmus], a rule of anaptyxis added
a third vowel changing the word from the class of paroxytones to
that of proparoxytones.

Menéndez Pidal (1964: 193-198) gives a number of examples
attesting the existence of a widespread process of epenthesis in
word medial positions during Medieval Spanish. Post-tonic epenthetic
vowels such as the [a] of [álamo] remained in the language,
pretonic epenthetic vowels such as the [o] of Medieval Spanish
[korónika] 'chronicle' (Mod. Sp. [krónika]) are no longer found.

[6] How /l/ and /y/ are linked by rule is difficult to determine. There are
two possibilities, one to have underlying representations like /ll/, and
the other, to have /y/. The first solution will require two rules:

(ii) $/ll/ \longrightarrow \begin{cases} [y] & / \underline{\quad} V \\ [l] & / \underline{\quad} \left\{ \begin{matrix} C \\ \# \# \end{matrix} \right\} \end{cases}$

The second will require one rule:

(iii) $/y/ \longrightarrow [l] / \underline{\quad} \left\{ \begin{matrix} C \\ \# \# \end{matrix} \right\}$

The first solution requires an abstract cluster /ll/, the second, one of
the alternating phonetic representations. /ll/ is used in section 3-2.1
with a different function; it degeminates into /l/ when it is found
between two vowels. (iii) cannot be the rule underlying the alternation.
In Chapter 3, the segment /y/ is described in detail, and its behaviour
cannot substantiate the postulation of (iii).

[7] Contraction between the article and some prepositions is commonly found in Romance languages. Italian, for example, combines the preposition /a/ 'to' with the definite article to form [al]. Besides this similarity, the alternating forms exhibited by the Italian definite article (il, i, lo, gli, gl) do not seem to be enough motivation for attempting to derive all the forms from the same stem as is done in Spanish with /l/ in this thesis.

There is no implication in the analysis of the definite article of Spanish that all Romance Languages should be treated alike. In the present thesis, the objective is to show that an epenthesis analysis of the alternations exhibited by the definite article is possible in Spanish because there is a process of epenthesis in this language. In Italian there is no epenthesis in words like [skóla] 'school', but not that [il] cannot occur before /sC(L)/ words; the form must be [la] or [lo]. An epenthesis analysis in Italian would be questionable.

[8] This specific case of apocope or elision could be handled as an assimilation process without compensatory lengthening:

$$\text{(iv)} \quad a \; + \; [\acute{a} \underline{\quad}] \; \longrightarrow \; \acute{a}$$
$$[\quad [\qquad + \text{noun}$$

If it could be shown that the article and the noun are separated by a stem-boundary /#/ rather than by /##/, for example / ##l#gat#o##/, then the rule could be formulated in terms of segments and boundaries:

$$\text{(v)} \quad /a/ \; \longrightarrow \; \emptyset \; / \; \underline{\quad}\#\acute{a}$$

The formulation of (v) implies that the definite article has the status of a prefix like /in#/ (cf. p. 14): /in#stabl/ 'unstable'. The prepositions /a/ and /de/ tend to contract with the definite article. Since contraction prevents epenthesis:

/de##l/	/a##l/	/kon##l/	
∅∅	∅∅		contraction
		e	epenthesis
[del]	[al]	[kon el]	

then, if only stem boundaries /#/ separate definite articles from nouns, representations such as / al#niñ#o/ 'to the child' ([al niño]) will be the input to rules such as that of epenthesis. If this possibility can hold, then a system of determiner prefixes (perhaps case) may be emerging in Modern Spanish.

[9] According to Bello, the article [el] was found during Early Spanish before the word [espáda] 'sword'. According to Menéndez Pidal (1968:261), the loss of the vowel /a/ occurred before any vowel: [ell álma] 'the soul', [el alimósna] 'charity', [el étra] 'the other'.

Since the [e] of [espáda] is epenthetic, this shows that, originally, /a/-apocope was a low-level phonetic rule, intrinsically ordered after epenthesis:

$$/el\#a\#\#spad\#a/$$
e	epenthesis
∅	/a/-apocope

[el espáda]

[10] This rule is similar to elision rules found in other Romance Languages. In French, the "l apostrophe" is found before singular words beginning by a vowel: [lom] 'the man' [letüd] 'the study'. In Modern French, the distribution of the definite article may have to be accounted for in terms of morphological insertion rules. In Spanish, and not in other Romance Languages, stress is a relevant factor in the application of elision. As explained in Section 4-1.4 below, the alternation must be accounted for in terms of phonological rules when stress is part of the environment determining the distribution of allomorphs.

[11] The original rule of prothesis was probably a rule of [i]-insertion. tx can still be defined as the point where [e]-insertion began to apply, whether it descended historically from a rule '∅ → [i] (i.e. with a change in the quality of the epenthetic vowel), or from a period where there was no epenthesis rule in the language.

[12] t3 may correspond to the development of epenthesis in Modern French. This language is different from Spanish since, in French, the vulgar vocabulary underwent epenthesis: [ekól] 'school' but the more modern borrowings do not have the [e]: [skolér] 'scholar'. Spanish has the vowel in early and late borrowings, showing that t2 and not t3 is the stage corresponding to Modern Spanish.

Chapter 3

Epenthesis in final position

3-0.0   In Chapter 2, two subparts of a general rule of epenthesis in initial position were described. Rule (15-a) was shown to apply when the stem is in word initial position and when it is preceded by the prefixes /des#/ and /in#/.

(15)

$$\emptyset \longrightarrow e \ / \left\{ \begin{array}{l} \#\_s[+cons] \\ \\ \#\#\_1\#\# \end{array} \right\} \quad \begin{array}{l} a \\ \\ b \end{array}$$

Since in Spanish there are no inflections of the form / s[+cons] /, the stem boundary in (15-a) can be interpreted only as a stem-initial boundary.

Rule (15-b) could be simplified in one of two ways: a) as (21) if one wants to economize in the number of boundaries used to specify the environment,

(21) $\emptyset \longrightarrow e \ / \ \#\_1\#\#$

or b), as (22) if instead we economize in the number of features required to specify the type of segment that can trigger epenthesis.

(22) $\emptyset \longrightarrow e \ / \ \#\#\_[+cons]\#\#$

For now, there does not seem to be any motivation to replace (15-b) by either (21) or (22). In the present chapter, two other sub-parts of the epenthesis rule are described. It will be argued that these rules can be collapsed with those in (15). From this analysis, another formulation of (15-b) will be motivated which shows that (22) is a better formulation of the rule than (21). The conclusion will be drawn that [e]-epenthesis in Spanish is a very general process that must be studied in a unitary manner

and that the 'different' rules of epenthesis are basically different aspects

of the same process applying at different places in word structure.

The analysis will require an examination of the morphological structure

of the words under description—an aspect that was very largely taken for

granted in Chapter 2, and which, now, must be clarified. For example, in

the description of the definite article, gender morphemes were identified as

inflections, and therefore, a stem-boundary was postulated between the stem

and the vocalic inflection (cf. /##1ˈa##/). The hypothesis postulated in

2-1.0 and 2-1.1 allows us to have this type of representation because the

feature which accounts for the occurrence of the particular gender morpheme

is a syntactic feature copied by a rule of gender agreement from the noun.

In this chapter, arguments are presented to separate gender morphemes from

stems by stem boundaries /#/ in all lexical categories.

3-1.0   Spanish Nouns and Adjectives can be classified into the four sets

represented in (23). The words in (23-a) and (23-b) represent the

morphologically simplest items of (23). In systematic phonemic representations,

these words can be represented as a stem without inflections. At this level,

they have no increment added to the stem. The words in (23-c) have a gender

morpheme added to the stem and the words in (23-d) have an increment of [e].

(23) a. [Réy]   'king'   b. [Rubí]   'ruby'
          [papél]   'paper   [kafé]   'coffee'
          [kalór]   'heat'   [kaló]   'Sp. slang'
          [fásil]   'easy   [papá]   'father'

      c. [tékla]   'key'   [péjne]   'comb'
          [séRo]   'hill'   [bérde]   'green'
          [ámpljo]   'spacious'   [kárne]   'meat'
          [méča]   'wick'   [ámbre]   'hunger'

3-1.1   The words in (23-a) represent the set of Spanish Nouns and

Adjectives that have phonetic representations ending in a consonant. The set

of consonants that can appear word finally is restricted primarily to coronal

consonants [r], [1], [n], [s] and [d] (which is in fact the continuant [d]

and sometimes its voiceless version [θ], although more often simply ∅); the

status of the segment [y], which is considered to be $\begin{bmatrix} +\text{cons} \\ -\text{voc} \end{bmatrix}$, is not as

clear as that of the other consonants in the set.   [y] alternates with [1] in

some environments (cf. 2-2.1 footnote 5) and needs therefore to be considered

a consonant.   There is, nevertheless, another source for [y], and this is

via the glide /j/ which is $\begin{bmatrix} -\text{cons} \\ -\text{voc} \end{bmatrix}$. Except for the value of the feature

[+/-cons], all the other features in the two segments are identical. In a

similar way, /j/ differs from /i/ in the value of the feature [+/-voc], since

/i/ is $\begin{bmatrix} -\text{cons} \\ +\text{voc} \end{bmatrix}$. /i/ and /j/ are different phonemes because of the

difference in this particular feature , although their other features are

identical.

In two isolated cases of Spanish, the path /i/ ⟶ /j/ ⟶ [y] can be

followed. A phoneme /i/ can become a glide [j] when it is unstressed and

next to another vowel. This is seen in the two following words: [païs]

'country'/ [pajsáno] 'countryman'. This rule is called glide formation and

applies also to /u/ in similar conditions.

(24).   a. $\begin{bmatrix} i \\ u \end{bmatrix} \rightarrow \begin{bmatrix} j \\ w \end{bmatrix}$ / $\left\{ \overline{\quad} V \atop V \overline{\quad} \right\}$

b. $\begin{bmatrix} +\text{voc} \\ -\text{cons} \\ +\text{high} \end{bmatrix} \longrightarrow [-\text{voc}]$ / $\left\{ \begin{matrix} \underline{\quad} V \\ V \underline{\quad} \end{matrix} \right\}$

That /j/ becomes [y] in word-final position, as in (25), can be seen in the

derivation of two Spanish words that have a very particular behaviour with

regard to stress: _ahi_ 'there' and _muy_ 'very'. These two words have two

consecutive vowels in their phonemic representations: /ai/ and /mui/.
Depending on the rate of speech, style and perhaps syntactic as well as
phonological context, stress can fall on either of the two vowels. Depending
on which vowel is stressed, (24) or both (24) and (25) will apply.

$$(25). \quad a. \quad j \rightarrow y / \_\#\#$$

$$b. \quad \begin{bmatrix} -voc \\ -cons \end{bmatrix} \rightarrow [+cons] / \_\#\#$$

/mui/	/mui/	/ai/	/ai/	
ú	í	í	á	stress
j	w		j	(24)
y			y	(25)

[múy]	[mwí]	[aí]	[áy]

/y/ may be considered to be a coronal segment because of its close
relationship with /l/. There is another coronal consonant ([t]) which never
occurs in final position. More will be said about /y/ and /t/ in Section 3-2.1.

Another restriction on the occurrence of consonants in word final
position is that no more than one consonant can be found. The only possible
counterexamples are erudite borrowings of Greek origin such as [fárinks],
'pharynx' and [tóraks] 'thorax'. Words such as these will be excluded from
consideration because a theory of Spanish phonological structure cannot be
based on them in a proper and well motivated manner. Thus, they will be
merely listed as exceptions to the general statements possible about word-
final consonants in Spanish.

3-1.2   The words in Class (23-b), like those in (23-a), do not have a
gender morpheme. Instead of having a consonant in stem-final position, they
have a vowel. These words were mentioned in 2-1.4 above, in relation to the
SSR, their main characteristic being that, except for [álkali] 'alkaline',

they are all stressed on the final vowel (i.e. the rightmost stem-vowel as in /kafé/ and /Rubí/). This is the essential characteristic that distinguishes these words from those of (23-c) which have phonetic representations with an unstressed gender morpheme in word-final position.

3-1.3   The gender morphemes /a/ and /o/ occur word-finally in singular forms such as those exhibited in (23-c). Normally, only the plural morpheme /s/ can follow the gender inflections.

Stress in nouns and adjectives always falls on the stem, never on the gender morphemes. In verbs, stress can occur on an inflection, but this is often due to a double distinctive function which does not exist in nonverbal forms such as nouns and adjectives. Verbal tenses and persons can be distinguished by stress in otherwise phonetically identical forms: [interpréto] 'I interpret' and [interpretó] 'he interpreted'. In nouns, stress does not have a distinguishing function except in the doublet [sábana] 'sheet' and [sabána] 'savanna' (cf. footnote 4, Section 2-1.4).

The reason for postulating a boundary /#/ between the stem and the gender morphemes /a/ and /o/, as in /tekl#a/ 'key' and /seR#o/ 'hill' is because the stem of the word must be differentiated from the inflections. This is necessary both in a linguistic model with lexical insertion in deep structure and in a model with lexical insertion in surface structure, as mentioned in 2-1.1. In both types of models, the origin of stems and inflections must be distinguished.

(i)   If lexical insertion is pretransformational, then adjectives like [číko] 'small (masc.)' and [číka] 'small (fem.)' must be represented in deep structure as /čik/. The syntactic transformation of gender-agreement will copy the gender feature from a noun of the same Noun Phrase onto the

adjective, and, later, a rule of inflection insertion will interpret the feature of gender either as /a/ or /o/.

If lexical insertion is post-transformational, the stem /čik/ will still be the output of 'Stem Formation Rules', which operate independently of any syntactic information and the choice of gender morpheme will still be dependent on the output of the syntactic component since gender agreement is a syntactic process.

In all cases, the stem must be completely formed before the gender inflection rules can apply. The choice of particular morphemes will depend in most cases on the gender feature of the stem: masculine stems take /o/ and feminine stems /a/. The gender feature [+/-feminine] determines the choice of inflection, but another feature, [+/-inflection] will determine whether or not the stem takes an inflection. The stems of words in (23-a), (23-b) and (23-c) do not have an inflection, but as seen in the examples in (26), these words have an inherent feature of gender which is copied onto the article and the adjective by the transformation of gender agreement.

> (26). El hombre alto 'the tall man'
>
> La mujer alta 'the tall woman'

The apparent consequence is that the occurrence of a gender morpheme on a lexical item is the result of the cooccurrence of two features in the representation of a stem at the point where the inflectional rules (27) apply.

$$
(27). \quad [+\text{inflection}] \longrightarrow \begin{cases} /a/ & / & [+\text{fem}]\# \underline{\quad} \\ /o/ & / & [-\text{fem}]\# \underline{\quad} \end{cases}
$$

Rule (27) can be understood as the interpretation of the feature [+inflection] as /a/ when the stem is [+fem], and as /o/ when the stem is [-fem]. This rule assigns the gender morphemes to determiners and adjectives,

since one of the features is copied onto them by a syntactic process. Taking

into consideration that nouns and adjectives in Spanish undergo in most cases

identical phonological and morphological processes, rule (27) should be

extended in its application to nouns also, and representations of the form

/mes/ and /pes/ be set up for the words /mes#a/ 'table' and /pes#o/ 'weight'.

What gender-agreement copies from the noun is not the nature of the final

vowel of the noun, i.e. /a/ or /o/, but the gender feature (cf. (26)).

(ii) The feature [+inflection] is lexical and morphological. In most

cases, it is intrinsically inherent to the root of the lexical item, as in

/mes#a/ 'table', and this feature serves then to distinguish the words in

(23-c) from those in the other three categories. The words [kafé] 'coffee',

[árbol] 'tree' and [bérde] 'green' do not have the feature [+inflection] and

this is the lexical difference existing between the two classes of words.

In some cases the feature [+inflection] is not inherent in the root,

but is required by a particular derivational suffix. For example, the words

in the left column in (28) do not have the feature [+inflection] and therefore

do not have a gender morpheme (although they have gender). The words in the

right column have stems built on the same roots as the words on the left with

the derivational suffix /it/ or /sit/ 'small'. Although the roots do not

have the feature [+inflection], the stems do, since (27) is triggered. In

this case, the occurrence of [+inflection] results from a particular rule of

stem-formation which requires every Spanish stem built with /it/ or /sit/ to

have the feature, and exhibit a gender morpheme.

(28). [kafé]   'coffee'   [kafesíto]   'little coffee'
      /kafe/   /kafesit#o/

      [papél]   'paper'   [papelíto]   'little paper'
      /papel/   /papelit#o/

      [kárne]   'meat'   [karníta]   'small meat cutting'
      /karn/   /karnit#a/

(iii) There are a number of Spanish Nouns that do not have the gender

feature intrinsically specified as does the word /mes#a/ 'table'. Instead,

they can occur with either of the morphemes. These nouns have an animate

referent and the choice of morpheme depends on its sex, as seen in (29).

(29). [el níño] 'the boy'   [la niña] 'the girl'

[gáto]   'the male cat' [gáta]   'female cat'

The basic lexical representation of the words in (29) cannot include the

gender morphemes /o/ or /a/: They must be /niñ/ and /gat/. The morphology

of this set of nouns is very similar to that of the adjectives. In both

cases, the lexical representations are the stems (as defined in this thesis),

and the choice of gender morpheme is carried out by independently motivated

processes: /gat/ is the lexical representation and the two stem or word

phonemic representations that can be derived from it are /gat#o/ and /gat#a/,

just like /čik#o/ 'small (masc.)' and /čik#a/ 'small (fem.)' are the two

possible systematic phonemic representations of the lexical item /čik/.

It seems that the most general description is one that postulates the

same morphological, as well as phonological, processes for nouns and adjectives.

(iv) There is a particular subset of Spanish Nouns that exhibit the

opposite morpheme from the one generally correlated with its gender. A

feminine noun will take /o/, for example [la máno] 'the hand (fem.)', or a

noun with a male referent will take /a/, for example [el astronáwta] 'the

astronaut (male)'. Since agreement shows the intrinsic gender of the noun,

the application of rule (27) above must be altered by making these nouns

exceptions. The rule still has to apply, since they are marked also with

the feature [+inflection]. Instead of the gender morpheme generally

associated with the intrinsic gender of the item, the only other possible

gender morpheme is attached to the noun.

It is also possible, instead of marking the nouns that are inflected
with the feature [+inflection] and the uninflected nouns like [kársel]
'prison' with the feature [-inflection], to make the feature [+/-inflection]
a ternary rather than a binary feature. Nouns like [mésa] will be marked
with the feature [+inflection], those exhibiting the opposite gender morpheme
with the feature [-inflection], and items like [kársel] will not have the
feature at all.

In all the cases presented in this section, two features, the one
[+/-feminine] and the other [+/-inflection], are required to account for the
syntactic and morphological factors that influence the distribution of gender
morphemes.

3-1.4   So far, in Section 3-1, the morphological characteristics of the
lexical items represented in (23-a), (23-b) and (23-c) have been described.
Every phonetic segment occuring word-finally has been described as belonging
either to the stem, such as the final consonant of [kolór] 'colour' /kolor/
or the final vowel of [rubí] 'ruby' /rubi/; or as being a gender morpheme,
like the /o/ of [gáto] 'cat(male)' /gat#o/. The words in (23-d) have a
different status from that of the words described above. They all have a
vowel [e] word-finally. The following section will concentrate on this
class of words and attempt to describe the behaviour of the vowel [e].

3-2.0   Stem-final /e/.

The fourth category of words represented in (23-d) above, can be
divided into the three classes (29-a), (29-b) and (29-c) below.

(29). a. [pége]   'hit'
           [tóke]   'touch'
           [léče]   'milk'
           [tomáte]   'tomatoe'
           [tóRe]   'tower'

b. [kárne]   'meat'
   [árte]   'art'
   [ájre]   'air'
   [gólpe]   'a blow'
   [gránde]   'large'

c. [próle]   'offspring'
   [peréne]   'perennial'
   [kláse]   'class'
   [dóse]   'twelve'

The classification is made in terms of phonological criteria. The words
in (29-a) end in a vowel [e] preceded by one consonant, the words in (29-b)
by a [e] preceded by two consonants. The consonants that appear before the
[e] in (29-a) are different from the consonants that can occur in word-final
position [r], [n], [1], [s], [d] and [y] and that characterize the class
(23-a), repeated as (30) below. (29-c) represents the small set of words
that have a final [e] preceded by one of the consonants acceptable, in (30),
in final position.

(30) [kalór]   'heat'   [pastél]   'cake'
     [réy]   'king'   [paréd]   'wall'
     [pás]   'peace'   [pán]   'bread'

In the following sections, arguments will be presented to support an
analysis which postulates that this [e] is predictable by rule, has no
identifiable derivational role, and therefore cannot be part of Spanish
Phonemic Representations. The process of epenthesis, whose application in
initial position was studied in Chapter 2 will be extended to account for the
data at hand.

3-2.1   The formulation of this case of epenthesis can best be done if,
first, the data in (29-b) is described and, using this as a model, the data
in (29-a) and then the apparent counterexamples of (29-c) are analyzed.

In the following sections, arguments will be presented to support an analysis which postulates that this [e] is predictable by rule, has no identifiable derivational role, and therefore cannot be part of Spanish Phonemic Representations. The process of epenthesis, whose application in initial position was studied in Chapter 2 will be extended to account for the data at hand.

3-2.1   The formulation of this case of epenthesis can best be done if, first, the data in (29-b) is described and, using this as a model, the data in (29-a) and then the apparent counterexamples of (29-c) are analyzed.

a)   If the rule of epenthesis that is to account for the data in (29-b) is to be collapsed with the rules of epenthesis in initial position, cf. (15), then some of the characteristics of (15) will have to be shared by this rule.

$$(15) \quad \emptyset \rightarrow e \, / \left\{ \begin{array}{l} \#\_s\,[+cons] \\ \#\#\_1\#\# \end{array} \right\}$$

The principal characteristic shared by the two rules in (15) is that both rules add a similar segment [e] in environments made up solely of consonantal segments and boundaries. The environment shared by the items in (29-b) and on the basis of which the [e] can be predicted is the sequence of two, and sometimes three consonants. Rule (31) is a simplified notation expressing the seven of nine possible combinations of two segments /C/ (Consonant), /L/ (Liquid) and /G/ (Glide) found in Spanish and exemplified in (32).

(31) $\emptyset \longrightarrow e / CC\_\#\#$

(32) /CC/
$$/ \begin{bmatrix} +cons \\ -voc \end{bmatrix} \begin{bmatrix} +cons \\ -voc \end{bmatrix} \_\_\_ \#\#$$

/LC/
$$/ \begin{bmatrix} +cons \\ +voc \end{bmatrix} \begin{bmatrix} +cons \\ -voc \end{bmatrix} \_\_\_ \#\#$$

/GC/
$$/ \begin{bmatrix} -cons \\ -voc \end{bmatrix} \begin{bmatrix} +cons \\ -voc \end{bmatrix} \_\_\_ \#\#$$

/CL/
$$/ \begin{bmatrix} +cons \\ -voc \end{bmatrix} \begin{bmatrix} +cons \\ +voc \end{bmatrix} \_\_\_ \#\#$$

/LL/
$$/ \begin{bmatrix} +cons \\ +voc \end{bmatrix} \begin{bmatrix} +cons \\ +voc \end{bmatrix} \_\_\_ \#\#$$

/GL/
$$/ \begin{bmatrix} -cons \\ -voc \end{bmatrix} \begin{bmatrix} +cons \\ +voc \end{bmatrix} \_\_\_ \#\#$$

/CG/
$$/ \begin{bmatrix} +cons \\ -voc \end{bmatrix} \begin{bmatrix} -cons \\ -voc \end{bmatrix} \_\_\_ \#\#$$

The two environments /GG/ and /LG/ are not found before final [e]. The other combination with /G/ as the second element, /CG/, affords only on example: [deságwe] 'drainage'. This word is related to [ágwa] 'water' (/agw#a/) and has as underlying representation /des#agw/; its derivation is as follows:

$$\begin{array}{ll} /des\#agw/ & \\ \quad\bar{a} & SSR \\ \qquad e & epenthesis \\ [des\bar{a}gwe] & \end{array}$$

The environments with /C/ as the second element can be listed together:

/CC/: /sC/, /NC/ ex: [póste] 'post', [kónde] 'count'
/LC/: /lC/, /rC/ ex: [álse] 'elk', [árte] 'art'
/GC/: /jC/, /wC/ ex: [aséjte] 'oil', [áwxe] 'apogee'

The only consonants (i.e. /C/'s) found before a /C/ are a) [s] and the
so-called 'archiphoneme' /N/ (which is phonetically a nasal segment of point
of articulation similar to that of the following /C/):

       [pwénte]   'bridge'

       [tjémpo]   'time'

       [ánčo]   'wide'

       [óŋgo]   'mushroom'

and b) liquids and glides. Not all combinations of segments are found. This
reflects particular combinatory properties of segments or simple gaps of
distribution the full specification of which is outside the scope of this
thesis. For example, /č/ can only be preceded by a liquid or by /N/:

       [kórčo]   'cork'

       [kólča]   'bedspread'

       [párče]   'patch'

       [mánča]   'stain'

       [engánče]   'down payment'

/č/ is never found after /s/. The absence of words ending in [-sče] can be
accounted for as a combinatory peculiarity of these two segments. The
absence of a word ending in [-lče] is probably due to an accidental
distributional gap. As seen in the examples directly above, [-lča] exists
alongside of [-rčo] and [-rče]. In any case, the absence of certain
combinations does not affect the formulation of the rule of epenthesis.

    The combinations with a /L/ as second element must be described
independently. /GL/ is exemplified by [ájre] 'air'; /LL/ by [tóRe] 'tower'
(cf. (c) below, for the motivation behind postulating sequences /rr/).

    /CL/ has a particular status because it can be preceded of another
consonantal segment forming a stem-final three consonant cluster:

| [póstre] | 'desert' |
| [ómbre] | 'man' |

In this case the combinations are constrained to /s/ or /N/ followed by a stop, followed by /L/,

$$\begin{Bmatrix} s \\ N \end{Bmatrix} \begin{matrix} C \\ [-stop] \end{matrix} \quad L$$

Other than in these three member clusters, /CL/ is found very commonly, but gaps, systematic or not, are found, as in all previous cases. These gaps, however, in no way invalidate the general rules proposed here.

[póbre]	'poor'
[kófre]	'chest'
[mádre]	'mother'
[Róble]	'oak'

(b) The epenthesis rule that accounts for the [e] in the data in (29-a), applies after one single /C/ and not after two as does (31). The notation $/C_2/$ used in the formulation of rule (33) symbolizes the set of Spanish consonants that trigger epenthesis. These are independently exemplified in (34).

(33) $\emptyset \longrightarrow e \ / \ C_2 \underline{\quad} \# \#$

Set $/C_2/$ must be studied in conjunction with set $/C_1/$, which is the set of consonants that do not trigger (33), as seen in (34). The apparent counter-examples of (29-c) will be studied under (c) below. A solution will be proposed there to account for the application of (31) in environments which in phonetic representation seem to belong to the set $/C_1/$.

(34) $/C_2/$

/p/	[tópe]	'bump'
/b/	[núbe]	'cloud'
/k/	[tóke]	'touch'
/g/	[pége]	'hit'
/f/	[aResífe]	'ridge of rocks'
/x/	[páxe]	'page'
/č/	[nóče]	'night'
/m/	[deRáme]	'spill'
/n/		

                   $/C_1/$

/n/	[pán]	'bread'	
/s/	[pás]	'peace'	
/l/	[papél]	'paper'	
/r/	[kolór]	'colour'	
[y]	[Réy]	'king'	(/i/ or /j/)
/d/	[paréd]	'wall'	

Possible counterexamples (29-c)

/n/	[peréne]	'perennial'
/s/	[kláse]	'class'
/l/	[próle]	'offspring'
/r/		
/y/	[mwéye]	'dock'
/d/		
/t/	[tomáte]	'tomato'

The first interesting characteristic that can be observed in (34) is that, except for /t/, which is listed as a possible counterexample, all the consonants sharing the feature $\begin{bmatrix} +coronal \\ +anterior \end{bmatrix}$ are listed under $/C_1/$. Of the consonants listed under $/C_1/$, /y/ requires particular attention. As mentioned in 3-1.1 above, there are alternations in Spanish where the segment [y] is derived from /i/ via /j/ (cf. /múi/ → /múj/ → [múy]). If epenthesis applies before /j/ becomes /y/, then there is no reason why the appearance of

[y] in final position, without the application of epenthesis, should appear
as abnormal. Epenthesis (33) is designed to apply only when the final segment
is a consonant. Epenthesis does not apply when the last segment is a glide
preceded by a vowel. As seen in (3-2.1 (p. 60), the environment /CG/ triggers
epenthesis in the word [deságwe]. This is a very different environment from
/VG/.

In (34), the segment /y/ is listed again, as a possible counterexample,
since in the words [káye] 'street' and [mwéye] 'dock', the epenthetic [e]
appears word-finally. The /y/ segment here does not come for /j/ or /i/ but
is, in fact, the same segment that occurs in the word [akéya] 'that one (fem.)'
and that alternates with [1] in the word [akél] 'that one (masc.)'. In
phonemic representations the [y] may be /11/ or /y/ (cf. ft. nt. 5, Chapter 2),
but, in any case, it is never a vowel or a glide, and therefore the application
of epenthesis in these two words is expected.

The application of epenthesis after /t/ as in [tomáte] 'tomato' can be
explained if this [t] derives from /tt/, and therefore it is not (33), but
(31) that applies. To account for the occurence of [e] after stem final /t/,
rule (33) could also be expanded to apply specifically after this segment.
The rest of the apparent counterexamples of (34), except for /y/ which has
already been explained, could be simply listed as elements that require an
epenthetic [e]. In the following sections it will be shown that an analysis
that proposes underlying double consonants and a rule of degemination could
be proposed within our present framework and therefore that, with this
'abstract' analysis, all the correct forms of Spanish can be generated.

In the next section, rule (35) will be carefully examined.

(35) Degemination

$$/c_i c_i/ \longrightarrow /c_i/ \quad / \quad V\_V$$

The data in (34) will be examined in terms of this rule. If stem-final /t/ is considered to be in fact /tt/ and the [y] of [Réy] 'king' is derived from /ĵ/, while the [y] of [káye] is derived from /y/, then (33) will be formulated as (36):

(36) $\emptyset \longrightarrow$ e / $\left[\begin{array}{c} \begin{bmatrix} +\text{cons} \\ -\text{voc} \end{bmatrix} \\ \left\{ \begin{array}{c} [-\text{coro}] \\ \begin{bmatrix} +\text{coro} \\ -\text{ant} \end{bmatrix} \end{array} \right\} \end{array} \right]$ _____ ##

(36) applies only after consonants, not after liquids and glides; it applies to [-coronal] consonants in general, and to [-anterior] coronal consonants in particular. The set of $\begin{bmatrix} +\text{coronal} \\ +\text{anterior} \end{bmatrix}$ segments (/n/, /s/, /r/, /l/, /d/) do not trigger epenthesis.

c)   The postulation of the underlying representation /tt/ and of the rule of degemination (35) above allows for a systematic description of epenthesis (36). To account for the apparent exceptions of (34), it is necessary to postulate double consonants in underlying representations. Evidence for double consonants and for rules of the type of degemination (35) can be found in two independently motivated circumstances.

(i)   Certain processes of prefixation, such as that of the derivational morpheme /ad/ 'toward'. When the root begins by a segment /d/, as in the word [djéstro] 'able', and /ad/ is prefixed to this root to form a compound, /ad+djestrar/ 'to train', the output does not exhibit a geminated /dd/, *[addjestrár], but rather shows the application of a rule of degemination: [adjestrár].

/ad+djestrar/
á   stress
d   degemination (35)
[adjestrár]

(cf. Foley, 1965, for several possible cases of degemination). Following

Foley, degemination may be in fact the result of two rules, one of

contraction and one of shortening. It is not, in all cases, necessary to

have the two subcomponents of degemination apply. This is particularly

clear in the behaviour of the consonant /r/ and of the cluster /rr/.

(ii) Harris (1969: 46-56) offers an in depth description of nonlateral

liquids. In the present thesis, the symbols r and R have been used to write

phonemic and phonetic representations without elucidating their real nature.

In the following partial description of Spanish Nonlateral Liquids, the

notation will be complicated. A third symbol rr is used in opposition to

the two previously used symbols. Phonetically [r] is a 'tap' and [R] is a

'trill'. Independently of style variations and of secondary environmental

factors that may influence the particular nature of the segments, the

distribution of these two segments can be narrowed down to three essential

characteristics, as seen in (37):

(37)   a.

    [Róto]   'broken'

    [Rémo]   'paddle'

    [Ráta]   'rat'

                       b.

    [séRo]   'hill   [séro]   'zero'

    [péRa]   'dog (fem.)'   [péra]   'pear'

    [káRo]   'cap'   [káro]   'expensive'

                      c.

                      [dolór]   'pain'

                      [kalór]   'heat'

                      [teRór]   'fear'

As seen in these examples, [R] is the only nonlateral liquid that

occurs in initial position, and [r] the only one that appears in word-final

position, whereas both [r] and [R] occur and contrast in stem medial and stem final positions, cf. /korason/ 'heart', /teRor/ 'fear' and /peR#a/ 'dog (fem)', /per#a/ 'pear'. Before describing the interaction of epenthesis with the nonlateral liquids, it is necessary to show that [R] can be derived from /rr/ by a rule of contraction without shortening. This is the factor that distinguishes the complete application of degemination of clusters such as /dd/ (cf. (i) above) from the partial application of degemination in /rr/ clusters.

Harris (1969: 96-98) shows that there is in Spanish a rule of apocope which deletes the theme vowel /e/ of some second conjugation verbs and the /i/ of one verb of the third conjugation.

(38) (Haris's (69))

	Infinitive	Future stem
a.	poder	podr-
	saber	sabr-
	caber	cabr-
b.	salir	salr-
	tener	tenr-

The verb [kerér] 'want' also undergoes apocope, resulting in [keRé] 'I shall want'. In essence, a sequence /rr/ results from the application of apocope, and /rr/ becomes [R] by contraction.

/kerer/	/kerere/	
é	é	stress
	∅	apocope
	R	contraction
[kerér]	[keRé]	

Since /rr/ results in [R], it is possible now to describe the interaction of epenthesis with the nonlateral liquids.

(iii) The difference in the derivation of double consonants like /tt/
and /rr/ is evident particularly in the distribution of [r] and [R] seen in
(39).

(39)

    a. [pán]   'bread'   [peréne]   'perennial'

       [pás]   'peace'   [kláse]   'class'

       [papél] 'paper'   [próle]   'offspring'

       [paréd] 'wall'

    b. [pár]   'pair'

                    [tóRe]   'tower'

    c.   [tomáte] 'tomato'

    d. [Réy] 'king'   [káye]   'street'

The two subparts of degemination, contraction and shortening, apply to
the times in (a) and (c):

    /pan/   /perenn/

     á   é   stress

                  e   epenthesis

                  n   contraction   degemination

                  n   shortening

    [pán]   [peréne]

In (b), since shortening does not apply, a difference is seen in the
realization of /rr/ and /r/ which is not evident between the realizations of
/nn/ and /n/:

    /par/   /torr/

     á   ó   stress

                  e   epenthesis

                  R   contraction   degemination

                     shortening

    [pár]   [tóRe]

The nonlateral liquids exhibit clearly how epenthesis applies only after two
$\begin{bmatrix} +\text{coronal} \\ +\text{anterior} \end{bmatrix}$ segments and not after a single one.

If forms ending phonetically in either *[-R] or *[-re] were found, then the present hypothesis would be falsified. [r] can only originate from /r/. /r/ cannot trigger epenthesis and therefore the absence of #[-re] is expected just as is the absence of *[-R], for [R] originates in a double consonant which must always trigger epenthesis.

The gap in (39-c) is due to the absence of */-t##/ and (39-d) was explained in 3-2.1, (b) above (p.49). The rules of epenthesis (31) and (33) can therefore account for the distribution of all non-verbal word-final unstressed [e]'s in Spanish.

Before describing the application of epenthesis in stem-final position in plural forms, a short summary of the consequences of epenthesis on word-formation which have been described thus far will be presented, followed by a comparison between our solution of the same data.

3-2.2 Summary.

We started originally with the four classes of words represented in (40-a-b-c-d) (cf. (23) above).

(40) a. [papél]   'paper   b. [péjne]   'comb'
          [kalór]   'heat'   [léče]   'milk'

      c. [Rubí]   'ruby'   d. [tékla]   'key'
          [kafé]   'coffee'   [séRo]   'hill'

We know now that, underlyingly, there are in fact two morphologically distinct classes; one with gender morphemes and one without (which can be further subclassified into three classes, as seen in (41)).

(41)   [-inflection]

          [+inflection]   /V##/   /C##/

          /tekl#a/   /Rubi/   /papel/ /pejn/

          /serr#o/   /kafe/   /kalor/ /leč/

The Spanish Stress Rule applies identically to the stems of the four

subclasses. In the examples in (40), the stressed vowel is always the

rightmost vowel of the stem. A generalization which can be made from this

data is that Spanish stems preferably have consonantal endings. The words

in (a) and (b) have been shown to be closely related by this particular

characteristic, the difference in phonetic representations being explained in

terms of epenthesis. Stems ending in a vowel amount to about two dozen items

and are therefore a minority in comparison with the rest of the lexicon. The

items taking a gender morpheme also have stems generally ending in a consonantal

segment. This similarity between the stems that are inflected and those that

are not can also be seen from the existence of forms like [kanóa] 'canoe'

which like [Rubí] has a stem ending in a vowel, but has also a gender

morpheme: /kano#a/. A word like this one is in the minority among inflected

words.

There is another subset of inflected words that must be described since

it contains stems ending in /e/. Some examples are presented in (42). This

/e/ is in all cases part of the stem since it is stressed. It is, however,

a derivational morpheme with a possible gloss 'iterative'. This /e/ is

always appended to the root ending in a consonant. What this shows is that

the distinction between 'stem' and 'root' is unnecessary as far as phonological

processes are concerned in the cases that have been described so far.

(42) [maréa]   'tide'   /mar+e#a/
      [bokséo]   'box'   /boks+e#o/
      [maréo]   'dizziness' /mar+e#o/
      [toréo]   'bull-fighting' /tor+e#o/

A consonantal ending is therefore a general characteristic of Spanish roots.

This is evidenced by the data in (40) above. Consonantal endings are also

a characteristic of most stems. Most derivational morphemes are not like the 'iterative' /e/. They are generally of the form /VC/ and, when added to stems /-VC/, the result is /-VCVC/, showing that, in most cases, whether the stem is coterminous with the root or a root with some derivational morphemes, the stem ends in a consonant. In (43), certain examples of words build out of roots plus derivational suffixes are listed to exemplify this particular characteristic of Spanish stems. In contrast to the relatively general consonantal ending of stems, singular words manifest the very common vocalic ending. As described in this chapter, the passage from underlying consonantal endings into phonetic vocalic endings is due either to the morphological process of gender or to the phonological process of epenthesis.

(43) /niñ#/ 'boy'   /niñ+es/ 'childhood'

/grand/ 'large'   /grand+es#a/ 'greatness'

/past#o/ 'grass'   /past+ur#a/ 'pasture'

/pasjon/ 'passion'   /pasjon+arj#a/ 'passion-flower'

/pas+e#o/ 'walk'   /pas+e+ant/ 'walker'

3-2.3 Epenthesis vs. Apocope.

As mentioned in Chapter 1, when epenthesis solutions are presented, it is often possible to have more or less equivalent apocope solutions. When two alternating forms /XYZ/ and /XZ/ are being analyzed, the two types of solutions may, at first sight, seem to be equivalent:

/XZ/   /XYZ/

Y   epenthesis   Ø   apocope

[XYZ]   [XZ]

Foley (1965) and Harris (1969) have proposed an apocope solution for the problem that has been described as involving epenthesis in this chapter. In this section, a short description of the apocope analysis is given for comparison with our epenthesis solution. The Latin Stress Rule proposed by Foley and Harris is then contrasted with the SSR since the final [e] described in this chapter is particularly relevant to the formulation of stress. The two solutions will be contrasted by observing their particular interpretations of morphological structure and of the interaction of palatalization with this [e].

(i) Foley posited an underlying /e/ in the phonemic representations of words having [e] word-finally and of those ending in a consonant, as seen in (44); the bracketed forms are the representations proposed by the epenthesis analysis.

(44)	/papele/	(/papel/)	[papél]	'paper'
	/kalore/	(/kalor/)	[kalór]	'heat'
	/arte/	(/art/)	[árte]	'art'
	/onse/	(/ons/)	[ónse]	'eleven'

The apocope rule proposed by Harris (1969: 179) can serve to represent the point of view of proponents of apocope. This rule drops the underlying /e/ when there is at most one $\begin{bmatrix} +coronal \\ +anterior \end{bmatrix}$ consonant preceding a [-tense] /e/. The /e/ drops also when the preceding segment is /y/.

$$(45) \quad \begin{bmatrix} e \\ -tense \end{bmatrix} \rightarrow \emptyset \quad / \quad V \left\{ \begin{bmatrix} -cor \\ -ant \end{bmatrix}_0^1 \atop y \right\} \underline{\quad} \#$$

/papele/	/reye/	/arte/	
é	é	á	stress
∅	∅		apocope
[papél]	[réy]	[árte]	

(ii) $\begin{bmatrix} e \\ -tense \end{bmatrix}$ is postulated because the final [e] of the subjunctive

and of the third person singular of the second and third conjugations do not

undergo apocope.

[kõme] 'he eats'   [sále] 'he goes out'

[kánte] 'that I sing' [mĭre] 'that I look'

There is a clear difference between the /e/ found in nouns and

adjectives and the verbal /e/. It is apparent, though, that the distinction

cannot be explained in terms of a feature [+/-tense] which is never realized

in phonetic representation. This feature is a notational variant of the

feature of length posited by Foley (1965) and mentioned in 2-1.5 above. Some

evidence against this feature was presented there. The 'epenthesis' explanation

of the occurrence of the verbal /e/ as a morpheme and, therefore, present in

underlying representation and of the other /e/ as epenthetic shows that there

is no connection between the two /e/'s.

/sale/ 'goes out'   /papel/ /art/

                               e   epenthesis

[sále]   [papél] [árte]

The epenthesis analysis can generate all the correct forms without using an

abstract feature [+/-tense] and should in this respect be preferred over the

apocope analysis.

(iii) The formulation of the environment of apocope as consisting of

at most one $\begin{bmatrix} +coronal \\ +anterior \end{bmatrix}$ consonant or /y/ can be understood better if it is

studied in connection with the set of words that were studied in 3-2.1 as

apparent counterexamples to epenthesis since they are also apparent counter-

examples to the apocope analysis. These are listed in (46).

(46) a. /t/ [tomáte] 'tomato'

/n/ [peréne] 'perennial'

/s/ [kláse] 'class'

/d/ [a dréde] 'on purpose'

/1/ [próle] 'offspring'

b. [tóre] 'tower

c. [káye] 'street'

To begin, /t/ is $\begin{bmatrix} +coronal \\ +anterior \end{bmatrix}$ and therefore apocope should apply to words like [tomate]. This set of words cannot be described within the apocope model. Harris (1969:178) cannot postulate double consonants because "if the [t] in question came from /tt/, then the Latin Stress Rule would assign stress to the penultimate vowel" of words like [trámite] 'proceeding'. The Latin Stress Rule requires a feature [+/-tense] in the formulation of the subpart that stresses antepenultimate vowels. This particular environment is formulated in (47).

(47) / $\begin{bmatrix} -cons \\ +voc \end{bmatrix}$ C_o $\begin{bmatrix} V \\ -tense \end{bmatrix}$ C V

Since the underlying representation of [sábana] is /sabăna/ (where /V̆/ is a short or [-tense] vowel) in the apocope model and /V̆/ is followed by one single consonant, stress falls on the antepenultimate vowel. But if there were two consonants following the [-tense] vowel, another subpart of the LSR, (48) would apply, stressing the penultimate vowel incorrectly (*[tramíte]).

(48) / $\begin{bmatrix} -cons \\ +voc \end{bmatrix}$ CCV

Since in the present analysis the LSR cannot be proposed for Spanish because the feature [+/-tense] is exluded from the inventory of Spanish

distinctive features for vowels, the postulation of double consonants is possible, and the apparent counterexamples are all accounted for in a similar manner. All the counterexamples in (46-a) must, within the apocope model, be listed as exeptions.

Apocope (45) is also specified as applying after /y/ to account for words like [Réy] 'king'. The [e] in [kaye] must also be an exeption to the apocope solution. In the epenthesis model [y] can originate from two different sources and there are, therefore, no exceptions.

(iv) Notice that apocope is formulated so as to apply when the segment preceding the [-tense] /e/ is a vowel. This is because the words in (49), which are characterized here as having stems ending in a vowel are postulated in the apocope framework with an underlying /e/ which undergoes apocope.

(49)   [Rubí]   'ruby'   /rubie/
       [kafé]   'coffee'   /kafee/
       [perú]   'Peru'   /peru/

The main reason why /e/ is postulated in these underlying representations is to explain word-final stress in this particular subset of words. Stress is assigned to the antepenultimate vowel by (50) and then the /e/, having served its function, is dropped by a rule of apocope. This part of the rule assigns stress penultimately as in (48), but in this case any number of consonants or zero consonants may follow the vowel. The difference between (47) and (50) is that the penultimate vowel is [-tense] in (50). According to the LSR, penultimate [+tense] vowels are always stressed.

$$(50) \qquad / \underline{\hspace{1cm}} C_o V\#$$
$$\begin{bmatrix} -\text{cons} \\ +\text{voc} \\ +\text{tense} \end{bmatrix}$$

According to the apocope model, since apocope is ordered after stress,
derivations like the following account for the placement of stress in the
words in (49):

/Rubie/

í   stress

∅   apocope

[Rubí]

The second reason why this set of words is postulated to have an /e/ is
because, historically in Spanish, there have been some dialects that exhibited
an /e/ in their plurals of the words of (49) as seen in (51). In Section
3-3.3 it will be shown that an epenthesis analysis can also account for the
[e] of the plural forms of these particular dialects. For now, it is only
necessary to say that words like [mamá] cannot be accounted for by the apocope
model because the plural of this word is [mamás] and not *[mamáes]. The
epenthesis model does not generate this exception.

(51)   [Rubíes]   'rubys'

        [baxáes]   'Arabic landlords'

It is also worth noting that, in the dialect under analysis, the plurals
[Rubís] and [baxás] are probably more common.

(v) The analysis of final [e] is crucial to the formulation of stress.
The apocope analysis supports the LSR and the epenthesis analysis the SSR.
In essence, there are certain areas where the SSR is superior to the LSR.
One of them was noted in 2-1.5, but the comparison between the two rules in
terms of data is not as interesting as a comparison in terms of the formulation
of the rules and of their implications concerning morphological structure.

The formulation (52) of the LSR is that given by Harris (1969:121), the
SSR is rewritten in (53).

(52) LSR

$$V \longrightarrow [+\text{stress}] \; / \; \underline{\quad} \; (C_0 (\check{V} C \; (L)) V) C_0 \#] \quad N, \text{Adj}$$

(53) SSR

$$V \longrightarrow [+\text{stress}] \; / \; \underline{\quad} C_0 \; (\#X) \; \#\#$$

in [-Verb]

where X is not $\emptyset$

In terms of simplicity, the formulation of (53) seems to be preferable to that of (52). The LSR stresses a different vowel of the word, counted from the end, depending on the type of phonological environment that follows the vowel. The SSR, in a simpler way, always stresses the same vowel of the stem. (53) is in fact incorrectly stated at present. (53) accounts for the distribution of stress at a level close to phonetic representation. It will be shown that at a deeper level, the process of stress underlying the regular distribution represented by (53) can be studied as two main subcomponents.

The bracketed portion in (53) is written as X as a reminder that inflections occur in this part of the word. The X stands for either of the gender morphemes /a/ or /o/ and for the plural morpheme /s/. The simplified notation is necessary because all combinations are possible and their phonological specification would complicate the rule when in fact the single morphological characteristic of being inflections is what the morphemes subsumed under X have in common. This implies that (53) must be reformulated as (55) and not as (54). (54) complicates the rule by specifying all the types of phonological elements that can occur in the place of X; in (55) the second condition is translated by the feature [+inflection] (for this is what characterizes X and not the fact that it is not $\emptyset$ as specified in (53)) which then can replace the feature X simplifying, thus, the rule.

(54)
$$V \longrightarrow [+\text{stress}] \ / \ \underline{\quad} \ C_0 \left(\# \left\{ \begin{matrix} V \\ C \\ VC \end{matrix} \right\} \right) \#\#$$

in [-Verb]

(55)
$$V \longrightarrow [+\text{stress}] \ / \ \underline{\quad} \ C_0 \ (\#[+\text{inflection}]) \#\#$$

in [-Verb]

After a short description of the behaviour of stress in Spanish compounds having the derivational suffixes /it/ 'small' and /ot/ 'large' it will become apparent that (55) needs to be reformulated again. As was mentioned in (2-1.5), diphthongization will be described in Chapter 4. Since the application of this process is necessary for the following discussion, rule (56) will be used for the discussion. Although it will be shown that diphthongization is a process very different from that represented in (56), the conclusions reached from the problem at hand will not be invalidated when diphthongization is more fully described in Chapter 4.

(56)
$$\begin{bmatrix} e \\ o \end{bmatrix} \longrightarrow \begin{bmatrix} je \\ we \end{bmatrix} \ / \ \underline{\quad\quad} \ [+\text{stress}]$$

Consider first the two words [pwérta] 'door' and [portál] 'portal'. These two words have the same root /port/, the first has an inflectional suffix /a/, the second a derivational suffix /al/. The two words are stressed by the SSR on the rightmost stem-vowel. Since their stems are different, different vowels are stressed and only in one of the two cases is the environment required for the application of (56) generated.

/port#a/	/port+al/	
ó	á	stress
wé		diphthongization
[pwérta]	[portál]	

Consider now, the word [pwertíta] 'small door'. This word has to be
derived from the same root as the two words just exemplified. In the case of
this word, the diphthong appears in phonetic representations even though
stress falls on another segment. At some point in the derivation, the
segment underlying the diphthong must have been stressed for (56) to apply.
Harris (1969:175-176) showed that a better analysis of this problem can be
made if a boundary /#/ is postulated between the root and the morpheme /it/.
Harris accounts for the problem by using the cycle, and therefore stressing
first the root vowel and in the second cycle the vowel of the morpheme /it/
and weakening the leftmost vowel:

$$/[\#[\#sEg\#]ito\#]/$$

É	stress	
jé	diphthongization	CYCLE I
/[#sjégito#]/		
je í	stress and weakening	CYCLE II
[sjegíto]		

If the SSR (55) is reformulated as (57), the correct forms can be generated
within our framework without having recourse to the cycle. Weakening of
leftmost stress is necessary in the present model, but instead of being part
of the stress rule as in Harris's model, it is a rule that applies closer to
phonetic representations than the stress rule.

(57) V $\longrightarrow$ [+stress] / ___ C_o # ([+inflection]##)

in [-Verb]

The new formulation of the SSR implies that every vowel followed by at least
zero consonants and by the boundary /#/ is stressed.

/port+al/	/port#a/	/port#it#a/	
á	ó	ó í	SSR (57)
	wé	wé	diphthongization
		we	stress weakening
[portál]	[pwérta]	[pwertíta]	

There is another peculiarity about the formulation of (57) that must be considered carefully, but this objective falls beyond the scope of our thesis. The material in brackets is inflectional and is therefore the output of different subcomponents of the lexicon (cf. p. 10 and p. 12). If in nouns and adjectives stress applies before the inflectional material is attached to the stem, then (57) can be rewritten as (58).

(58) V ⟶ [+stress] / ___C$_0$ # in [-Verb]

The decision as to whether (57) should be replaced by (58) cannot be made here. The possibility, however, is open to debate.

There is another area where the reformulations (57) and (58) of (55) can be tested empirically. The prefixes /in#/ and /des#/ should be stressed since in their generation the environment of (57) and (58) is met. Since words like [inesperádo] 'unexpected' have underlying representations like /##in#sperad#o##/, stress should apply to them in two positions: /in#sperad#o/. This word would be affected by the rule of leftmost stress weakening resulting in the form [ìnesperádo]. Since the vowels of /in#/ and /des#/ do not undergo any changes due to stress such as diphthongization, it is possible only intuitively to verify that the words in column (a) below have secondary stress on the prefix vowel whereas the items in (b) do not.

a.		b.	
[ìnesperádo]	'unexpected'	[inspirádo]	'inspired'
[ìnfatigáble]	'unwearied'	[infantíl]	'childlike'
[dèsasér]	'undo'	[konbinár]	'combine'

(vi) The way the LSR is formulated, a particular conception of morphological structure can be detected. In essence, only one class of lexical items is conceived of: every Spanish phonemic representation ends in a vowel. In the epenthesis analysis, the opposite is true, except in clearly stated and well-motivated cases. In the epenthesis model a distinction is also made between root, stem and word. This distinction is absent from the analysis that proposes apocope.

APOCOPE	EPENTHESIS	
/mesa/	/mes#a/	[mésa]
/peso/	/pes#o/	[péso]
/mese/	/mes/	[més]
/sobre/	/sobr/	[sóbre]
/rubie/	/rubi/	[Rubí]

As shown in 3-2.2, there are in fact morphological and phonological criteria which must be defined and represented in a linguistic analysis. The epenthesis definition of the data appears to be more interesting than the corresponding definition by the apocope analysis.

(vii) The application of a palatalization rule has repeatedly been used as an argument for apocope-type descriptions. Foley (1965) considers the words in the left column below to be related in a synchronic grammar to those items in the right column by a phonological rule of palatalization.

[bós]	'voice'	[bokál]	'vowel'
[pés]	'fish'	[peskádo]	'fish'
[ápise]	'apex'	[apikál]	'apical'

For example, the underlying representations of the first pair of words, in an apocope model, are /boke/ and /bokale/. Palatalization applies when /e/ follows /k/, but not when /a/ follows /k/, resulting in /bose/ and /bokale/. Apocope then applies, resulting in the forms [bós] and [bokál]. At first

sight, this seems to be an argument in favour of the apocope analysis. In

fact, the derivations proposed by Foley and Harris in connection with these

examples are quite similar to diachronic derivations, and in our thesis no

argument is presented against an analysis that tries to relate these words

etymologically. We are opposed, however, to relating these words

synchronically. The words that can be related by the postulation of an

abstract /e/ and of a rule of palatalization is minimal in comparison with

words that do not undergo palatalization in the same environment:

      [tóke]   'touch'
      [kónyuge] 'husband'
      [atáke]   'attack'
      [pége]   'blow'

It seems more interesting to deny the existence of a synchronic phonological

relationship between [bós] 'voice' and [bokál] 'vowel', and to be able to

account for the examples directly above. This is not to deny the possible

existence synchronically of a palatalization process in nominal and verbal

forms but this problem is independent of final [e].

    Consider also the derivations proposed by the apocope model for the

words [bós] and [ápise]:

/boke/	/apike/	
ó	á	stress
s	s	palatalization
Ø	Ø	apocope
[bós]	[ápise]	

Apocope does not apply to [ápise] as it does to [bós]. This is a clear

counterexample for the apocope theory. If the [s] in [bós] derives from

the same origin as the [s] in [ápise] as is required by the apocope model,

it is impossible to explain why apocope applies to /bos/ but not to /apise/.

Within the epenthesis model, it is possible to introduce the [e] of [ápise]

without having to add one to [bós]:

/bos/   /apise/

ó   á   SSR

             sse   epenthesis

             s   degemination

[bós]   [ápise]

3-3.0   Epenthesis in Plural Formation.

In Spanish, words ending in a consonant undergo pluralization differently

from words ending in a vowel.   In some dialects, words ending in a stressed

vowel, undergo the same process as those ending in a consonant.   Since, in

the literature (Foley: 1965 and Saltarelli: 1970), the dialects described

have included the two sets of words in the same category, the same will be

done in 3-3.2.

In the speech of the majority of the population of the Mexican dialect

under consideration here, the [e]-involving alternation occurs only in words

ending in a consonant and words ending in a stressed or unstressed vowel have

the same apparent behaviour.   The analysis will therefore concentrate on the

epenthesis rule that applies in consonantal environments.   It will be

contrasted with the apocope solution proposed by Harris (1969) since this is

a coherent proposal and it restricts the data to the consonantal environment.

3-3.1   The process of plural formation must be analyzed with respect to

the four classes of words encountered thus far.   Class (b) has two

alternating forms [Rubís] and [Rubíes].   The form with the epenthetic [e]

will be described below in 3-3.2.

(59)

a.	[mésa]	/mes#a/	[mésas]	/mes#as/
	[gáto]	/gat#o/	[gátos]	/gat#os/
b.	[kafé]	/kafe/	[kafés]	/kafe#s/
			[kafés]	
	[Rubí]	/rubi]	[Rubís]	/rubi#s/
			[Rubíes]	
c.	[póstre]	/postr/	[póstres]	/postr#s/
	[gránde]	/grand/	[grándes]	/grand#s/
d.	[més]	/mes/	[méses]	/mes#s/
	[sól]	/sol/	[sóles]	/sol#s/

(59-a) and (59-b) show that pluralization consists of the addition of
the morpheme /s/ to the right of the stem with or without gender morphemes.
The boundary /#/ separates the plural morpheme from the stem /kafe/, cf.
/kafe#s/, because /s/ is an inflection just like the gender morphemes /a/ and
/o/. In (59-a), it is clear that /#/ occurs between the stem and /s/. It is
also clear from the data that pluralization does not, in general, alter the
assignment of stress studied above in singular forms.

The forms in (59-c) have an [e] between the stem and the plural morpheme.
These words undergo epenthesis in the singular because of their particular
stem-final consonantal ending. It is expected, if the epenthesis hypothesis
is to hold, that epenthesis will also apply in the plural forms, particularly
since another consonant is added to a consonantal environment that independently
requires the vowel [e]. In the case of the plural form, the [e]-epenthesis
rule does not apply 'word-finally', as in the singular, but stem-finally, as
seen in the formulation of (60).

(60) $\emptyset \longrightarrow e \: / \: C \underline{\quad} \#s$

This is a 'different' rule from the one that supplies the epenthetic [e] of
the singulars and the same rule that supplies the [e] of class (59-d):

/mes/	/mes#s/	/postr/	/postr#s/	
é	é	ó	ó	stress
		e		epenthesis (31)
	e		e	epenthesis (60)
[més]	[méses]	[póstre]	[póstres]	

Although the epenthesis rules are, in some sense, different, there is no
need except perhaps for clarity, to write different epenthesis rules in our
derivations. All these rules are specific applications of a general process
of epenthesis in environments consisting of consonants and boundaries. What
is interesting to note is that the words of class (59-c) have epenthesis (31)
applying to them in the singular and (60) in the plural.

(31) $\emptyset \longrightarrow$ e / CC__##

This means that, in a sense, the [e] of [ómbre] and the [e] of [ómbres] have
different origins since two different sub-parts of the epenthesis rule
introduce the epenthetic vowel. This may seem to be a loss of generalization
since the apocope theory proposes that word-final and plural [e] are identical.
Another generalization is made instead: the [e] of [méses] is similar to that
of [ómbres] and different from that of [ómbre] since different subrules
operate. But these sub-rules represent only the different environments
where the epenthetic [e] is introduced.

The subrules have a complementary or 'conspiratorial' function (cf.
Kisseberth (1970) and Kiparsky (1973)). There are certain phonotactic
constraints on sequences of consonantal segments and boundaries which require
the different subrules for the application of the very general process of
epenthesis to prevent these sequences from surfacing in phonetic
representations.

3.3-2   The marginal case of epenthesis in some of the words of (59-c) can
be clearly stated in one rule within the present framework. Rule (61)
introduces [e] between a stem and a plural morpheme when the final segment in
the stem is a stressed vowel.

(61) $\emptyset \longrightarrow$ e / V ___ $\#$ s

This rule applies to words like [Rubíes] 'rubies' or [marabedíes]
'Arabic coin'. It does not apply to words like [mamá], *[mamáes], cf.
[mamás] 'mothers' and in the word [kafé] 'coffee', [kafés], it is apparent
that there is no epenthesis, although a rule of contraction and simplification
could be posited to account for the occurrence of one [e] where underlying
there are two [e] vowels, one phonemic and the other epenthetic.

/kafe$\#$s/
  é   stress
  ée   epenthesis
  é   contraction and simplication
[kafés]

Foley, in his analysis of pluralization (1967), posits such rules, the
difference between his model and the one presented here is that the two
vowels are present in phonemic representations:

/kafees/   /kafee/
  é   é   stress
                  $\emptyset$ apocope
  é   contraction and shortening
[kafés]   [kafé]

In section 3-3.4 the apocope interpretation of Foley and Harris will be
contrasted. For now, it is only necessary to say that there is evidence
within our model for a rule of contraction and deletion between vowels as

there is for degemination between consonants. As mentioned in section 3-2.1,
in this thesis the rule of epenthesis (61) is not included in the inventory
of rules of the dialect under description, and therefore the derivations of
the three types of words mentioned in this section are uniform:

/rubi#s/	/mama#s/	/kafe#s/	
í	á	é	stress
[Rubís]	[mamás]	[kafés]	

Leaving this particular case of epenthesis aside, a comparison can be
made between apocope and the epenthesis analyses, but first it is necessary
to compare the formulation of epenthesis in plural forms with that of
Saltarelli (1970).

3-3.3   The formulation of epenthesis proposed by Saltarelli is that of
(62). In essence, Saltarelli showed very clearly that pluralization could be
formulated as epenthesis, and not, as Harris and Foley had done before him, as
apocope. He also described the similarity between epenthesis before /s[+cons]/
clusters and the epenthetic [e] that occurs in plural forms.

$$(62) \quad \emptyset \rightarrow e \ / \begin{Bmatrix} C \\ V \end{Bmatrix} \_\_ s\#$$

The only problem with the formulation Saltarelli gives is that he does not
use a stem boundary to separate the stem from the plural inflection as is
done here:

$$(61) \quad \emptyset \rightarrow e \ / \ V\_\_\#s$$

Because of this omission, the subpart ' / V__s ' of (62) will confuse
stem-final /s/ with plural /s/:

/mais/	'corn'	/naris/	'nose'	
	í		í	stress
	e		e	epenthesis (62)
*[maíes]		*[naríes]		

The correct output is possible with the formulation (60):

```
/mais/        /mais#s/
   í             í              stress
                 e              epenthesis (61)
[maís]        [maíses]
```

Contreras (UM) also proposed a rule of epenthesis to account for the [e]

increment found in plural forms. His formulation was similar to that of (60)

in that it had in Contreras' terms, a 'word'-boundary in the environment.

In the present thesis, a description similar to that proposed by Saltarelli

or Contreras is presented in a framework where the rule is a logical result

of the rest of the analysis of [e]-involving alterations and of the

independently motivated postulation of /#/ in the environment of (60) and (61).

3-3.4   Foley and Harris, within the same framework of apocope as that

described in 3-2.3, attempted to unify the description of word-final /e/

with that of the plural /e/. The set of words that, in the singular in the

apocope model, undergo apocope are the words showing the /e/ increment in the

plural:

```
/kalore/       /kalores/
   ó              ó              stress
   ∅                             apocope
[kalór]        [kalóres]
```

The word-final /e/ undergoes apocope in singular forms but in the plurals

the /e/ is not in word-final position and therefore cannot apply.

$$(45') \quad e \longrightarrow \emptyset \;/\; V \; \begin{matrix} C \\ \begin{bmatrix} +cor \\ +ant \end{bmatrix} \end{matrix} \underline{\quad} \#$$

Rule (45') is the subpart of (45) which applies in the example above.

The epenthesis solution for the same data is as follows:

/kalor/	/kalor#s/	
ó	ó	stress
	e	epenthesis
[kalór]	[kalóres]	

If the plural /e/ is studied in isolation, as in Saltarelli (1970), the
apocope and epenthesis solutions appear simply as equivalent solutions. To
be able to choose between these solutions it is necessary to study the
plural e in conjunction with the word-final e. The apocope solution considers
the singular /e/ in [ómbre] to be the same as that of the plural [méses] which
is the main generalization this model tries to capture. The epenthesis
analysis makes a generalization by showing that very specific and different
subrules which are involved in a conspiracy introduce the epenthetic [e].
In 3-2.3 several arguments were offered in favour of interpreting the final
e as epenthetic rather than to posit apocope.

Plural formation, studied in isolation, can be interpreted as either
epenthesis or apocope. The choice between epenthesis and apocope must be
arrived at by studying the generality of the two processes in the language as
a whole. In the present case, epenthesis is chosen because the word-final
[e] was clearly shown to be epenthetic. It is logically impossible to have,
in Spanish, an apocope solution for pluralization and an epenthesis solution
for word-final [e]. It is not possible to posit /postr/ for [póstre] and
/kalore/ for [kalóres] ([kalór]) without violating the logic of generalization
in linguistic theory.

3-4.0   Summary.

The analysis of final position epenthesis presented in this chapter has
proven to be a strongly motivated solution. The redefinition of the stem-

final [e]-involving alternations required (a), a morphological examination
of the different types of Spanish words. A first characteritic is that words
are, first of all, divided according to whether or not they take a gender
inflection. Those that take the inflections /o/ or /a/ exhibit the same
behaviour independently of the phonological structure of stem-final position.
Whether the stem ends in one or more consonants or in a vowel, their
derivations are similar:

/mar+e#a/	/kano#a/	/per#a/	/pesk#a/	
é	ó	é	é	stress
				epenthesis
[maréa]	[kanóa]	[péra]	[péska]	

The words without gender morpheme have the same behaviour with regard
to stress as those with inflection: the more general rule is that the last
stem vowel is stressed and that stress is in fact assigned to every vowel
preceding a boundary /#/. The differences with the inflected class is that
three subclasses can be differentiated in terms of phonological structure.

/rubi/	/kolor/	/sastr/	
í	ó	á	stress
		e	epenthesis
[Rubí]	[kolór]	[sástre]	

One class has stems ending in a vowel, the other has consonantal endings.
The latter can be further subdivided into two phonetic subclasses indentified
in terms of the application of epenthesis.

(b) a reformulation of the Spanish Stress Rule. The more general
subpart of the SSR is formulated as (57) or (58); this formulation coincides
with the fact that gender morphemes are never stressed, and that neither is
the epenthetic [e].

(57)   V ⟶ [+stress] / __C_0 (#[+inflection])##

(58)   V ⟶ [+stress] / __C_0 #

3-4.1   The three subrules of epenthesis studied in this chapter can now be collapsed in (62) with the two stem-initial epenthesis rules studied in Chapter 2.

(62)

$$\emptyset \longrightarrow e \ / \ \begin{Bmatrix} \#\_\_s\ [+cons] \\ \#\#\_\_1\#\# \\ CC\_\_\#\# \\ C_2\_\_\#\# \\ C\_\_\#s \end{Bmatrix} \begin{matrix} a. \\ b. \\ c. \\ d. \\ e. \end{matrix}$$

Subpart (62-c) is a simplified notation of (63), a reformulation of (32).

(63) $\emptyset \longrightarrow e \ / \ \begin{Bmatrix} [+cons] \\ [-voc] \end{Bmatrix} \begin{Bmatrix} [+cons] \\ [-voc] \end{Bmatrix} \_\_\_\_\#\#$

(62-d) corresponds to (64):

(64)

$$\emptyset \longrightarrow e \ / \ \begin{bmatrix} \begin{bmatrix} +cons \\ -voc \end{bmatrix} \\ \begin{Bmatrix} [-coro] \\ \begin{bmatrix} +coro \\ -ant \end{bmatrix} \end{Bmatrix} \end{bmatrix} \_\_\_\_\#\#$$

It is evident that a formulation using strength scales (for example cf. Hooper (1976) for the description of a 'strength scale model') could formulate (62-c) or (63) and (62-d) or (64) as (65) by assinging to x a strength value greater than that of y which is the value of those consonants that do not trigger epenthesis.

(65) $\emptyset \longrightarrow e \ / \ C_x \_\_\#\#$

Because of the behaviour of epenthesis in the items that take the alternant
/sit/ of the diminutive /it/, it is clear that (62-c) and (62-d) could well be
one single subpart of the epenthesis rule.

3-4.2   The diminutive /it/ is the form found more extensively in Spanish.
Its allomorph /sit/ is only found in compounds constructed with stems or roots
that without the diminutive do not take a gender morpheme ([ámbre], [kolór]:
[ambresíta], [kolorsíto]). Although the particular rules of distribution of
the morphemes are complex and their description, beyond the scope of this
thesis, it is necessary to say that these rules are lexical and morphologically
determined rather than phonologically. For example [kárne] 'meat' appears to
have two diminutives [karnesíta] 'little meat' [karníta] 'specially cut and
cooked meat'. In the first item epenthesis applies whereas in the second it
does not. The reason is probably that in the second example the /it/ is
separated from the root by /+/ and not by /#/. [karníta] is not the
diminutive of [kárne], it is rather a different stem with a different referent.
In this case the suffix is attached by a process of Stem Formation specific
to this lexical item. The word [karnesíta] 'little meat' has the more
productive derivational diminutive morpheme.

To account for the epenthetic [e] in the following words, it is
necessary to expand (62-c) or (63) into (66) and (67) correspondingly.

$$
\begin{array}{ll}
\text{[ómbre]} & \text{[ombresíto]} \\
\text{[mádre]} & \text{[madresíta]} \\
\text{[kórte]} & \text{[kortesíto]}
\end{array}
$$

(66) $\emptyset \longrightarrow e \;/\; CC\_\#\begin{Bmatrix} \# \\ s \end{Bmatrix}$

(67) $\emptyset \longrightarrow e \;/\; \begin{Bmatrix} +\text{cons} \\ -\text{voc} \end{Bmatrix} \begin{Bmatrix} +\text{cons} \\ -\text{voc} \end{Bmatrix}\_\#\begin{Bmatrix} \# \\ s \end{Bmatrix}$

The following derivations exemplify the application of (67):

/ombr#sit#o/	/madr#sit#a/	
ó í	á í	stress
e	e	epenthesis
o	a	left stress weakening
[ombresíto]	[madresíta]·	

The rule of word-final epenthesis that applies after the consonants in set /C_2/ must be expanded to apply like (67) when the diminutive morpheme /sit/ follows since epenthesis applies also in this subset of words:

/leč/	/leč#sit#a/	
é	é í	stress
e	e	epenthesis (69) and (62-d)
	e	left stress weakening
[léče]	[lečesíta]	

Epenthesis does not apply to words having the morpheme /sit/ after one single consonant of the set /C_1/: [pansíto], *[panesíto]. This fact shows that to accommodate in our description the facts of epenthesis with the morpheme /sit/ it is the two rules that are under discussion that must be expanded in a similar way, and therefore perhaps collapsed to show the consistent parallelism which they exhibit in all environments. (62-d) should be rewritten as (68) and (67) and (68) should be collapsed as (69).

(68) $\emptyset \longrightarrow e \;/\; C_2 \_\_\#\#$

(69) $\emptyset \longrightarrow e \;/\; \begin{bmatrix} CC \\ C_2 \end{bmatrix} \_\_ \# \begin{Bmatrix} \# \\ s \end{Bmatrix}$

3-4.3   Rule (69) must be rewritten as (69'), replacing /s/ by [+cons] in the environment of the rule. This change simplifies the specification of the

rule and, at the same time, extends its range of application to another set
of words where epenthesis applies.

$$(69') \quad \emptyset \longrightarrow e \ / \ \begin{bmatrix} CC \\ C_2 \end{bmatrix} \!\!-\!\!\# \left\{ \begin{array}{c} \# \\ [+\text{cons}] \end{array} \right\}$$

The adverbs in /#mente/ below, when compared with their phonemic
representations, can be classified according to the presence or absence of
the epenthetic vowel.

    (a) [fwerteménte]   /fort#ment/   (b) [fasilménte]   /fasil#ment/

         [koRjenteménte] /koRjent#ment/   [ferosménte] /feros#ment/

In this case epenthesis applies word-medially between two structures separated
by a boundary /#/. The first element of the adverbial construction is similar
in every phonological aspect to an adjective: [fwérte] 'strong', [ferós]
'fierce'. Adjectives that are lexically categorized as [+inflection] are
phonologically identical to feminine adjectives: [bwéno] 'good (masc)'
[bwéna] 'good (fem)' [bwenaménte] 'kindly'. There is no evidence for
postulating boundaries /##/ between the base and the suffix in the word
/bon#a#ment/. A representation */bon#a##ment/ would require the postulation
of a rule of contraction to prevent the generation of two words *[bwéna ménte]
'kindly'. /bon#a##ment/ is in fact a correct phonemic representation but it
is not the adverb 'kindly', it is instead two words: 'good mind'.

Chapter 4

Diphthongization

4-0.0   The vocalic alternations subsumed under the term 'diphthongization'
have been described by several linguists (Foley, 1965; Harris, 1969, etc.;
Hooper, 1976; Brame and Bordelois 1973, 1974; Norman and Sanders, 1977). The
first part of this chapter will attempt to show that all these solutions
involve similarities and differences which can serve to group the solutions
proposed to date into two distinct classes. The first can be characterized
as the unitary analysis. It is represented by the analyses of Foley, Harris,
Norman and Sanders, and Hooper. The other is the 'non-unitary' analysis and
can best be seen in the analyses proposed by Brame and Bordelois. The
unitary view of diphthongization considers this process to be the result of
one single rule, i.e. diphthongization (4-1.0; 4-1.2) or monophthongization
(4-1.3) or a morphological insertion rule (4-1.4). In all cases this rule
has no other purpose but to account for the vocalic alternations under
consideration. The non-unitary analysis divides the process into sub-parts,
some of which have a function only in the generation of the diphthongizing
forms, the other applying in the generation of forms of Spanish involving
characteristics other than diphthongization. The second perspective will be
demonstrated to be the most interesting, and, two possible solutions, derived
from considerations of non-unitary analyses, will be proposed and finally
compared and contrasted in relation to the extension of the epenthesis
process, which is the central hypothesis under consideration.

The first part of the analysis refers to the alternations [o]/[we] and
[e]/[je]. The rules underlying the alternation called 'diphthongization'
will then be examined in relation to the rule that accounts for the

alternation [e]/[i] in some verbs of the Third Conjugation, in order to account for the more complex alternations [e]/[i]/[je] and [o]/[u]/[we].

For the sake of simplicity, the analysis will be presented in terms of the verbal system. Diphthongization will be stated as a process conditioned by phonological environments. The alternation [e]/[i] occurs only in third conjugation verbs. The triple alternations are analyzed in terms of the two simpler alternations, i.e. [e]/[i] and [e]/[je], for example, and are exhibited by a subset of Third Conjugation verbs.

4-1.0   Foley (1965) and, later, Harris (1969, etc.) attempt to solve the alternations [o]/[we] and [e]/[je] in terms of a rule of the type 'A → BC' when /A/ is stressed; Norman and Sanders (1977) propose instead a rule of the opposite form 'BC → A' when neither /B/ nor /C/ is stressed. The two types of solution attempt to explain the data in terms of opposites. This particular characteristic will be examined further in this chapter. It is clear that the two solutions are comparable both in their successes and shortcomings. The two solutions must posit an abstract feature to identify those segments /o/ and /e/ (or /we/ and /je/) which diphthongize (or monophthongize) from other segments which are phonetically identical and which in identical phonological environments do not diphthongize (or monophthongize). The analysis proposed in this thesis will not require the use of an abstract feature and will in this sense be superior to the two analyses presented in this section.

Hooper (1976) also discards the use of an abstract feature, but her solution will be shown to require modifications of the grammar which are too powerful. In the present thesis no such modifications are required and this serves to support the solution proposed here.

4-1.1   The words in (70) show the alternation of the mid-vowels [e] and [o]
with the diphthongs [jé] and [wé] respectively. Stress is the conditioning
factor in the process. A rule similar to (71) is proposed by Foley (1965)
to account for these alternations.

(70)   [kontár]   'to tell, to count'
        [kwénto]   'I tell, I count'
        [perdér]   'to lose'
        [pjérdo]   'I lose'

(71) $\begin{bmatrix} \breve{e} \\ \breve{o} \end{bmatrix} \longrightarrow \begin{bmatrix} je \\ we \end{bmatrix}$ / _____
                                              [+stress]

As (71) stands, it is not descriptively adequate because not every mid-vowel
of Spanish diphthongizes when stressed. The words in (72) show that certain
mid-vowels can be stressed and that (71) does not apply. If it did apply,
incorrect forms such as *[twémo] 'I take' and *[bjébo] 'I drink' would be
incorrectly generated.

(72)   [tomár]   'to take'
        [tómo]   'I take'
        [bebér]   'to drink'
        [bébo]   'I drink'

The problem is to find the factor that characterizes and distinguishes
the mid-vowels that diphthongize from those that do not. The vowels that
diphthongize were originally short vowels in Latin and the ones that do not
were originally long vowels. The distinction of vocalic length requires
that there be in Latin a phonemic inventory of ten vowels, G_1: /ā//ă//ē//ĕ/
/ī//ĭ//ō//ŏ//ū//ŭ/, i.e. five short vowels /V̆/ and five long vowels /V̄/.

In Spanish, the distinction of length was lost from phonetic
representations during the Middle Ages. Our claim is that this distinction

was altogether lost in Spanish and that the inventory of vocalic phonemes
in Spanish consists of five vowels /a//e//i//o//u/ undifferentiated for
length. Foley proposes that, although in phonetic representations there is
no distinction of length between vowels, in phonemic representations, the
inventory of vowels is still G_1 in Modern Spanish. A rule of the absolute
neutralization Type is postulated to account for the appearance of only five
vowels in phonetic representation:

$$
\begin{array}{ll}
\text{/tomas/} & \text{/kontas/} \\
\acute{\breve{o}} & \acute{\gamma} \qquad\qquad \text{stress} \\
& \text{wé} \qquad\quad \text{diphthongization} \\
\acute{o} & \qquad\qquad\quad \text{absolute neutralization} \left\{ \begin{matrix} \bar{o} \\ \breve{v} \\ \breve{o} \end{matrix} \right\} \longrightarrow [o] \\
\text{[tómas]} & \text{[kwéntas]}
\end{array}
$$

Rule (73) represents Foley's formulation of diphthongization. The rule of
absolute neutralization is simply a rule that makes all the vowels not
affected by diphthongization (or by apocope, cf. 3-3.2 (ii) above) become of
equal length.

$$(73) \quad \begin{bmatrix} \breve{e} \\ \breve{o} \end{bmatrix} \longrightarrow \begin{bmatrix} je \\ we \end{bmatrix} \ / \ \underline{\hspace{3cm}} \atop \text{[+stress]}$$

4-1.2   Harris (1969) proposes one change with respect to Foley's analysis
of diphthongization. Harris has a rule like (73) and, in order to distinguish
the vowels that diphthongize from those that do not, he uses a morphological
feature [D] 'mnemonic for diphthongization' instead of the feature of length.
Foley has four mid-vowels /ē//ĕ//ō//ŏ/, Harris has also four mid-vowels
/ē//ĕ̬//ō//ŏ̬/.

Harris's use of the feature [D] to provide a solution for the
diphthongization alternation instead of [+/-length] is not consistent with
Kiparsky's formulation of the Weak Alternation Condition (1968). This

condition allows that abstract phonological features may be posited. Harris

posits an abstract morphological feature [D] instead of an abstract

phonological feature [+/-length]. The problem is, however, that Harris also

posits independently an abstract phonological feature [+/-tense] to account

for the /e/ which, in his system, undergoes apocope and for the placement of

stress on antepenultimate vowels (cf. (52) p. 64). In essence Harris has

the vocalic inventory G_3 instead of Foley's G_1 of ten vowels; G_3: /ã//ă̌/

/ē//ě//ī//ǐ//ō//ŏ//ū//ǔ/ and /ę̃/ /ę̌/ , i.e. ten vowels distinguished by the

feature of tenseness and two vowels distinguished by the feature [D]. In

all, Harris has twelve different underlying vocalic segments. Harris

mentions also that the mid-vowels with the feature [D] can be directly

correlated with lax vowels. In this sense, Harris' use of [D] complicates

the analysis and/or is superfluous. Either there are more vocalic

distinctions in Harris' model than in Foley's or else [D] is nothing but

[-tense]. The use of [D] would be a constraint placed on the number of

possible grammars only if the feature [+/-tense] was complete discarded from

the analysis and substituted by [D]. [D] would then be 'mnemonic for

diphthongization' and the vocalic inventory would be G_4: /a//e//i//o//u/ and

/ę̃//ę̌/, i.e. five vowels and two other mid-vowels distinguished from their

respective unmarked partners by [D]. This would then require the postulation,

in Harris' model, of a feature [A] 'mnemonic for apocope' (to account for the

apocope formulation of final [e] mentioned in Chapter 3) and, furthermore,

of a feature [S] 'mnemonic for stress' (to account for the penultimate

vowels that are not stressed). It would be inappropriate to call all these

vowels [D]. What this points to is that the inconsistent use of an abstract

morphological feature leads to complicated analyses lacking the generalizations

which are possible if an abstract phonological feature, like Foley's, is

posited instead. It has been shown, in this thesis, that an epenthesis

solution can make generalizations in other areas where the feature [+/-length]

is used by Foley. The same will be done below with diphthongization. For

now, it is sufficient to say that Foley's rule (73) is equivalent to Harris'

rule (74).

$$(73) \quad \begin{bmatrix} \breve{e} \\ \breve{o} \end{bmatrix} \longrightarrow \begin{bmatrix} je \\ we \end{bmatrix} \quad / \quad \underline{\hspace{2cm}}_{[+stress]}$$

$$(74) \quad \begin{bmatrix} \breve{\underline{E}} \\ \breve{\underline{O}} \end{bmatrix} \longrightarrow \begin{bmatrix} je \\ we \end{bmatrix} \quad / \quad \underline{\hspace{2cm}}_{[+stress]}$$

4-1.3   Norman and Sanders (1977) interpret the relationship between

synchrony and diachrony differently from Harris and Foley. Where Harris and

Foley propose that diphthongization 'A ⟶ BC' existed in Early Spanish and

that it exists in Modern Spanish, Norman and Sanders propose that the loss

of the distinction of vocalic length brought about a restructuring of

underlying representations and that the rule of diphthongization became a

rule of monophthongization. For example, Harris' analysis must be interpreted,

to adduce its diachronic implications, as saying that at t1, [pwédo] was

underlyingly /pŏdo/ and that at t2 it was /pŏdo/ and that the rule linking

the two levels of representation was 'ŏ ⟶ wé' at t1 and 'ŏ ⟶ wé' at t2.

Norman and Sanders, on the other hand, picture t2 differently. Instead of

Harris' creation of an abstract feature to carry from t1 into t2 a similar

rule of diphthongization, Norman and Sanders say that there was a concomitant

change of underlying representations from /pŏdo/ at t1 to /pwedo/ at t2 and

that the rule changed from (75) at t1 to (76) at t2.

(75)
$$\begin{bmatrix} \breve{e} \\ \breve{o} \end{bmatrix} \longrightarrow \begin{bmatrix} je \\ we \end{bmatrix} / \underline{}_{[\text{+stress}]}$$
$\underline{t1}$ (Early Spanish)

(76)
$$\begin{bmatrix} je \\ we \end{bmatrix} \longrightarrow \begin{bmatrix} e \\ o \end{bmatrix} / \underline{}_{[\text{-stress}]}$$

$\underline{t1}$ $\longrightarrow$ $\underline{t2}$

| /pŏdes/ /pŏder/	/pwedes/ /pweder/
ŏ́ é stress	é é stress
wé Rule (75)	o Rule (76)
[pwédes] [podér]	[pwédes] [podér]

At $\underline{t1}$, [+stress] is the triggering factor, at $\underline{t2}$ it is [-stress].

In Chapter 2, a case of historical change was described in terms of a change in underlying representations due to a rule of apocope which ultimately resulted in a rule of epenthesis. In that particular case, the definite article el, ela underwent apocope and concomitantly epenthesis, resulting in el, la. In Chapter 3, it was shown that, in Modern Spanish, word-final [e] and plural [e] are both epenthetic. It is known that, in Latin, a vowel /ĕ/ was part of the accusative morpheme /em/ in the singular and that in the plural the vowel of the accusative morpheme /es/ was /ē/. Since 'absolute neutralization' did apply historically the distinction between these vowels should have vanished. The two vowels were also the output of inflectional rules which were lost along with the accusative case and with the distinction between declensions. The vowel [e] was the factor which distinguished third declension items from all others. The other Latin declensional vowels had become either /o/ or /a/ and become associated with the feature [+/-feminine] resulting this in two gender morphemes. The /e/ could not be associated with any morphological feature and no inflectional rule could introduce it. Hooper (1976:106-110) studied in depth the data gathered by Menendez Pidal

(1968) where the loss of this morpheme is exemplified. Hooper showed that
the /e/ dropped from all words except from those having a stem ending in /CL/
like [pádre] father. The word [nóče] lost the /e/: [nóč]. Verb-final [e] was
also lost but only for a short period of time, since this /e/ had a
morphological function in verbs, it had to be recovered. The [e] of [nóč]
was also recovered eventually (as attested by modern Spanish [nóče]). But
this was not because the [e] had a valuable morphological function. In fact
a number of [e] vowels were not recovered: [páne] became [pán] with the loss
of the declensional vowel of the accusative, but did not follow the same
route as [nóč] becoming [nóče] again. *[páne] was never to occur again.
Our interpretation of this historical development is that a functionally weak
morpheme /e/ was lost word-finally and was later replaced in all the
environments described in Chapter 3 as /CC/ or /C₂/ by an epenthetic [e].

t1 ⟶	t2 ⟶	t2 ⟶	t3	
/noče/	/noče/	/noče/	/noč/	
——	∅	∅	——	apocope
——		e	e	epenthesis
[nóče]	[nóč]	[nóče]	[nóče]	
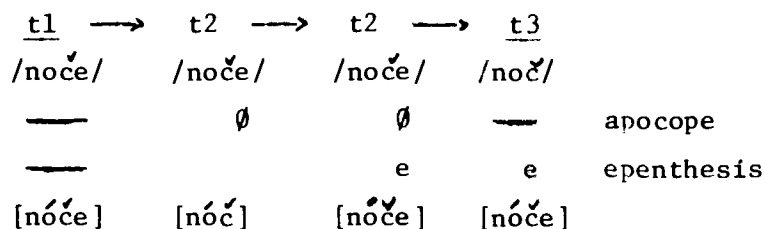
In the diagram above, the specification of two periods as t2 reflects that
at t2 the two phonetic forms [nóče] and [nóč] were in 'free variation'. A
subpart of the epenthesis rule developed prior to all the subparts described
in Chapter 3. The subpart 'CL-' appeared concomitantly with apocope of
declensional morpheme:

t1 ⟶	t2 ⟶	t3	
/padre/	/padre/	/padr/	
——	∅	——	apocope
——	e	e	epenthesis
[pádre]	[pádre]	[pádre]	
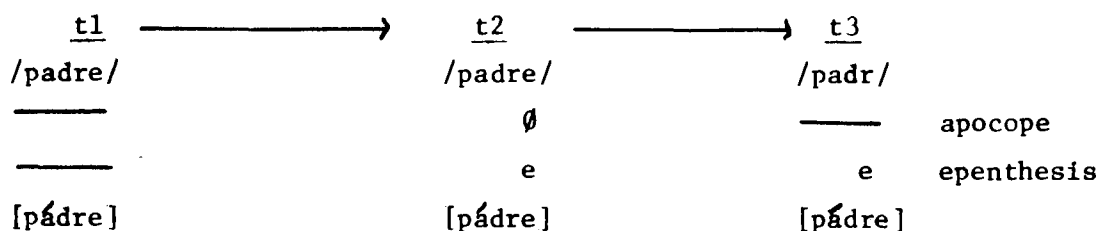
In the case of diphthongization, it could be argued similarly that the loss of the feature 'length' or 'tenseness' implied the appearance of an opposite process to carry into a later stage the same phonetic alternants. Our contention is that epenthesis is the main underlying process diphthongization in Spanish. Proposing for t2 a solution opposite to that for t1 to account for the same data can be motivated if there is evidence for a change such as the loss of vocalic length or the loss of the /e/ from the third declension. There are some other aspects that demand consideration. For example, the existence of a process of epenthesis in Spanish. Since epenthesis will be shown to be one of the underlying processes of diphthongization in conditions similar to those of t1, two opposing solutions will be possible for t2. One will postulate that the [e] that at t1 was redundant is lexicalized at t2; but the solution that will be preferred will postulate that the change produced by stress during Medieval Spanish triggered epenthesis and that in Modern Spanish, with the loss of the feature of tenseness, this particular change has become lexicalized and that epenthesis still applies in Modern Spanish to account for the [e] of the diphthongs. That diphthongization is the result of several sub-components is sbustantiated by demonstrating the failure of a monophthongization analysis to account for the alternations and by showing the desirability of discarding the use of an abstract feature [D].

As pointed out by Hooper (1976) and by Harris (1977), a monophthongization analysis has to replace the feature [D] by [-M] 'mnemonic for the failure of the application of monophthongization' in environments where it would normally apply. The diacritic must be interpreted as an exception feature. This feature is necessary to account for underlying diphthongs that surface as diphthongs and not as mid-vowels when unstressed, [frekwentár] 'to frequent'.

If the two solutions 'diphthongization' and monophthongization' manifest the same essential problems, then a possible logical consequence and a scientifically acceptable hypothesis is that the alternation is neither formulatable as a rule 'A ⟶ BC' nor as a rule 'BC ⟶ A'. At ·least two independent processes must underly diphthongization. This can be shown to generate a more appropriate analysis than the 'unitary' solutions represented as 'diphthongization' and 'monophthongization'. In the next section, the analysis proposed by Hooper in terms of morphological rules will be described and shown to be based on basically the same unacceptable set of principles as the unitary analysis described so far.

4-1.4   Hooper describes diphthongization in a different way from those presented above. Her conception is also unitary, but in a particular sense. Hooper considers that in Modern Spanish what used to be a phonological alternation conditioned by stress and by the feature [-tense] is now a morphologically conditioned alternation, stress being the only factor conditioning the application of the rule. Her analysis is also unitary in the sense that the process is not decomposed into sub-components. Where Foley and Harris have representations with mid-vowels /ĕ//ŏ/, cf. /pŏder/, and Norman and Sanders have underlying representations with diphthongs /we/ and /je/, Hooper has representations with both the mid-vowels and the diphthongs: /p $\begin{Bmatrix} we \\ o \end{Bmatrix}$ do/. The rule of lexical insertion (77) distributes the mid-vowels and the diphthongs according to whether the / $\begin{Bmatrix} we \\ o \end{Bmatrix}$ / portion of the representation is stressed or not. In the derivation of the word [podér], the mid-vowels will be chosen because stress falls on the theme vowel /e/, in the derivation of [pwédo], the diphthong will be chosen.

$$(77) \quad \begin{Bmatrix} o/e \\ we/je \end{Bmatrix} \longrightarrow \begin{bmatrix} we/je & / & \rule{3cm}{0.4pt} \\ & & [+stress] \\ o/e & elsewhere \end{bmatrix}$$

Hooper dispenses with features of the type [D] and [-M]. She keeps the generalization that stress is the factor that determines the occurrence of the diphthongs and not of the mid-vowels. There is, however, one criticism that can be made of a rule such as (77). This rule must be read as an insertion rule which inserts the appropriate alternant under particular conditions, here stress. Stress is a rule that requires an input of particular characteristics before it can apply to the item in a particular way. Hooper's rule implies that stress applies before its input appears and that, given the consequences of how stress has applied, the particular lexical input is chosen by (77). The application of (77) can be compared to the rules proposed by Lakoff (1968) for syntax which were called 'Global Rules' or 'transderivational constraints'. These rules are capable of applying at one point in the cycle where the information required for the application of the transformation is not yet part of the input, or else was erased by a previous transformation. The application of these rules is derivable from a reading of an earlier structural description or of a later one. Global Rules can look backwards and forwards in the derivational process. Hooper's rule (77) looks ahead in the derivation for the information required for its application.

Hooper is a proponent of Natural Generative Phonology, and, consequently, uses certain types of constraints on grammars to reduce the descriptive power of a generative model. Hooper proposes among other constraints, the utilization of Kiparsky's Alternation Condition, discussed in 4-1.2 above, the Strong formulation of Venneman's Naturalness Condition (Venneman, 1972-74). This condition requires that, when there are two alternating allomorphs, one

be derived from the other. Since this is impossible without the use of a
feature like [D], and Hooper cannot use such features because she adopts
Kiparsky's strong form of the Alternation Condition which prohibits the use
of such features, she says that the alternation is lexically determined. For
Hooper, diphthongization is a case of rule determined suppletion. The
economy in descriptive power that she gains by adopting Natural Constraints
brings about the need for creating yet another tool that in effect, by its
descriptive power, nullifies any previous economy. In terms of descriptive
power, the constraints exclude a subset of abstract solutions but create
another class of potential abstract solutions.

Some of the implications of Hooper's model are of interest in many ways.
Her view of linguistic change is similar to that of Norman and Sanders. Her
position is that, with the loss of the Latin distinction of length, a
restructuring of lexical representations was required and a new rule had to
be developed to account for the very general alternation of diphthongization.
Her inflection insertion rules are very useful. Note that a similar type of
rule was used in Chapter 3 to insert the gender morphemes in nouns, adjectives
and predeterminers. Our criticism concerns, in particular, the formulation
of the environment of (77), using stress. In the present thesis, Hooper's
description of Spanish verb morphology is generally followed. Only the
aspect dealing with diphthongization is changed. In particular, her
analysis of the phonetic diphthongs in second and third conjugation present
participles is assumed. These forms are exemplified by [tenjéndo] 'having'
and [pidjéndo] 'asking'. The corresponding infinitives are [tenér] and
[pedír]. Since first conjugation verbs have in their present participle a
vowel [a] similar to that of the infinitive: [amándo] 'loving' and [amár]
'to love', Harris and Foley proposed that the underlying representations of

second and third conjugation participals have the corresponding conjugational

theme vowel underlying the diphthong. Harris proposed derivations such as the

following to derive the phonetic representations [amándo] 'loving', [komjéndo]

'eating' and [unjéndo] 'uniting' form phonemic representations with the

corresponding conjugational theme vowel (1969:174):

/amando/	/komendo/	/unindo/	
á	é	í	stress
Á	É	É	rule (78)
	yé	vé	diphthongization
[amándo]	[komyéndo]	[unyéndo]	

$$(78) \qquad \begin{matrix} V \\ [+stress] \end{matrix} \longrightarrow \begin{bmatrix} -high \\ + D \end{bmatrix} / \underline{\qquad} +ndo$$

Harris generates the correct phonetic output. The question that must be

answered is whether it is worth attempting to capture a generalization by

positing that the phonetic diphthongs originate in theme vowels, or whether

it is better to follow Hooper and say that these diphthongs are in phonemic

representations. The generalization captured by Hooper is not that of

Harris', who says that second and third conjugation inflections are always

different, but, rather, that second and third conjugation verbs have identical

morphology except in the infinitive and in the first person plural of the

present indicative; e.g. [bebér] 'to drink' [bebémos] 'we drink' and [bibír]

'to live' [bibímos] 'we live'.

As formulated, rule (78) applies to /e/ and /i/ converting both of them

into /E/, and applies to /a/, converting it into /A/. /E/ stands for /ɇ/ and

/A/ for /ɐ/. The vowel /a/ is changed into /a/ plust the mnemonic feature

for diphthongization. Yet, it is contradictory to say that /a/ can have the

feature for diphthongization if it never diphthongizes.

4-2.0   In this section, Brame and Bordelois' (1974) analysis of

diphthongization, or rather 'diphthong-formation', is presented. The

previous analyses were defined as unitary because the change from phonemic

to phonetic representations is mediated by one single rule of diphthongization

or monophthongization. Brame and Bordelois' analysis as well as the epenthesis

and apocope analyses proposed here consider diphthong formation to be

decomposable into subcomponents. Since our purpose is not to present an

in-depth analysis of every linguistic analysis written on diphthongization,

but, rather, to explicate the trends and methods that have been used to

describe the alternations at hand, the exposition of competing theories is

quite brief, but, nevertheless, sufficient for the presentation of our

proposals.

4-2.1   Brame and Bordelois postulate the mid-vowels /e/ and /o/ as

phonemes. These vowels are marked by the feature [S] : /ę/ and /ǫ/. When

these segments are stressed, their derivation into diphthongs is not, as

with unitary analyses, due to the application of a single rule, but the

result of the joint application of four rules. First, the mid-vowels

undergo <u>Breaking</u> resulting in a sequence of two mid-vowels; then the first

vowel undergoes <u>Raising</u>, to become a high-vowel, and, later, a glide, after

the stress shifts to the second element /e/. Sample derivations are given

in (79). The rules will be discussed individually in 4-2.2.

(79)	/mǫler/	/mǫlo/	/bęrtir/	/bęrto/	
	é	ó	í	é	stress
		óe		ée	breaking
		ú		í	raising
		ué		ié	stress shift
		wé		jé	glide formation
	[molér]	[mwélo]	[bertír]	[bjérto]	

4-2.2

   (i) <u>BREAKING</u>

     Brame and Bordelois formulate <u>Breaking</u> as a rule of <u>Epenthesis</u> even though the strict definitions of <u>Breaking</u> and <u>Epenthesis</u> are not identical. <u>Breaking</u> is generally a process which can be divided into two components: the first is <u>Breaking</u> per se, the feature [+vocalic] breaks away from a fully specified matrix, creating two segments, the second being minimally specified as a single feature.

$$(80) \quad \begin{bmatrix} +voc \\ -cons \\ \cdot \\ \cdot \\ \cdot \end{bmatrix} \longrightarrow \begin{bmatrix} \begin{bmatrix} -voc \\ -cons \\ \cdot \\ \cdot \\ \cdot \end{bmatrix} & [+voc] \end{bmatrix}$$

The minimally specified segment must later be interpreted by a rule like (81) which adds all the features required to result in [e]. This rule is similar to a morpheme structure rule and has also similarities with epenthesis rules, The Breaking (epenthesis) rule proposed by Brame and Bordelois must, however, be compared with the rules of epenthesis proposed in Chapters 2 and 3, since there are some clear and substantial differences.

$$(81) \quad [+voc] \longrightarrow \begin{bmatrix} [-cons] \\ \cdot \\ \cdot \\ \cdot \end{bmatrix}$$

     The epenthesis rule proposed by Brame and Bordelois is shown in (82). In (83), the epenthesis rule is formulated as a redundancy rule. The feature [S] is necessary for the application of epenthesis. Our intent here is to dispose of abstract features. On these terms alone, it is possible to reject (82), but our main argument is that, when (82) is compared with (84) (the already established rule of epenthesis of Spanish), we observe that the factors conditions epenthesis in our analysis are always consonantal or

boundaries /#/ and /##/, whereas Brame and Bordelois' rule (82) is triggered

by a syllabic segment in conjunction with the abstract feature [S].

$$(82) \quad \emptyset \longrightarrow e \ / \ \begin{bmatrix} +syl \\ +stress \\ -low \\ +S \end{bmatrix} \underline{\hspace{1cm}} C_o$$

$$(83) \quad \begin{bmatrix} +syl \\ +stress \\ -low \\ +S \end{bmatrix} - \emptyset \longrightarrow \begin{bmatrix} +syl \\ +stress \\ -low \end{bmatrix} - e$$

$$(84) \quad \emptyset \longrightarrow e \ / \ \begin{Bmatrix} \#\underline{\hspace{0.5cm}}sC \\ \#\#\underline{\hspace{0.5cm}}1\#\# \\ CC\underline{\hspace{0.5cm}}\#\# \\ C_2\underline{\hspace{0.5cm}}\#\# \\ C\underline{\hspace{0.5cm}}\#s \end{Bmatrix}$$

As mentioned in 4-1.4, the diphthongs in second and third conjugation

present participles are not derived   from theme vowels. For

this reason, Brame and Bordelois' analysis has been simplified by excluding

from their rules the subparts dealing specifically with theme-vowel

diphthongization. It follows that, if an analysis can be found for

diphthongization excluding the feature [S], the diphthongs in participles

cannot be derived from theme vowels since [S] is essential for that particular

derivation (cf. p. 90).

(ii) RAISING.

The rule used by Brame and Bordelois is represented in (85). Part (a)

applies in diphthongs, part (b) is the rule mentioned in 1-1.0 (d). This

rule applies only to third conjugation verbs, except the verb discernir

'discern'.

(85)
$$\begin{bmatrix} +\text{syl} \\ -\text{low} \\ +\text{S} \\ -\text{pres} \end{bmatrix} \longrightarrow [+\text{high}] \ / \ \begin{bmatrix} \overline{\rule{2cm}{0.4pt}}\ \overline{[+\text{stress}]} \ C_0 V \\ \\ \rule{2cm}{0.4pt}\ C_0 \begin{Bmatrix} iV \\ a \end{Bmatrix} \end{bmatrix} \quad \begin{matrix} a. \\ \\ b. \end{matrix}$$

The application of (85-b) can be exemplified with the verb [pedír] 'ask'.

In the forms in the left column of (86), the /V/ of the stem is realized as

[e] and in the items of the right as [i]:

(86)   [pedír]   'ask'   [píde]   'he asks'

      [pedímos]   'we ask'   [pidámos]   'we ask (subj.)'

      [pedirán]   'they will ask'   [pidjéndo] 'asking'

      [pedirémos] 'we will ask'   [pída]   'I ask (subj.)'

(85) implies that the underlying segment /V/ is /e/. The /e/ becomes [i]

when '$C_0 iV$' or '$C_0 a$' follow. The rule is also restricted so as to apply to

tenses other than the present. A number of counterexamples can be found to

show that (85) is not a general rule of Spanish.

The rule cannot be restricted to apply only to [-pres] tenses because

a) Raising applies in present forms, eg. [píde] 'he asks' and b) as Harris

(1976:20) points out, part (a) of (85) is the subpart of Raising that applies

in diphthongization and diphthongization occurs in present forms also, eg.

[benír] 'come', [bjéne] 'comes'.

As mentioned above, the alternation of the stem-vowels from /e/ to [i]

occurs only in third conjugation verbs. This information should be part of

this rule of Raising. As Harris (ibid.) points out, words such as

[pensábamos] 'we used to think' exist and there is no raising to *[pinsábamos].

This is because the verb belongs to the first conjugation, cf. [pensár]

'to think'.

The rule of Raising that is exemplified by the data in (86) can be

formulated as (87).

(87) e $\longrightarrow$ i / $\underline{}C_o$ V
                        [-high]

in third conjugation verbs.

The way (85-b) is formulated, Raising applies when the next vocalic

segment is /a/ or /i/ followed by another vowel. Leaving aside the fact

that the /a/ need not be stressed, cf. [pída] 'I ask (subj.)', the /iV/

environment can only be posited from forms like [pide] 'asks', if two vowels

are posited underlyingly eg. /pedie/. The formulation (87) shows that

'Raising' is equivalent to vocalic dissimilation. The mid-vowel of the stem

of third conjugation verbs raises when the next vowel is [-high] and remains

[-high] when the next vowel is [+high]. The result is that third conjugation

Spanish verbs that have an underlying /e/ in the root and that follow regular

behaviour, change /e/ into /i/ so as to always differ from the following

vowel in the feature [+/-high].

[-high] Co [+high]	[+high] Co [-high]
[pedír]	[píde]
[pedímos]	[pída]
[pedíamos]	[pidjéndo]
[pedirémos]	[pído]

The part of (85) that accounts for raising in Brame and Bordelois'

description of diphthongization can best be formulated as (87) as a rule of

vocalic dissimilation. In essence, sequences /oe/ and /ee/ must become /ue/

and /ie/. This can best be accomplished by a rule like (88). Notice that

this rule does not, a does (85) above, require the feature [S].

(88) $\begin{bmatrix} V \\ -low \\ -high \end{bmatrix}$ $\longrightarrow$ [+high] / $\underline{}$ $\begin{bmatrix} V \\ -low \\ -high \end{bmatrix}$

The only way (87) and (88) can be collapsed is as follows:

(89)

$$\begin{bmatrix} e \\ o \end{bmatrix} \longrightarrow \begin{bmatrix} i \\ u \end{bmatrix} / \begin{bmatrix} \underline{\hspace{2cm}} e \\ \underline{\hspace{2cm}} \\ \text{III conj.} \quad C_o \begin{bmatrix} V \\ [-\text{high}] \end{bmatrix} \end{bmatrix}$$

Although rule (89) is not required for the epenthesis analysis proposed below, an apocope solution will be mentioned which will require it.

(iii) <u>STRESS SHIFT</u>.

This rule performs the function of moving the stress from the vowel that has undergone raising unto the vowel that was added to the representation by epenthesis (82):

$$/\underset{s}{o}/ \qquad /\underset{s}{e}/$$

ó̧	ȩ́	stress
óe	ée	epenthesis (82)
úe	íe	raising
ué	ié	stress shift

(iv) <u>GLIDE FORMATION</u>.

This rule is presented in (90) below. It is independently motivated since it applies to all unstressed high vowels when they are next to another vowel. This rule was mentioned in 3-2.1. It applies in alternations like [Reúnen] 'they reunite' / [Rewnjón] 'reunion'. The rule is formulated in (90). After stress-shift has applied, (90) converts the sequences /ué/ and /ié/ into [wé] and [jé].

(90)

$$\begin{bmatrix} u \\ i \end{bmatrix} \longrightarrow \begin{bmatrix} w \\ j \end{bmatrix} / \left\{ \begin{array}{l} V \underline{\hspace{2cm}} \\ \quad \underline{[-\text{stress}]} \\ \underline{\hspace{2cm}} V \\ [-\text{stress}] \end{array} \right\}$$

It has been shown in this section that Brame and Bordelois (1974) analysis of 'diphthong-formation' can account for the problem if certain changes are made in the formulation, in particular in connection with Raising. The feature [S] is required to trigger epenthesis-(breaking). In this sense, this analysis is equivalent to Harris' or Foley's since a feature is necessary to trigger at least the initial subcomponent of diphthong-formation. Although our thesis is that epenthesis is the process underlying this alternation, the non-unitary analysis presented in this section can serve to test our hypothesis that analyses of diphthongization that use a feature [D] or [S] reflect a system of alternations closer to earlier Spanish (t1) than to Modern Spanish (t2), and that an analysis without an abstract feature is possible at t2.

4-2.3   Apocope Solution.

Supposing that the analysis presented by Brame and Bordelois is adequate for Early Spanish, and that instead of the feature [S], the feature of length or tenseness is the factor that distinguishes the vowels from those that do not diphthongize. Breaking applies to lax mid-vowels resulting in sequences of two mid-vowels /oe/ and /ee/. At t2, breaking can no longer apply because the tenseness distinction has been lost. Since the occurrence of [e] can no longer be derived from the presence of the feature of laxity, the [e] becomes lexicalized. Representations such as /poder/ and /tener/ become /poeder/ and /teener/.

In the analysis of the definite article, it was shown that the phonetic representation [el] had remained constant throughout the historical span under consideration while its phonemic representation and the processes that have generated it had changed radically. A phonemic /e/ and a rule of

apocope were replaced by a rule of [e]-epenthesis. In the case of

diphthongization, the opposite could have occurred because of the loss of the

[+/-lax] opposition. If the epenthesis rule was replaced by an apocope rule,

and the redundant [e] by phonemic /e/ in all the words where before it was

predictable, then, rules (91), (92) and (93) would generate, as exemplified

below, all the correct forms without having to postulate an abstract feature.

/poeder/	/poedes/	/teener/	/teenes/	
é	é	é	é	stress
∅		∅		apocope (91)
	u		i	raising (92)
	w		j	glide formation
[podér]	[pwédes]	[tenér]	[tjénes]	

(91) APOCOPE

$$e \longrightarrow \emptyset \; / \; \begin{matrix} V \\ \begin{bmatrix} -high \\ -low \end{bmatrix} \end{matrix} \underline{\hspace{2cm}} [-stress]$$

(92) RAISING

$$\begin{bmatrix} e \\ o \end{bmatrix} \longrightarrow \begin{bmatrix} i \\ u \end{bmatrix} \; / \; \underline{\hspace{1cm}} é$$

(93) GLIDE FORMATION

$$\begin{bmatrix} i \\ u \end{bmatrix} \longrightarrow \begin{bmatrix} j \\ w \end{bmatrix} \; / \; \begin{Bmatrix} \underline{\dfrac{V \underline{\hspace{2cm}}}{[-stress]}} \\ \dfrac{\underline{\hspace{2cm}} V}{[-stress]} \end{Bmatrix}$$

As seen in the derivations above, the /e/ that was added to the phonemic

representations is directly stressed. There is no need in this analysis for a

rule of stress shift since the mid-vowels [e] and [o] which alternate with

the glides [j] and [w] are not the stressed segments as in the different

proposals, excepting Norman and Sander's monophthongization analysis,

described above.

Apocope applies to an /e/ if it is the second of two mid-vowels and it

is unstressed. Otherwise, the vowel is stressed and remains, creating the

environment for (92) and (93).

An apocope solution for diphthong-formation does not require any abstract

morphological features. The process can therefore be postulated to apply to

all morphological classes, the environment creating the conditions for the

rules to apply being determined purely in terms of phonological information.

The words [pwérta] 'door' and [portál] 'portal' can be related phonologically.

These words have the same root /poert/. Different derivational processes

apply in the formation of the two words from the same root. Because of

the difference in these processes, phonological rules apply to these words

differently, resulting in one word with a diphthong and one without the

diphthong.

/poert#a/	/poert+al/	
é	á	stress
	Ø	apocope
u		raising
w		glide formation
[pwérta]	[portál]	

The 'apocope' analysis of diphthong-formation can be postulated for all

morphological classes. This degree of generality in the extent of the

process is missed by analyses of the type of Hooper's since she attempts to

restrict diphthongization to the verbal system at the expense of nouns and

adjectives. From examples such as the following, it is apparent that there

do not exist any reasons why diphthongization should not apply across all

morphological classes:

[kwénto]   'story'   [kwénto]   'I tell'

[kontádo]   'cash'   [kontádo]   'counted'

There remains one problem with the analysis presented in this section. This analysis is based on the assumption that at tl, Breaking, as exemplified by Brame and Bordelois (1974), was the process at the base of diphthong-formation. It was argued above that the rule of Breaking-(epenthesis) does not have a consonantal or rather, an environment without vowels like the other epenthesis rules posited for Spanish in this thesis.

In Chapter 3, it was shown that in some dialects of Spanish, epenthesis applies when the final segment in the stem is a stressed vowel. It is necessary, at the present point, to reformulate rules (60) and (61). (61) was formulated after Foley and Saltarelli, taking into consideration the fact that the epenthetic [e] appears in phonetic representations after a stressed vowel: [Rubí] / [Rubíes].

(61) $\emptyset \longrightarrow e$ / V __ #s

It was also shown that (60) occurs in all dialects, whether there is [e]-epenthesis in nouns ending in a stressed vowel or not.

(60) $\emptyset \longrightarrow e$ / C __ #s

The analysis of pluralization presented in Chapter 3 consisted therefore in positing (60) for all dialects of Spanish and (61) in conjunction with (60) for those dialects that have an epenthetic vowel after a stem-final stressed vowel. It will now be shown that (61) is not a possible rule since it is triggered by a vocalic environment. It will be shown that, for those dialects where plural epenthesis is more general, there is one single rule, different from (60) and (61) which accounts for the insertion of all epenthetic vowels.

For those dialects where epenthesis in plural forms applies only after a
stem ending in a consonant, there is one rule of epenthesis, i.e. (60):

(60) $\emptyset \longrightarrow e \: / \: C \_ \#s$

This rule is not appropriately specified. It will apply to forms like
/pan#sit#o/ 'little bread', resulting in ungrammatical forms like
*[panesíto]. It was seen in Chapter 3, that the correct representation in
this case is [pansíto] and that epenthesis does not apply. (60) must
therefore be reformulated in such a way that it will only apply when the
/s/ is the plural /s/ and not the /s/ of the diminutive /it/-/sit/. This
is done in (94).

(94) $\emptyset \longrightarrow e \: / \: C \_ \#s\#\#$

(94) will apply correctly to forms like /pan#s/ and will not apply to forms
like /pan#sit#o/. Rule (94) will therefore be the rule that applies in those
dialects where plural epenthesis is restricted to words having stems ending
in a consonant.

For those dialects where the epenthetic [e] is found after a stressed
vowel, the formulation of the environment must be changed. First, no vowels
must be specified. If it is not the fact that the last stem-vowel is stressed
that triggers epenthesis, then there must be another characteristic that
accounts for the data. In essence, words like [Rubí] and [papél] have
something in common. The two words have phonemic representations without
inflections: /rubí/ and /papél/. In those dialects where epenthesis
applies after the stressed vowel as well as after a consonant, it becomes
clear that, in fact, all items without gender morphemes /a/ and /o/ undergo
epenthesis. The formulation of the epenthesis rule must be (95). This rule
does not include in its environment of application information relating to

the last segment of the stem. This rule applies whenever the plural morpheme

/s/ is directly preceded by /#/ rather than by one of the morphemes /a/ or

/o/.

(95) $\emptyset \longrightarrow$ e / #_s##

/mes#as/	/sentr#os/	/rubi#s/	/papel#s/	
é	é	í	é	stress
		e	e	epenthesis
[mésas]	[séntros]	[Rubíes]	[papéles]	

The fact that in these dialects the epenthetic [e] is preceded by a stressed

vowel does not imply that this vowel is part of the environment that triggers

epenthesis. In fact, attempting to show this forces us to postulate two

rules of epenthesis, i.e. (60) and (61) where only (95) is necessary.

This new solution for the epenthetic [e] that occurs in plural forms

implies that the difference between the two dialects is not due to the

absence or presence of (61), but rather, is due to the existence of different

rules in the two dialects. In one, (95) is the rule and the process is more

extensive, in the other (60) is the rule, and in this dialect, the nature

of the last segment of the stem becomes part of the environment of the rule.

In the dialect with (60), when the last segment of the stem is a vowel,

epenthesis does not apply. This agrees with our hypothesis that epenthesis

applies only in environments consisting of consonants and boundaries. With

this view in mind, it becomes clear that a solution like the one proposed

by Brame and Bordelois (1974), positing stressed mid-vowels as the environment

conditioning epenthesis should be questioned. If such an anlysis is

questionable, then the 'apocope' analysis proposed for diphthongization

should also be questioned for it is based on the assumption that Brame and

Bordelois' solution was correct at some earlier historical period. In the

following section, an alternative analysis for 'diphthong-formation' will be

proposed. This analysis will be based on arguments for epenthesis rather than for apocope, and the rule will be shown to be conditioned by non-vocalic environments.

4-2.4   Epenthesis solution.

In 4-2.3, an analysis of the vocalic alternations [e], [o] / [jé], [wé] was presented, and it was shown that, if language changes by restructuring lexical representations and changing the types of rules linking phonemic and phonetic representations rather than by just replacing "real" features such as medieval [+/-tense] by abstract features [D] or [S], a solution can be offered in Spanish for this particular alternation.

The purpose of our analysis is not simply to offer rules that will generate the appropriate phonetic representations. It is instead to extend the application of epenthesis from initial and final environments, to medial environments. Brame and Bordelois' analysis used epenthesis to explain diphthong-formation and our criticism was that a vocalic environment should not create the conditions necessary for epenthesis which, up to now, appears to require only consonantal and boundary specifications.

The following counterexample will demonstrate that an analysis, like the one proposed by Brame and Bordelois, cannot account for the generation of all the relevant sets of data. Consider the following pairs of words in a dialect with the more extensive application of epenthesis in plural forms:

[indú]	'East Indian'	[indúes]
[Rubí]	'ruby'	[Rubíes]
[dominó]	'domino'	[dominóes]
[kafé]	'coffee'	[kafés]

This rule of epenthesis is different from the one posited by Brame and Bordelois for Breaking-(epenthesis), cf. (95). In fact, the words above

demonstrate that the other subcomponents of diphthong-formation proposed by
Brame and Bordelois cannot generate correctly all the forms of Spanish. The
words represented by the four examples above have structural descriptions
that can trigger the rules of Raising, Stress-shift and Glide-formation
posited by Brame and Bordeois. Raising applies to sequences of vowels /oe/
and /ee/. These sequences are found in [dominóes] and perhaps in */kafées/
and yet Raising does not apply resulting in *[dominúes] or *[kaffes]. Stress
shift does not apply when environments such as /úe/ and /íe/ are generated,
resulting in /ué/ and /ié/, cf. */indués/, */rubiés/, */dominués/ and
*/kafiés/; and, glide formation does not apply either: *[indwés], *[Rubjés],
*[dominwés].

Instead of an apocope analysis for diphthong-formation, an epenthesis
analysis will now be proposed. This proposal requires a diachronic as well as
a synchronic analysis.

(i) <u>Diphthong-formation at t1</u>.

At this stage there are four mid-vowels: /ē//ĕ/ and /ō//ŏ/. /ĕ/ and /ŏ/,
when stressed, become /jé/ and /wé/. Diphthong-formation is the result of
two rules, one 'Raising' (not dissimilation) and the other Epenthesis. Stress-
shift is also necessary, for, as mentioned repeatedly throughout this thesis,
epenthesis applies after stress-assignment and epenthetic vowels are
characterized by the lack of stress. If an epenthetic vowel appears stressed
in phonetic representations, this must be the result of a later change in the
position of stress.

Raising changes lax mid-vowels into glides, as seen in (96), the
result is a stressed glide positioned between two consonants. Epenthesis
(97) must then apply to a vowel-less environment to supply a vowel. Stress-
shift completes the derivation of diphthongs.

/pŏder/   /pŏdo/   /tŏner/   /tĕnes/
      é   ó   é   ĕ́   stress
                   ẃ   ʃ   raising (96)
                   e   e   epenthesis
                   wé   jé   stress-shift

[podér]   [pwédo]   [tenér]   [tjénes]

(96) Raising

$$\begin{bmatrix} \overset{u}{e} \\ \overset{u}{o} \end{bmatrix} \rightarrow \begin{bmatrix} j \\ w \end{bmatrix} \Big/ \underline{\qquad} \atop [+stress]$$

(97) Epenthesis

$$\emptyset \longrightarrow e \Big/ \ C\acute{G} \underline{\quad} C$$

(98) Stress-shift

$$\begin{bmatrix} -voc \\ -cons \\ +stress \end{bmatrix} + V \longrightarrow \begin{bmatrix} -voc \\ -cons \end{bmatrix} - \underset{[+stress]}{V}$$

It could be possible, following Dinnsen (1974), to postulate rules
disregarding 'strict sequentiality', and say all these rules apply at the
same time, avoiding in that way the stage of the derivation where /j/ and
/w/ carry stress. It is not our intention to do this. In fact, /j/ and /w/
have been shown throughout this thesis to have a very particular behaviour
in relation to vocalic segments. It is our contention that epenthesis applies
in most cases to add a vowel to vowelless environments. One of the purposes
of epenthesis can also be to supply a vowel for stress to 'be appropriately
realized' in phonetic representations. This does not imply that in
underlying representations /w/ and /j/ cannot carry stress.

(ii) Diphthong-formation at t2.

The loss of the feature [+/-tense] implies a change in the phonological
system. In 4-2.3, an apocope solution was based on the same principle. In

that analysis, the epenthetic [e] was determined by the feature [-tense] at
t1. In the present description, the epenthetic [e] is not the direct result
of the feature of laxness, rather it is the by-product of the change of
mid-vowels into glides. It is the glides that are redundantly determined by
the coincidence of lax vowels with stress at t1. At t2, therefore, the
epenthetic [e] cannot be part of the underlying representations. It has to
be, instead, the glides that have become part of the underlying representations.
At t1 the phonemic representations are /podo/ and /tenes/, at t2 they have
become /pwdo/ and /tjnes/.

At t2, the derivation of all the correct forms is the result of three
rules besides stress. Stress will be formulated below to show that it can
apply to /w/ and /j/. The diphthongs are the result of epenthesis (plus
stress-shift); the mid-vowels, the result of a lowering rule.

/tjner/	/tjnes/	/pwdo/	/pwder/	
é	j́	ẃ	é	stress
	e	e		epenthesis
	é	é		stress-shift
e			o	lowering
[tenér]	[tjénes]	[pwédo]	[podér]	

Epenthesis is (97), stress-shift (98) above, and lowering (99) below:

$$(99) \quad \begin{bmatrix} j \\ w \end{bmatrix} \longrightarrow \begin{bmatrix} e \\ o \end{bmatrix} \Big/ \quad [+cons] \underline{\hspace{2cm}} [+cons]$$
$$[-stress]$$

The SSR, formulated thus far as (58), can only apply to vocalic segments
$\begin{bmatrix} -cons \\ +voc \end{bmatrix}$. To apply to $\begin{bmatrix} -cons \\ -voc \end{bmatrix}$ segments like /j/ and /w/, it must be
reformulated as (98).

$$(58) \quad V \longrightarrow [+stress] \Big/ \underline{\hspace{1cm}} C_0 \#$$

$$(100) \quad \begin{bmatrix} -cons \\ (-voc) \end{bmatrix} \longrightarrow [+stress] / \_\_C_0^3 \#$$

The feature [-vocalic] is bracketed. (100) simply means that a glide will be stressed if there is no vowel in that position. The way (100) is formulated, only [-consonantal] segments can be stressed, and between these there is an order of precedence: first, vowels are stressed, and then, glides. The definite article [el] was shown to be unstressed. On the one hand this was due to the absence of vowels from the representation at the point where stress applies, and on the other, /l/ cannot be stressed by (100) because it is [+consonantal] and only [-consonantal] segments are stressed by (100).

In the derivation of the word /rej/ ⟶ [Réy], the underlying /j/ is not stressed because (100) applies first to the last stem-vowel if followed by at most three consonants. In this case the /j/ of /rej/ is interpreted as one of the three consonants that can occur in a stem-final cluster, eg. [áŋkla] (/aNkl#a) 'anchor'. When there is no such vowel, then the second case of (100) applies, stressing the glide in words like [mwéstra] (/mwstr#a/) 'example'.

Before concluding this chapter, it is necessary to describe the other vocalic alternations mentioned in 4-0.0.

4-2.5   Other vocalic alternations.

(i)   [o]/[u]/[we] and [e]/[i]/[je].

These alternations are found only in third conjugation verbs like the [e]/[i] alternation described in 4-2.2. Previous analyses, in particular Brame and Bordelois (1973, 1974) have attempted to explain the triple alternation as the result of the application of two rules, diphthongization and raising, to the same verbs. Different morphological categories have

different phonological structures which trigger either raising or diphthongization. In such an analysis, /o̥/ and /e̥/ become diphthongs when stressed and high vowels when the following vowel is [-high].

/mo̥rir/ /mo̥ren/ /mo̥ramos/ /se̥ntir/ /se̥nten/ /se̥ntamos/

í	ó̥	ḁ́	í	é̥	á́	stress
	ú̥	u		í̥	i	raising
	wé			jé		diphthongization

[morír] [nwéren] [murámos] [sentír] [sjénten] [sintámos]

As was mentioned previously, there is a constraint on certain vocalic sequences in a subclass of third conjugation verbs. Verbs like [desír] 'to say', change the rightmost stem vowel when the leftmost inflectional vowel is [-high]: [dísen]. Given an epenthesis analysis such as that described in 4-2.4, it is not possible to postulate only one rule (Raising as proposed by Brame and Bordelois) to account for both Raising as in the verb [desír] and diphthongization as in the verb [sentír]. This same segment must be part of the phonemic representation of verbs like [sentír] which show the three way alternation: /sjntir/.

When the segment /j/ is stressed, diphthong formation applies as shown in 4-2.4:

/sjnten/

j́	stress
e	epenthesis
jé	stress-shift

[sjénten]

When the segment /j/ is unstressed, it is lowered in a similar fashion as in the cases of diphthongization exemplified above. One main difference is that, in third conjugation verbs, there is the constraint on vowel sequences which in most verbs does not permit two vowels with the same value

of the feature [+/-high] to follow each other. /j/ will become [e] when the leftmost inflectional vowel is [+high] and [i] when the vowel is [-high] as specified in (101).

$$(101) \quad /j/ \longrightarrow \begin{bmatrix} [i] \; / \; \underline{\hspace{2cm}}\;\; C_0 \;\; \underset{[-high]}{V} \quad \text{in third conjugation verbs} \\ {}_{[-stress]} \\ \\ [e] \; / \; \underline{\hspace{2cm}} \\ {}_{[-stress]} \end{bmatrix}$$

/bjnir/	/bjnjeron/	/bjnen/	
í	é	j́	stress
e	i		lowering
		je	epenthesis
		jé	stress shift
[benír]	[binjéron]	[bjénen]	

In essence, the constraint that applies on two-vowel sequences in third conjugation verbs is maintained by two rules, one is simply Raising in those verbs where there is no evidence of diphthong-formation as in the verb [desír]/[dísen], the other is by a particular case of lowering. This is a case of 'conspiracy' (Kiparsky, 1973) where two rules apply to different subsets of the data in order to maintain the same phonetic constraint on vowel sequences in third conjugation verbs.

(ii) [i]/[je] and [u]/[we] alternations.

These two alternations are exhibited by three verbs. Two verbs exhibit the front alternation: [inkirír] 'inquire/[inkjéro] 'I inquire' and [adkjéro] 'I acquire'/[adkirír] 'to acquire', the back alternation is exhibited by [xugár] 'to play'/[xwégo] 'I play'. In an apocope analysis such as the one presented in 4-2.3, these two alternations can be accounted for by making only one alteration to the apocope rule (91).

$$(91) \quad e \longrightarrow \emptyset \; / \; \underset{\begin{bmatrix} -high \\ -low \end{bmatrix}}{V} \; \underline{\hspace{2cm}} \; {}_{[-stress]}$$

As the apocope rule stands, /e/ will undergo apocope when it is unstressed
and preceded by a mid-vowel /e/ or /o/. This rule applies to underlying
representations like /moeler/ 'to grind' and /peensar/ 'to think' resulting
in forms like [molér] and [pensár]. (102) is the reformulation of (91). In
this rule, the vowel preceding the /e/ that undergoes apocope is not specified
as [-high]. The /e/ undergoes apocope when it follows a mid-vowel /e/ or /o/
and a high vowel /i/ or /u/.

$$(102) \quad e \longrightarrow \emptyset \;/\; \begin{bmatrix} V \\ -low \end{bmatrix} \underline{\hspace{2cm}} [-stress]$$

The verbs exhibiting the high-vowel/diphthong alternation can be
represented in phonemic representation as /inkierir/ and /xuegar/. The
representations [inkirír] and [xugár] result from the application of (102).
The only word that appears as an exception to apocope is [éroe]/[érwe] 'hero'.
In this word there is an [e] after a mid-vowel which, eventhough unstressed,
appears in phonetic representation.

The epenthesis solution presented in 4-2.4 cannot account for this
alternation as easily as can the apocope solution. In this respect the
apocope solution could be preferred over the epenthesis solution but because
of the generality of [e]-epenthesis demonstrated throughout this thesis, it
is better to state these cases as exceptions to rule (101), and account for
most of the alternations within the framework of epenthesis.

Conclusion

The aim of the present thesis has been to describe a number of phonological alternations involving the vowel [e]. These alternations occur in initial, medial and final position. Previous analyses of Spanish (Foley, 1965; Harris, 1969) have accounted for the 'Prothetic' [e] as the result of epenthesis. A critical analysis of this alternation was made in Chapter 1, and it was concluded that the prothetic [e] had some particular characteristics that differentiate it from other vocalic segments and in particular from other [e] segments of Spanish. It was shown that the epenthetic [e] is not part of systematic phonemic representations until after the Spanish Stress Rule has applied. It was shown that this [e] is in all cases statable by rule and therefore predictable.

These two criteria were then set up as 'primitives' or in a sense as 'hypotheses' to recognize and identify other epenthetic segments of Spanish. The initial [e] of the definite article [el] was shown to satisfy these two conditions. It is unstressed and it can be generated by rule. This analysis of the definite article allowed us to define the morphological structure of predeterminers and to write the rules of morphological insertion that operate in this subsystem.

The anlysis of epenthesis was then carried to two stem- and/or word-final alternations. In both cases it was shown that the [e] involved in these two alternations had the same characteristics as the [e] studied in the two cases mentioned above. The Spanish Stress Rule was partly formulated and it was shown that this rule was descriptively and explanatorily more adequate than previous formulations of the stress rule (Foley and Harris ibid). A reanalysis of non-verbal morphological structure was also presented and it

was shown that certain regularities were only statable if the final position [e] was considered to be epenthetic and not part of systematic phonemic representations as was previously done in Apocope type analyses.

It was also necessary to study the alternations called 'diphthong-formation' since this alternation was previously described by using an abstract feature [+/-tense]. It was demonstrated that the [e] of the diphthongs [je] and [we] differed from other epenthetic vowels only in the sense that this [e] appears stressed in phonetic representations. It was also shown that this [e] can become part of underlying representations only after stress has applied and that it must therefore be introduced by another subpart of the epenthesis rule, while the occurrence of stress on this segment must be accounted for by a subsidiary rule of stress-shift or stress levelling.

In all cases, the analysis of the alternations in terms of epenthesis proved to be superior to other possible proposals. This analysis was also superior because, where other descriptions of Spanish identify different underlying processes such as epenthesis, apocope and diphthongization to account for the alternations at hand, the present analysis has generalized one Epenthesis rule consisting of several conjunctively ordered sub-rules to account for all the alternations while at the same time discarding the use of abstract features.

The analysis of [e]-involving alternations was carried out both within a synchronic and a diachronic framework in order to demonstrate the generality of the epenthesis thesis. In diachrony, it was shown that epenthesis can result from two main sources. a) in some cases, such as prothesis or diphthongization, where at $t1$ there was no [e], at $t2$ the [e] appears under specific conditions. b) the process of "Rule Inversion" (Venneman, 1972)

was shown to be a normal path for the extension of the epenthesis rule:
Where at t1 there was a phonemic /e/, at t2 this /e/ was dropped from
phonemic representations by a rule of apocope but the [e] continued to appear
in phonetic representations because of the extension of epenthesis to some of
the environments where /e/ was lost. In all cases, the epenthetic [e] is a
Spanish innovation when this phonological system is compared to Latin phonology
or to other Romance Languages such as Italian.

In the following section, and to conclude this thesis, an attempt will
be made to simplify further the epenthesis rule by comparing the different
environments proposed in the rule.

The epenthesis rule that applies in diphthong-formation is in a sense
different from the other cases of epenthesis. This rule applies in medial
position, although there is some evidence that, historically, mid-vowels also
diphthongized when the segments were in either initial or final position:
[wébo] 'egg', [pjé] 'foot'; these words are probably stored in the lexicon
with underlying diphthongs: /pje/, /web#o/, although they can be accounted
for by the rules we have proposed in this thesis.

(103) $\emptyset \longrightarrow$ e / CG__C

The other cases of epenthesis all have many similarities since in all
cases boundaries /#/ and/or /##/ are present in the environments of
application.

(104)

$$\emptyset \longrightarrow e / \begin{cases} \#\#\_\_1\#\# & a \\ \#\_\_s[+cons] & b \\ \begin{cases} C\_\_\#s\#\# \\ \#\_\_s\#\# \end{cases} & \begin{matrix} c \\ c' \end{matrix} \\ \begin{bmatrix} CC \\ C_2 \end{bmatrix}\_\_\# \begin{cases} C \\ \# \end{cases} & \begin{matrix} d \\ e \end{matrix} \end{cases}$$

(104-a) can be rewritten as (105) for simplicity.

(105) $\emptyset \longrightarrow e$ / $\#\#\_\_$ [+cons] $\#\#$

Rules (104-c'), specifically designed to apply in the dialect having plural

forms with the epenthetic [e] after stressed vowels (stem-final vowels) can

be rewritten as (106).

(106) $\emptyset \longrightarrow e$ / $\#\_\_$ [+cons] $\#\#$

It is possible to rewrite (105) as (106) by omitting one of the two initial

boundaries /#/, since [+cons] is the specification that /l/ and /s/ share and

/l/ does not occur as a suffix preceded by /#/ and /s/ does not occur as an

independent word like [el].

For those dialects where there is no epenthesis in words having a stem

ending in a vowel, rules (104-a) and (104-c) can also be collapsed, but this

time as (107).

(107) $\emptyset \longrightarrow e$ / $\begin{Bmatrix} \# \\ C \end{Bmatrix} __\# $ [+cons] $\#\#$

In this case /#/ and /C/ are both included in braces and (104-a) is specified

with /##/ rather than as /#/ in (106). The final formulation of (104) is

now (108).

(108)

$$\emptyset \longrightarrow e \ / \ \begin{pmatrix} \#\_\_s\,[+cons] & & a \\ \begin{Bmatrix}\#\\C\end{Bmatrix}\ \#\ \_\_[+cons]\#\# & & b \\ \#\ \_\_[+cons]\ \#\# & & b' \\ \begin{bmatrix}CC\\C_2\end{bmatrix}\_\_\#\begin{Bmatrix}C\\\#\end{Bmatrix} & & c \end{pmatrix}$$

As (108) stands, (108-a) is prothesis as exemplified in words like [eskwéla]

'school'. (108-b) and (108-b') belong to different dialects. Both rules

introduce the [e] of the article [el], (108-b) is restricted to those

dialects where plural [e] appears only when the stem ends in a consonant: [tréboles] 'clovers'; (108-b') applies in those dialects where plural epenthesis applies also when the stem ends in a vowel: [Rubíes] 'rubies'. (108-c) is the simplified formulation of the rules that apply stem and word finally and in some cases of suffixation as when /sit/ (/it/'small') and /ment/ are attached to the stem in word-formation processes. If an analysis using strength scales were utilized, the rule might be further simplified, but this is not relevant to the immediate scope of this thesis since rules specified with the more commonly used distinctive features are adequate for demonstrating the validity of the epenthesis hypothesis.

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