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THE PREFERENTIALITY OF LINGUISTIC CHANGE

A THEORETICAL ANALYSIS OF THE DEVELOPMENT OF STRESSED VOWELS
IN SUBLÀVAN (RAETOROMANSH)

by

Martin Andreas Wyss

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS
in the Department
of
Languages, Literatures and Linguistics

Martin Andreas Wyss 1983
SIMON FRASER UNIVERSITY
June 1983

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A Theoretical Analysis of the Development of Stressed Vowels in Sursilvan (Raetoromansh)

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The Preferentiality of Linguistic Change

A Theoretical Analysis of the Development of Stressed Vowels in Sursilvan (Raetoromansh)

Author:

(signature)

Martin Wyss

(name)

July 18, 1983

(date)
Abstract

This thesis investigates phonological processes in the development of stressed Latin vowels in Sursilvan, a Raetoromansh language. Analyses and solutions are presented within the framework of Theoretical Phonology, the linguistic theory introduced in the work of Professor James Foley. In Theoretical Phonology, linguistic change is explained with a small number of phonological processes conditioned by universal principles. One of these principles is the Inertial Development Principle (IDP) which predicts that phonological change occurs preferentially.

There are two theoretical themes recurring throughout this thesis. According to the IDP, phonological processes are governed by universal conditions. These conditions are isolated by comparing and subsuming language specific conditions under which phonological processes may appear. All of the investigated phonological rules are found to apply preferentially. They either apply to specific elements, or their application is conditioned by specific elements rather than by entire classes of elements. The preferentiality of linguistic change is interpreted with reference to the strength relations among the phonological elements.

Chapter one introduces the Sursilvan language and the theoretical concepts, such as the preferentiality of linguistic change, used in this thesis. Chapter two examines the prenasal changes of stressed vowels with reference to phonological interactions between vowels and following nasals. Different
Prenasal reflexes are interpreted as a result of two contrary phonological processes: diphthongization and contraction, which are found to be manifestations of more abstract phonological processes, revealing the preferentiality of linguistic change. Chapter three investigates the development of open mid vowels. The Romance diphthongization is analyzed as a process governed by one uniform condition. Since this condition is not met by the change of 'E' to 'ia', it is interpreted as a pseudodiphthongization resulting from the addition of a metathesized schwa generated between two consonants.

The philological analysis of the diphthongization of open mid vowels in Sursilvan (metaphony), is shown to be inadequate and rejected in favour of a more abstract solution: the polarization of phonological strength.

From the interpretation of stressed vowels in Sursilvan, it is concluded that linguistic change can be explained with reference to a limited set of universal processes, and that linguistic change is governed by the preferential application of these processes, as predicted by the IDP.
ACKNOWLEDGMENTS

I would like to thank

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Dr. James Foley who taught me the difference between linguistics and grammar, and who showed me what it means to have 'in egl per il bi'.
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<td>2</td>
<td>4</td>
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- Present Day Romania
- Linguistic Boundaries
I. Introduction

The purpose of this chapter is to introduce the Sursilvan language in its Raetoromansh context, and to give a brief presentation of the theoretical framework within which the data will be analyzed.

In section 1.1, the distribution of Raetoromansh will be illustrated, and some characteristics of its phonology will be compared to French and Italian. It will be shown that Sursilvan has been chosen as a representative language, because it is the most archaic of the different Raetoromansh varieties.

In section 1.2, it is shown that linguistic change can be explained systematically (i.e. without reference to nonlinguistic factors), once it is acknowledged that it occurs naturally and that it is governed by universal principles.

In Theoretical Phonology it is claimed that linguistic change neither occurs randomly nor idiosyncratically, but preferentially: phonological rules apply to specific elements in preference to other elements. As an illustration for this claim, the rule that deleted all final vowels in French (apocope), is shown to be the result of a gradual process which applied in a predictable direction.

---

1 For data, data sources and phonetic symbolism cf. appendix.
Baetoromansh is a cover term for a variety of Romance languages spoken in the area between the origin of the Rhine in the west, and the bay of Trieste in the east. Restricted to marginal, largely rural areas of three different countries (Switzerland, Austria and Italy), the Raetoromansh dialects never developed a standardized language unlike other Romance languages such as French, Italian and Spanish which emerged from economically powerful dialects into national languages.

But despite its variety, dialectologists such as Ascoli ("Saggi Ladini", 1873) and Gartner ("Raetromanische Grammatik", 1883) recognized the linguistic unity of the Raetoromansh dialects which they divided in three major groups: East Ladin or Friulian, Central Ladin or Dolomitan and West Ladin or Romansh which is spoken in the Swiss Canton of Graubuenden. This view has been emphasized by Decurtins. 2

2 Decurtins, 1964, p. 30
The location of West (W), Central (C) and East (E) Ladin is shown on the map below.²

² Adapted from Mendeloff, 1969, F-X
While East and Central Ladin have been heavily influenced by neighbouring North Italian languages such as Venetian and Lombardian, the West Ladin dialects remained comparatively unaffected. Sursilvan, the most western of the West Ladin dialects, due to its geographical isolation (cf. map\(^2\) below), is considered today to be the most archaic Raetoromansh variety; this is the reason it has been chosen as the representative for the Raetoromansh languages in this thesis.

**FIGURE 2  LINGUISTIC BOUNDARIES**

Alle sind sich daruber einig, dass das Surselvische die ausgepragteste und archaischste Phase des Raetoromanischen festhalten.\(^3\)

---

\(^{2}\) Adapted from Rohlfs, 1975, p.XIV

\(^{3}\) Prader-Schucany, p.18
The Raetoromansh languages possess, according to Rohlfs (1975, p. 7), many rules which can be found in a further developed form in French. Some of these rules are outlined in the following pages, by comparing Sursilvan data to Italian and French data.

1. Assibilation before a:

In Raetoromansh, the general assibilation of k before a is restricted to certain words: capra > tgaura3 (French: chèvre), but cara > cara (French: chère). The retention of the occlusive onset is another sign that assibilation has not developed as far as it did in French: [tSavr] but [SEvr].

<table>
<thead>
<tr>
<th>Italian:</th>
<th>Sursilvan:</th>
<th>French:</th>
</tr>
</thead>
<tbody>
<tr>
<td>capra</td>
<td>tgaura</td>
<td>chèvre</td>
</tr>
<tr>
<td>carbone</td>
<td>carbun</td>
<td>charbon</td>
</tr>
</tbody>
</table>

2. Vocalization of l:

In syllable final position l vocalizes to u in French: Italian alto, French haut (Cld French [awt], Modern French [o]). The intermediate stage /awl/ is found in Sursilvan: ault.

3 Orthographic tga = [t5]
3. Apocope:

All Romance final vowels have been lost in French, whereas final a has been retained in Sursilvan:

<table>
<thead>
<tr>
<th>Italian</th>
<th>Sursilvan</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>pane</td>
<td>paun</td>
<td>pain</td>
</tr>
<tr>
<td>mano</td>
<td>maun</td>
<td>main</td>
</tr>
<tr>
<td>lana</td>
<td>launa</td>
<td>laine</td>
</tr>
</tbody>
</table>

4. Nasalization:

Although there are no nasalized vowels in Sursilvan, vowels diphthongized under the influence of a following nasal (cf. chap. 2): Italian mano, Sursilvan maun, French main [mœ].

5. Diphthongization of e:

The Old French reflex ei for e is still present in Sursilvan:
Italian tela, Sursilvan teila, French toile.

6. Intervocalic Lenition:

In French, voiceless dental occlusives were lost intervocally. In Sursilvan, as in Spanish, they only lenited to voiced stops: Italian rota, Sursilvan roda, French roue.
1.2 Linguistic Change in Theoretical Phonology

Philologists have attempted to explain linguistic change with reference to non-linguistic factors such as the laziness of the speaker, which is said to involve two antipodal tendencies:

1. Improper enunciation of speech sounds or ease of articulation, and
2. the speaker's desire to maintain the distinctiveness of the linguistic sign (phoneme), or ease of perception.

A typical formulation of this still pervasive view can be found in Gartner:

**Ease of Articulation:**

Wenn ein Volk einen Laut seiner Sprache im Laufe der Jahrhunderte verändert oder abwirft, so tut es dies meistens um Kraft und Zeit zu ersparen, also zur Bequemlichkeit des Sprechenden.

**Ease of Perception:**

Manchmal ist der neue Laut nicht bequemer auszusprechen, aber er ist deutlicher: er dient also zunächst der Bequemlichkeit des Angesprochenen, aber auch wieder der des Sprechenden, in so fern sich dieser leichter verständlich macht.

---

* Falk (144:1978) lists four extrasystemic factors responsible for sound change: "(1) physiological characteristics of the speech and hearing systems of man, (2) language contact, (3) the social nature of language, and (4) the acquisition of language by children", but fails to mention the systemic nature of phonological change.

* Gartner, 1910, p. 33
The laziness of the speaker has therefore been said to be the cause for the loss of final Latin vowels in many Romance languages. This idea, however, does not account for the preferential loss of final vowels:

In Spanish, for instance, apocope applied to e but not to o or a.

\[
\begin{array}{lcl}
mare & \longrightarrow & mar \\
octo & \longrightarrow & \acute{o}cho \\
amica & \longrightarrow & amiga \\
\end{array}
\]

In Theoretical Phonology, on the other hand, linguistic change is regarded as natural. The questions that are asked are therefore not why and for what purpose language changes, but how (why was e but not o or a lost in Spanish?) and in which direction the changes take place; in other words, what is the nature of linguistic change?

If language change were regarded as natural, linguists would not feel compelled to explain it, and could instead devote their energies to discovering the nature of language change.\(^6\)

\(^6\) Foley, 1981, p. 13
Linguistic change is not only regarded as natural, but as governed by universal laws and principles such as the Inertial Development Principle (IDP), which states that:

1. strong elements strengthen first and most extensively and preferentially in strong environments, and
2. weak elements weaken first and most extensively and preferentially in weak environments.

The strength of phonological elements that is referred to is, unlike the phonetic (acustico-articulatory) features, an abstract property which is revealed by the behaviour of the phonological elements, that is, in their participation or nonparticipation in phonological rules.

Configurations such as the one obtained for apocope in Spanish, reveal specific relations among the phonological elements. On the basis of the assumption that the loss of final e must be a weakening process (nothing is weaker than something, i.e. \( 0 < 1 \)), it can be concluded that e must be weaker than o and a, thus:

\[ e < o, a \]

---

Poley, 1977, p. 107
In Sursilvan, on the other hand, only final a is retained, indicating that a must be the strongest vowel.

\[
\begin{align*}
\text{mare} & \quad \text{mar} \\
\text{octo} & \quad \text{otg} \\
\text{amica} & \quad \text{amitga}
\end{align*}
\]

thus: \[ e, o < a \]

Combining the Spanish and the Sursilvan situations, the following relations among the three vowels can be found:

\[ e < o < a \]

If these phonological elements are assigned numerical values representing their inherent strength,

\[
\begin{array}{ccc}
1 & 2 & 3 \\
\hline
\text{e} & \text{o} & \text{a}
\end{array}
\]

the phonological process apocope can be analyzed and formulated in the following way:
The universal rule for apocope is therefore conditioned by the inherent phonological strength of the vowels:

<table>
<thead>
<tr>
<th>Language</th>
<th>Word Form</th>
<th>Phonemes</th>
<th>Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italian</td>
<td>mar-e</td>
<td>ott-o</td>
<td>amic-a</td>
</tr>
<tr>
<td>Spanish</td>
<td>mar-och-o</td>
<td>amig-a</td>
<td>1 → θ</td>
</tr>
<tr>
<td>Sursilvan</td>
<td>mar-otg-</td>
<td>amitg-a</td>
<td>1, 2 → θ</td>
</tr>
<tr>
<td>French</td>
<td>mer-huit-</td>
<td>ami-ea</td>
<td>1, 2, 3 → θ</td>
</tr>
</tbody>
</table>

Universal Rule (Apocope) : \[ V \rightarrow θ ( \_ \# ) \]

Universal Condition : \[ |V| < m \]

Parochial Conditions :
- \( m = 0 \) for Italian
- \( m = 1 \) for Spanish
- \( m = 2 \) for Sursilvan
- \( m = 3 \) for French

---

* Final \( e \) is not pronounced in French

* Phonological environments are contained in brackets
The general application of apocope in French must be the result of a gradual development which first deleted e (as in Spanish), later o (as in Sursilvan), and finally a as in French. Although there can be no reason why apocope completely failed in Italian, in Theoretical Phonology it is possible to give a principled (weak elements weaken first) and systemic explanation for the preferential loss of final e in Spanish, and the preferential retention of final a in Sursilvan:

1. e (\(|V| = 1\)) \rightarrow \emptyset \\
2. o (\(|V| = 2\)) \rightarrow \emptyset \\
3. a (\(|V| = 3\)) \rightarrow \emptyset \\

The strength differences that exist between the phonological elements, their environments and their positions, create intrasystemic instabilities which may manifest themselves as phonological rules. Since all phonological elements differ in their inherent strengths, phonological rules typically apply to specific elements rather than to whole classes of elements.
If on the other hand our rules had been based on phonetic properties, we would be merely rewriting the data:

\[
\begin{align*}
e \text{(mid front)} & \rightarrow \ & \emptyset \text{,(mar)} \\
o \text{(mid back)} & \rightarrow \ & \text{idem (ocho)} \\
a \text{(low back)} & \rightarrow \ & \text{idem (amiga)}
\end{align*}
\]

Summary

In this chapter, Sursilvan has been introduced as a representative Raetorroman language which shares a number of phonological rules with French. In section 1.2, the conception of linguistic change in Theoretical Phonology has been introduced, and illustrated with a comparison of the preferential application of apocope in Italian, Spanish, Sursilvan and French.
II. The Development of Stressed Vowels before Nasals

In Sursilvan, as in most other Romance languages, Latin vowels have different reflexes before nasal and oral consonants. This simple observation has been listed by philologists again and again, but it never has been investigated deeply enough to allow for a phonological evaluation of the phonetic facts.

In section 2.1, the development of prenasal a is investigated. The diphthongization of a to au is interpreted as a result of prenasal strengthening and related to similar processes in other Romance languages. The contraction of au to o, is found to be the result of a strengthening process, occurring preferentially in sufficiently strong nasal environments.

In section 2.2, the consequences of the findings made in 2.1 will be examined with respect to the systematic difference of all Sursilvan vowels before dental and labial nasals. The lowering of high vowels before a will be related to the contraction of au to o in strong nasal environments.

\[\text{\textsuperscript{1}}\text{Cf. Ascoli 1873, Buonder 1901, Gartner 1910, Caduff 1952, Bourciez 1967, Prader-Schucany 1970 etc.}\]
2.1 Diphthongization and Contraction of Prenasal a

Before oral consonants, stressed a stays the same in Sursilvan:

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>ala</td>
<td>ala</td>
</tr>
<tr>
<td>clave</td>
<td>clav</td>
</tr>
<tr>
<td>platta</td>
<td>platta</td>
</tr>
</tbody>
</table>

but before nasal consonants, a diphthongizes to au,

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>manu</td>
<td>maun</td>
</tr>
<tr>
<td>plana</td>
<td>plauna</td>
</tr>
</tbody>
</table>

or raises to o:

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>annu</td>
<td>onn</td>
</tr>
<tr>
<td>planta</td>
<td>plonta</td>
</tr>
</tbody>
</table>

The situation can be summarized with the following rules:

Open Syllables:

\[ a \rightarrow a \ ( \_ \% \text{ oral C} ) \quad \text{ala} \]
\[ a \rightarrow au \ ( \_ \% n ) \quad \text{plauna} \]
Closed Syllables:

\[
\begin{align*}
  a & \rightarrow a \ (\text{oral } C \%) \quad \text{platta} \\
  a & \rightarrow o \ (\text{n } \%) \\
\end{align*}
\]

Although these rules generate the correct phonetic output, which may make them useful for descriptive purposes, they are of no theoretical significance for they fail to indicate the relations and processes behind the phonetic changes.

Since Theoretical Phonology is concerned with the nature of linguistic change rather than with its description, the pertinent phonological processes are isolated in contrastive configurations of the form:

\[
\begin{align*}
  A & \rightarrow \text{idem} \ (X) \\
  A & \rightarrow E \ (Y) \\
\end{align*}
\]

In most Romance languages Latin au monophthongized to o², and in Norman French prenasal a diphthongized to au: *branca* $\rightarrow$ *braunche*, pronounced /brɔs/ (cf. p.23).

Given this independent evidence, the conversion of prenasal a to o is interpreted as a two step process:

1. a $\rightarrow$ au

2. au $\rightarrow$ o

---

² H.B. Latin o never changes to au.
The data can now be analyzed on the basis of two contrastive configurations which reveal relations and elicit questions which could not have been asked on the basis of the rules given above.

1. $a \rightarrow \text{idem}$ (oral C)
   $a \rightarrow \text{au}$ (nasal C)

   Why does $a$ diphthongize before nasal, but not before oral consonants?

2. $\text{au} \rightarrow \text{idem}$ (%
   $\text{au} \rightarrow \text{o}$ (%

   Why does $\text{au}$ contract to $\text{a}$ before tautosyllabic, but not before heterosyllabic $\text{n}$?

Before turning to the contraction of prenasal diphthongs, the origin of the prenasal diphthong is investigated.
Diphthongization seems to apply in strong (stressed) position in preference to weak (unstressed) position:

in English,  
\[ \text{famous} \rightarrow /\text{fey}^\prime\text{mæs}/ \]
\[ \text{but} \quad \text{infamous} \rightarrow /\text{in}^\prime\text{fæmæs}/ \]

and in Sursilvan,  
\[ \text{pi}'\text{lu} \rightarrow \text{peil} \]
\[ \text{but} \quad \text{piolo}'\text{su} \rightarrow \text{pelu}'\text{s} \]

This general observation is further confirmed by the following prenasal alternations:

\[ \text{a}^\prime\text{n} \rightarrow \text{aun} \quad \text{an} \rightarrow \text{idem} \]
\[ \text{ma}'\text{nu} \rightarrow \text{maun} \quad \text{manu}'\text{culu} \rightarrow \text{manu}'\text{gul} \]
\[ \text{sa}'\text{nu} \rightarrow \text{saun} \quad \text{sana}'\text{re} \rightarrow \text{sana}'\text{r} \]
\[ \text{pla}'\text{na} \rightarrow \text{pluna} \quad \text{planu}'\text{ra} \rightarrow \text{planira} \]

A process restricted to strong position must be a strengthening process. The diphthong \[ \text{an} \] must therefore be a reflex of strengthened \[ a \):

\[ a \rightarrow a^+ \]
\[ a^+ \rightarrow au \]

---

3 An apostrophe indicates that the preceding vowel/diphthong is stressed.

4 + indicates a strengthened, and - a weakened element
If this claim is correct, strengthening in prenasal position should be a universal process which cannot be restricted to Sursilvan vowels. In order to find the reason why vowels should strengthen preferentially before nasal consonants, phonological interactions between vowels and following nasals in other languages are investigated.

As a result of a regressive assimilation, English vowels appear as partially nasalized when followed by nasals:

\[
\text{bin} \rightarrow /b\tilde{\text{i}}\text{n}/ \\
\text{but} \rightarrow /b\text{id}/
\]

The nasalization of prenasal vowels is often accompanied by a concomittant weakening of the nasal. In northern Italian dialects there are two different phonetic manifestations for weakened \( \eta \):

- **Weakening to Effacement:** \( n- \rightarrow \& \) \( \text{pan} \rightarrow \tilde{p}a\)
- **Weakening to weaker element:** \( n- \rightarrow \eta \) \( \text{pan} \rightarrow p\tilde{a}\)

---

5 cf. Rohlfs, 1954, p. 90

* For the relation \( \eta < n \) cf pp. 30/31 below
Weakening applies preferentially to weak elements in weak position (IDP). In Portuguese, comparatively weak (dental) nasals were effaced: lana →  lã, but stronger (labial) nasals did not: fama → família.

Syllable final position is weaker than syllable initial position, as can be observed in French masculine/feminine alternations such as fait/faite, where only the syllable final t has lost its phonetic manifestation: fait% → [ftime], but faite → [ftime].

The appearance of a nasalized vowel in French, therefore depends on a positionally weak (syllable final) nasal.

main → /mɛ̃/
but laine → /lɛ̃/.

The examples given so far, indicate that nasals may be weakened as a result of nasalization. Nasalized vowels, however, seem to become stronger.

In French, nasalized vowels were lowered.

fin → /fɛ̃/ 
cent → /sɛ̃/.

---

For the relation n < m see pp.30/31 below.
The phonetic lowering of nasalized vowels corresponds to an increase of phonological strength on the \textit{eta} parameter which depicts the differences in phonological strength among the Romance vowels\(^8\).

\[
\begin{array}{c}
\text{u} & \text{o} & \text{0} \\
\text{i} & \text{e} & \text{E} & \text{a} \\
\hline
1 & 2 & 3 & 4
\end{array}
\]

Nasalization induces a strengthening of the vowel accompanied by a weakening of the nasal.

Just as nasalization (vowel strengthening) depends on the inherent or positional weakness of the nasal, the weakening of the nasal may depend on the strength of the preceding vowel, as can be observed from the preferential effacement of a dental nasal after a comparatively strong vowel\(^9\), but not after a weaker vowel, in Latin.

\[\text{nomen} \rightarrow \text{idem}\]
\[\text{homcn} \rightarrow \text{homo}\]

\(^8\) Cf. Foley, 1977, p. 47

\(^9\) For o > e cf. 1.2

21
The strengthening of vowels, as a result of nasalization, leads to an imbalance of phonological strength between vowel and following nasal, which causes the nasal to weaken. The complex process of nasalization is best represented as a polarization of phonological strength:

Nasalization: \( V N \rightarrow \sim V N \)

Polarization: \( \sim N \rightarrow V+N- \)

This abstract phonological process can be observed in the absence of phonetic manifestations such as nasalized vowels and effaced nasals. In the derivation below, the retention of the strengthened (nasalized) vowel contrasts with the loss of the oral vowel in different forms of the Latin verb *ferre*.

\[
\begin{array}{l}
\text{ferimus} \quad \text{ferit} \\
\sim \text{ferimus} \quad \sim \text{n} \quad \text{n} \\
\text{n} \quad \text{fert} \quad \text{elision of unnasalized vowel} \\
\text{ferimus} \quad \text{n} \quad \text{denasalization}
\end{array}
\]

Although nasalized vowels are invariably strengthened, strengthened vowels may depotentiate in various ways.

---

10 Example from Foley, 1977, p. 55
In Latin the strengthened vowel was simply retained:
ferit -> fert, but ferimus -> idem

In French, the strengthened vowel was promoted to a qualitatively different (stronger) vowel:
fine -> /fin/, but fin -> /fE/

In Norman French, strengthened (nasalized) a diphthongized to au: 11

<table>
<thead>
<tr>
<th>French</th>
<th>Norman French</th>
</tr>
</thead>
<tbody>
<tr>
<td>branche</td>
<td>braunche</td>
</tr>
<tr>
<td>luisante</td>
<td>luisaunte</td>
</tr>
<tr>
<td>enchantement</td>
<td>enchantment</td>
</tr>
</tbody>
</table>

The observations made on phonological interactions between vowels and following nasals above, allow for the isolation of three distinct processes in the phonetic change of stressed a to au:

- **Assimilation of Nasality:** VN -> ~V
- **Nasal Strengthening:** V -> V+
- **Diphthongization:** V+ -> D

11 Cf. Pope, p. 442
The derivation of stressed prenasal a in Sursilvan consequently has the following form:

<table>
<thead>
<tr>
<th>plana</th>
<th>planta</th>
</tr>
</thead>
<tbody>
<tr>
<td>plana</td>
<td>planta</td>
</tr>
<tr>
<td>pla+na</td>
<td>pla+nta</td>
</tr>
<tr>
<td>plauna</td>
<td>plaunta</td>
</tr>
<tr>
<td>fails</td>
<td>plonta</td>
</tr>
</tbody>
</table>

With respect to the second configuration,

<table>
<thead>
<tr>
<th>au</th>
<th>au</th>
</tr>
</thead>
<tbody>
<tr>
<td>au</td>
<td>o</td>
</tr>
</tbody>
</table>

the question arises how contraction in plonta could be related to the syllable structure.

In Latin, long thematic vowels have been shortened by tautosyllabic, but not by heterosyllabic stops:

<table>
<thead>
<tr>
<th>/ama:%tis/</th>
<th>-&gt; idem</th>
</tr>
</thead>
<tbody>
<tr>
<td>but</td>
<td>/ama:t/</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>/amaba:%bus/</th>
<th>-&gt; idem</th>
</tr>
</thead>
<tbody>
<tr>
<td>but</td>
<td>/amaba:m/</td>
</tr>
</tbody>
</table>
Contraction might be interpreted as a type of shortening:

Long Vowel/Diphthong -> idem ( - % )
Long Vowel/Diphthong -> Short Vowel/Monophthong ( _ Stop % )

This interpretation, however, does not account for the noncontraction of au before a tautosyllabic nasal followed by a velar stop:

\[ \text{sangue} \rightarrow \text{saung} \]
\[ \text{but} \quad \text{grande} \rightarrow \text{grond} \]
\[ \text{planca} \rightarrow \text{plunca} \]
\[ \text{but} \quad \text{planta} \rightarrow \text{plonta} \]

Contraction seems to be related to the character of the following cluster rather than to tautosyllabicity, for nasal consonants often assimilate to a following stop:

\[ \text{in \% portante} \rightarrow /\text{impurton}/ \]
\[ \text{in \% tonare} \rightarrow /\text{intura}/ \]
\[ \text{in \% carnatu} \rightarrow /\text{inkarnaw}/ \]

Thus: planka -> planka, but planta -> idem.
The correct configuration for contraction before tautosyllabic nasals is therefore:

plaunca: \( \text{au} \rightarrow \text{idem} \) \( (\_ \text{velar N} \%) \)
plonta: \( \text{au} \rightarrow o \) \( (\_ \text{dental N} \%) \)

Contraction not only depends on the character of the tautosyllabic nasal, but also on the character of the heterosyllabic nasal:

launa: \( \text{au} \rightarrow \text{idem} \) \( (\_ \% \text{dental N}) \)
loma: \( \text{au} \rightarrow o \) \( (\_ \% \text{labial N}) \)

Since contraction occurs before tauto-, but not before heterosyllabic dental nasals (plonta but pluna), and since it occurs before heterosyllabic labial nasals (loma), it can be expected before tautosyllabic labial nasals:

flama \( \rightarrow \) flomna, gamba \( \rightarrow \) comba.

Contraction and noncontraction of the prenasal diphthong \( \text{au} \) in Sursilvan can be summarized in the following fashion:

\[\begin{align*}
\text{au} & \rightarrow \text{idem} \quad (\_ \% J) \\
\text{au} & \rightarrow \text{idem} \quad (\_ \% n) \\
\text{au} & \rightarrow o \quad (\_ \% n C) \\
\text{au} & \rightarrow o \quad (\_ \% m)
\end{align*}\]
Contraction of \( au \) to \( o \) clearly does not depend on a tautosyllabic nasal (planca -> plunca), but rather on the quality of the nasal (plunca, but plonta and comka), and on nasal clusters as opposed to single nasals (plonta but pluna). The question, that needs to be asked, is why some nasal consonants induce contraction but not others.

Traditionally, the change from \( au \) to \( o \) has been described as a mutual assimilation. Canfield and Davis (p.31) for instance suggest the following development for Latin \( au \):

\[
au \rightarrow ou \rightarrow oo \rightarrow o;
\]

Despite its appealing obviousness, such a phonetic description says nothing about the preferential contraction of \( au \) to \( o \) in some environments but not in others, for which the phonetic change is merely an indication.

In order to find out how contraction is induced in certain nasal environments, the process of contraction has to be analyzed in theoretical terms, i.e. with reference to phonological strength.

In Theoretical Phonology, the internal structure of \( au \) and the internal structure of \( o \) are the same, namely \( (a,u) \). The phonetic difference between \( au \) and \( o \) is expressed as a difference in bondstrength.
The gamma parameter\(^{12}\) measures how strongly two elements are bound together:

\[
\begin{array}{ccc}
  au & aw & 0 \\
\end{array}
\]

\[\rightarrow\]

\[\begin{array}{ccc}
  1 & 2 & 3 \\
\end{array}\]

As an illustration, the development of the Latin diphthong /aw/ in various Romance languages is considered:

In French the bond strength between a and u increased by one unit: /awru/ \(\rightarrow\) /or/ (a,u)\(^2\) \(\rightarrow\) (a,u)\(^3\)

In Sursilvan, the Latin diphthong stayed the same:

/awru/ \(\rightarrow\) /awr/ (a,u)\(^2\) \(\rightarrow\) idem

In Roumanian, the bond strength decreased by one unit:

/awru/ \(\rightarrow\) /awru/ (a,u)\(^2\) \(\rightarrow\) (a,u)\(^1\)

The phonetic change of au to o corresponds to an increase of phonological bond strength. The general rule for the contraction of au to o is therefore:

\[\text{au} \rightarrow \text{au} + \rightarrow \text{o}\]

\(^{12}\) Cf. Foley, 1977, p. 41
According to the IDP, strengthening occurs preferentially in strong environments as is evident in the preferential contraction of au to o before strong German dentals\textsuperscript{13}, but not before weaker labials or velars:\textsuperscript{14}

<table>
<thead>
<tr>
<th>Gothic</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>dental</td>
<td>stautan</td>
</tr>
<tr>
<td>labial</td>
<td>kaupon</td>
</tr>
<tr>
<td>velar</td>
<td>aukon</td>
</tr>
</tbody>
</table>

Contraction is a process that requires phonological strength which may be provided by a sufficiently strong environment (German \textit{stossen} as opposed to \textit{kaufen}).

The correct configuration for the contraction of au to o is therefore:

\[
\begin{align*}
\text{au} & \rightarrow \text{idem}( \_ \_ \text{E} ) \\
\text{au} & \rightarrow \text{au}^+ ( \_ \_ \text{E}^+ ) \\
\text{followed by} & \text{ au}^+ \rightarrow \text{o}
\end{align*}
\]

\textsuperscript{13} Although the labials are the strongest occlusives in the Romance languages, \textit{vita} \rightarrow \textit{vie}, but \textit{ripa} \rightarrow \textit{rive} (in French), in German labials and dentals switch position on the alpha parameter, leaving the dentals as the strongest elements. Cf. Poley, 1977, p. 50

\textsuperscript{14} Cf. Poley, 1977, p. 118
The preferential contraction of the prenasal diphthong before dental clusters as opposed to velar clusters, and before single labial nasals as opposed to single dental nasals, can be explained with reference to the alpha parameter for the Romance languages\textsuperscript{15}, as a preferential strengthening in strong environments:

\begin{center}
\begin{tabular}{ccc}
velars & dentals & labials \\
\hline
1 & 2 & 3 \\
\end{tabular}
\end{center}

Since velar nasals are weaker than dental nasals, contraction fails in \textit{pluŋca}, but not in \textit{plonta}:

\begin{itemize}
\item \textit{pluŋca} \rightarrow \textit{idem}
\item but \textit{pluŋta} \rightarrow \textit{plau+nta} \rightarrow \textit{plonta}
\end{itemize}

and since dental nasals are weaker than labial nasals, contraction fails before a single \textit{n}, but not before a single \textit{m}:

\begin{itemize}
\item \textit{launa} \rightarrow \textit{idem}
\item but \textit{lauma} \rightarrow \textit{lau+ma} \rightarrow \textit{loma}
\end{itemize}

\textsuperscript{15} Cf. Foley, 1977, p. 59
As an illustration for the relation: velar < dental < labial, nasal weakening processes are considered:

In Portuguese, dental but not labial nasals were effaced:
manu → mão, but rau → ramo.

In Bernese, a Swiss German dialect, velar but not dental nasals were effaced before continuants:

<table>
<thead>
<tr>
<th>German</th>
<th>Bernese</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>n → idem ( _ s )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gans</td>
<td>Gans</td>
<td>goose</td>
</tr>
<tr>
<td>kommst</td>
<td>chunsch</td>
<td>come (2. sg.)</td>
</tr>
<tr>
<td>but g → _VO ( _ X )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>degken</td>
<td>taeiche</td>
<td>to think</td>
</tr>
<tr>
<td>Schigken</td>
<td>Scheiche</td>
<td>ham/leg</td>
</tr>
</tbody>
</table>

Contraction in plonta but not in plaunca, and in lema but not in launa, has now been related to the inherent strength of the following nasal as represented by the alpha parameter.

But why should contraction occur before tautosyllabic but not before heterosyllabic dental nasals?

pane → paun

but pannu → ponn

planta → plonta

31
According to the IDP, weakening applies preferentially to weak elements. In Portuguese, single dental nasals are effaced, but the respective geminates are not:

\[ \text{manu} \rightarrow \text{mão}, \text{ but } \text{annu} \rightarrow \text{anno}. \]

In Sursilvan, Latin \( t \) weakened to \( d \), but the geminate \( \text{tt} \) only degeminated:

\[ \text{mettere} \rightarrow /\text{Etër}/, \text{ but } \text{meter} \rightarrow /\text{Edër}/. \]

The configurations:

\[ \text{nn} \rightarrow \text{idem}, \text{ but } \text{n} \rightarrow \emptyset \]
\[ \text{tt} \rightarrow \text{t}, \text{ but } \text{t} \rightarrow \text{d} \]

suggest the relation:

\[ \text{CC} > \text{C} \]

allowing for the conclusion that homorganic clusters are stronger than their respective single counterparts.

In order to determine the sufficient strength for the contraction of the prenasal diphthong in Sursilvan, two different constellations need to be combined:
1. Contraction induced by **qualitative** strength:

\[
\begin{align*}
\text{au} & \rightarrow \text{idem} & (\_ n\_ \_ |n| = 1 \\
\text{au} & \rightarrow \text{idem} & (\_ n\_ \_ |n| = 2 \\
\text{au} & \rightarrow \text{o} & (\_ m\_ \_ |m| = 3
\end{align*}
\]

2. Contraction induced by **quantitative** strength:

\[
\begin{align*}
\text{au} & \rightarrow \text{idem} & (\_ n\_ \_ |n| = 2 \\
\text{au} & \rightarrow \text{o} & (\_ n+C\_ \_ |n| + |C| = 2 + 1 = 3
\end{align*}
\]

The contraction of the prenasal diphthong au in Sursilvan depends on the strength of the nasal environment, a combination of qualitative and quantitative strength:

**Quantitative**

**Strength:** \( |m| = m \) \( |N+C| = m + 1 \)

**Qualitative**

**Strength:**

\( |n| = 1 \)

1 : sauŋ 1+1=2 : plaŋŋa

\( |n| = 2 \)

2 : launə 2+1=3 : plonta

\( |n| = 3 \)

3 : loma 3+1=4 : flobma
In Sursilvan, prenasal au contracts to o, when the strength of the nasal or the nasal cluster equals or exceeds the value 3:

\[ \text{au} \rightarrow \text{idem}( - \text{ N C) if } |N| + |C| < 3 \]

\[ \text{au} \rightarrow \text{au}^+ ( - \text{ N C) if } |N| + |C| \geq 3 \]

followed by \[ \text{au}^+ \rightarrow o \]

Instead of interpreting the data in articulatory terms, where the preferential application of contraction cannot be explained, the process of contraction has been investigated with reference to the relations among the phonological elements, and expressed numerically. Philologists such as Huonder (p. 22) and Gartner (p. 133) "explained" the appearance of the rounded glide before velar nasals with the velar quality of the nasal. This phonetic reductionism, typical of philological phonetics, explains nothing and furthermore contradicts the data as shown below.

In the dialect spoken in Ems (Sutsilvan), au contracts to o even in velar environments (Gartner, p. 134):

- hand -> on
- lana -> lona
- grande -> gron
- clamat -> kloma
- flamma -> floma
Whereas in Engadinian au does not contract before nt. Both developments can be explained with reference to the theoretical findings made above:
The Sutsilvan dialect represents a simple generalization, (au -> o) having dropped the condition \( N(C) \) \( \geq \) 3, while the Engadinian dialect makes exclusive reference to the values represented by the alpha parameter, ignoring the difference between single consonants and consonant clusters.

In this section, the two reflexes of stressed a before nasals in Sursilvan have been related to each other with universal processes such as:

1. Nasalization: \( a \rightarrow \tilde{a} \)
2. Nasal Strengthening: \( \tilde{a} \rightarrow a^+ \)
3. Diphthongization: \( a^+ \rightarrow au \)
4. Contraction: \( au \rightarrow au^+ \)
\( au^+ \rightarrow o \)

The preferentiality of linguistic change has been evident in the preferential diphthongization of strengthened (nasalized) a, and in the preferential contraction of au before strong m, but not before weak g and single n, and before relatively strong dental clusters as opposed to velar clusters and single dental nasals.

\[ 16 \text{ Cf. Schorta, p.25} \]
2.2 Different Vocalic Reflexes before m and n

In the previous section, the diphthongization and contraction of stressed a in prenasal position has been demonstrated. This section illustrates the preferential contraction of prenasal diphthongs in sufficiently strong nasal environments by investigating the different vocalic reflexes of the remaining Sursilvan vowels before relatively weak dental nasals and before strong labial nasals.

In order to interpret the development of prenasal vowels (other than a), the development of closed vowels in Sursilvan needs to be illustrated.

Regardless of the environment, Romance u changes to i:

\[
\begin{align*}
duru & \rightarrow \text{dir} \\
acutu & \rightarrow \text{tg}it \\
luna & \rightarrow \text{gl}ina \\
fumare & \rightarrow \text{f}imar \\
\end{align*}
\]

and Romance o changes to u:

\[
\begin{align*}
tottu & \rightarrow \text{t}utt \\
to role & \rightarrow \text{c}ulur \\
spone & \rightarrow \text{s}avun \\
omen & \rightarrow \text{n}un \\
\end{align*}
\]
There are thus three closed vowels in Sursilvan: e, u, i, all of which diphthongize in originally open syllables (cf. below). For the time being, it suffices to show that e diphthongizes in open syllables, and that closed mid vowels have identical reflexes before oral and nasal consonants:

\[
\begin{align*}
\text{e} & \rightarrow \text{ei (\_ \%)}: & \text{pilu}^{17} & \rightarrow \text{peil} \\
& & \text{sinu} & \rightarrow \text{sein} \\
\text{but e} & \rightarrow \text{idem (\_ C \%)}: & \text{firmu} & \rightarrow \text{ferm} \\
& & \text{vincere} & \rightarrow \text{vencer}
\end{align*}
\]

Open mid vowels, however, are raised in prenasal position (as a result of prenasal diphthongization parallel to the diphthongization of a), yielding the same reflexes as closed mid vowels before oral and nasal consonants:

**Front Mid Vowels:**

- open \( \text{leve} \rightarrow \text{leu} \)
- closed \( \text{tela} \rightarrow \text{teyla} \)

**Back Mid Vowels:**

- open \( \text{nova} \rightarrow \text{nova} \)
- closed \( \text{voce} \rightarrow \text{vusch} \)

---

\(^{17}\) Short Latin \(i\) = Romance \(e\).
Since Romance ŭ and ŗ change to i and u respectively, and since open mid vowels have the same reflexes before nasals as closed mid vowels, there are only four basic vowels left in prenasal position: a, e, u, i. All of these vowels show different reflexes before ŭ than before ŭ.

The difference may appear as an opposition between diphthong (before ŭ) and monophthong (before ŭ), as in

<table>
<thead>
<tr>
<th>Original</th>
<th>Reflex 1</th>
<th>Reflex 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>manu</td>
<td>mawn /aw/</td>
<td>but</td>
</tr>
<tr>
<td>plena</td>
<td>pleina /ey/</td>
<td>but</td>
</tr>
<tr>
<td>semen</td>
<td>semen /e/</td>
<td>but</td>
</tr>
</tbody>
</table>

or as an opposition between closed and long vowels (before ŭ) and open and short vowels (before ŭ), as in

<table>
<thead>
<tr>
<th>Original</th>
<th>Reflex 1</th>
<th>Reflex 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>bona</td>
<td>buna /u:/</td>
<td>but</td>
</tr>
<tr>
<td>una</td>
<td>ina /i:/</td>
<td>but</td>
</tr>
<tr>
<td>homo</td>
<td>um /u/</td>
<td>but</td>
</tr>
<tr>
<td>fumat</td>
<td>fena /e/</td>
<td>but</td>
</tr>
</tbody>
</table>

Although an analysis which explains the behaviour of prenasal ŭ has been made, it is not clear yet how the remaining prenasal vowels (e, u, i) developed.

As shown above, closed e diphthongized regardless of the nasal environment, but according to the syllable structure, i.e. e appears to stay the same in closed syllables.

\[
\begin{align*}
e: & \quad \text{verde} \rightarrow \text{verd} \quad \text{or} \quad \text{e} \rightarrow \text{ide}n \ (\_\ C\ %) \\
\text{but} & \quad \text{rete} \rightarrow \text{reit} \quad \text{or} \quad \text{e} \rightarrow \text{ey} \ (\_\ %)
\end{align*}
\]
This configuration seems to contradict the configuration obtained for ́:

while ́ stays the same in closed syllables, ́ seems to stay the same in open syllables.

i:  
tritu \rightarrow trit or ́ \rightarrow idem ( _ % )
triste \rightarrow trest or ́ \rightarrow e ( _ C % )

This confusion however is solely due to the orthographic surface.
A proper understanding of the situation must be based on accurate observations.

1. Although only the diphthongization of ́ is orthographically represented (eij), all closed vowels diphthongize in open syllables:

   tela \rightarrow teyla
   flure \rightarrow fluwre
   filu \rightarrow fiyru

Evidence for this claim is the appearance of a so called hardened glide as a velar stop, a common phenomenon of many Raetoromansh dialects. Lausberg (p. 155) mentions teyla for teyla and fikl for fiyl (p. 153) in Sutsilvan and Engadinian, and Bourciez (p. 609) mentions flukr for fluwr in Engadinian.
2. All monophthongs which are not exposed to the raising influence of a following glide are lowered:

\[
\begin{align*}
loma & \rightarrow [\ell o\text{ma}] \\
cuppa & \rightarrow [\text{kUp}@] \\
verde & \rightarrow [\text{vErd}] \\
triste & \rightarrow [\text{treSt}] \\
\end{align*}
\]

3. Where no hardening of the glide has occurred, the diphthong may appear as a long monophthong, if vowel and glide are sufficiently similar:

\[
\begin{align*}
i: & \quad \text{for} \quad iy \\
u: & \quad \text{for} \quad uw \\
\text{but} & \quad \text{ei} \quad \text{for} \quad ey \\
\end{align*}
\]

The development of \( i \) in open and closed syllables consequently has the following form:

\[
\begin{align*}
\text{filat} & \quad \text{villla} \\
\text{fiylat} & \quad i \rightarrow iy \ ( \_ \_ \%) \\
\quad & \quad \text{vella} \quad i \rightarrow e \\
\text{fi:lat} & \quad iy \rightarrow i: \\
\text{fila} & \quad \text{vella} \quad MR \ (\text{orthography}) \\
\end{align*}
\]

In section 2.1, it has been shown that prenasal \( aw \) contracted

\[18\] Latin filat = to spin, 3.sg.
before \( m \) (\(|N| = 3\)), but not before \( n \) (\(|N| = 2\)). The contraction of diphthongs before sufficiently strong nasal environments is however not restricted to the diphthong \( au \), but applies to \( ey \), \( iy \) and \( uv \) as well.

1. \( ey \rightarrow e \rightarrow E (-m) \)

<table>
<thead>
<tr>
<th>avena</th>
<th>semen</th>
</tr>
</thead>
<tbody>
<tr>
<td>aveyna</td>
<td>seymen</td>
</tr>
</tbody>
</table>

\( V \rightarrow D (-\%\) 

<table>
<thead>
<tr>
<th>semen</th>
<th>D ( \rightarrow ) D+ ( \rightarrow ) M (-m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>sEmen</td>
<td>lowering</td>
</tr>
<tr>
<td>semen</td>
<td>M (orthography)</td>
</tr>
</tbody>
</table>

2. \( iy \rightarrow i \rightarrow e (-m) \)

<table>
<thead>
<tr>
<th>unu</th>
<th>fumu</th>
</tr>
</thead>
<tbody>
<tr>
<td>inu</td>
<td>fimu</td>
</tr>
<tr>
<td>iynu</td>
<td>fiymu</td>
</tr>
</tbody>
</table>

\( V \rightarrow D (-\%\) 

<table>
<thead>
<tr>
<th>fimu</th>
<th>D ( \rightarrow ) D+ ( \rightarrow ) M (-m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>femu</td>
<td>lowering</td>
</tr>
<tr>
<td>i:nu</td>
<td>iy ( \rightarrow ) i:</td>
</tr>
</tbody>
</table>

| fem | M (orthography) |
3. $u_w \rightarrow u \rightarrow u^* (_m)$

<table>
<thead>
<tr>
<th>bCnos</th>
<th>h0mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>bunos</td>
<td>humo $O \rightarrow o \rightarrow u (_N)$</td>
</tr>
<tr>
<td>buwnos</td>
<td>huwmo $V \rightarrow D (_%)$</td>
</tr>
<tr>
<td></td>
<td>humo $D \rightarrow D^+ \rightarrow M (_m)$</td>
</tr>
<tr>
<td></td>
<td>humo lowering</td>
</tr>
<tr>
<td>bu:nos</td>
<td>$u_w \rightarrow u^*$</td>
</tr>
<tr>
<td>buns</td>
<td>$u_m$ MR (orthography)</td>
</tr>
</tbody>
</table>

Although all nasal stops are members of the same natural class, labial and dental nasals seem to participate in different rules, this difference is particularly evident in Sursilvan, where all vowels have different reflexes before $m$ and $n$. This systematic difference is an instantiation of the preferentiality of linguistic change, and has been related to the preferential contraction of prenasal diphthongs in sufficiently strong environments and the diphthongization of closed vowels in open syllables.

On the following page, the development of the different reflexes of prenasal Sursilvan vowels before single dental nasals and before single labial nasals is summarized.
The Preferential Development of Prenasal Vowels in Sursilvan:

<table>
<thead>
<tr>
<th>manu</th>
<th>ramu</th>
<th>unu</th>
<th>fumu</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>inu</td>
<td>fimu</td>
</tr>
<tr>
<td>sawnu</td>
<td>rawmu</td>
<td>iynu</td>
<td>fiyμu</td>
</tr>
<tr>
<td>&quot;</td>
<td>romμ</td>
<td>&quot;</td>
<td>fimu</td>
</tr>
<tr>
<td>&quot;</td>
<td>romu</td>
<td>&quot;</td>
<td>femu</td>
</tr>
<tr>
<td>sawn</td>
<td>rom</td>
<td>i:n</td>
<td>fem</td>
</tr>
<tr>
<td>maun</td>
<td>rom</td>
<td>in</td>
<td>fem</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>bEne</th>
<th>femina</th>
<th>cena</th>
<th>semen</th>
</tr>
</thead>
<tbody>
<tr>
<td>bene</td>
<td>femina</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>beyne</td>
<td>feymina</td>
<td>ceyna</td>
<td>semen</td>
</tr>
<tr>
<td>&quot;</td>
<td>femina</td>
<td>&quot;</td>
<td>semen</td>
</tr>
<tr>
<td>&quot;</td>
<td>femina</td>
<td>&quot;</td>
<td>semen</td>
</tr>
<tr>
<td>beyn</td>
<td>femina</td>
<td>ceyna</td>
<td>semen</td>
</tr>
<tr>
<td>bein</td>
<td>femna</td>
<td>ceyna</td>
<td>semen</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>bonα</th>
<th>homo</th>
<th>sapone</th>
<th>nomen</th>
</tr>
</thead>
<tbody>
<tr>
<td>bona</td>
<td>homo</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>humu</td>
<td>sapuμe</td>
<td>numen</td>
</tr>
<tr>
<td>&quot;</td>
<td>huuμu</td>
<td>sapuuμe</td>
<td>numμen</td>
</tr>
<tr>
<td>&quot;</td>
<td>humo</td>
<td>&quot;</td>
<td>numen</td>
</tr>
<tr>
<td>&quot;</td>
<td>huuμo</td>
<td>&quot;</td>
<td>numen</td>
</tr>
<tr>
<td>burna</td>
<td>um</td>
<td>savu:n</td>
<td>num</td>
</tr>
<tr>
<td>buna</td>
<td>um</td>
<td>savun</td>
<td>num</td>
</tr>
</tbody>
</table>

43
Summary

In this chapter, superficially disparate alternations in prenasal environment have been related to each other with a small set of universal processes which have been validated with reference to the same processes operating in other languages. This was possible because the phonetic changes have been interpreted as instantiations of more abstract phonological processes.

All of the established rules failed to apply to whole classes of phonological elements; but they applied preferentially to certain elements of given classes.

The results of the investigation carried out in this chapter are briefly repeated in three parts:

1. Relating Prenasal Reflexes

Henceforth unrelated reflexes such as the diphthong au and the raising of a to o in prenasal environments, have been shown to be the result of a rule that diphthongizes stressed a as a result of prenasal strengthening, followed by the preferential contraction of au in sufficiently strong nasal environments.

The lowering of closed vowels (e,u,i) before m has been related to the contraction of au before strong nasals, by showing that all monophthongs, whether original or from contracted
diphthongs, yield low reflexes in Sursilvan.

2. Accounting for the Processes

The phonetic changes, diphthongization and contraction have been shown to be the result of more abstract phonological strengthening processes:

- **Nasalization:**  \( VN \rightarrow \sim VN \)
- **Polarization:**  \( \sim VN \rightarrow V+M- \)
- **Diphthongization:**  \( V+ \rightarrow D \)
- **Environmental Strengthening:**  \( D \rightarrow D+ \) (\( N \)) if \( |N| \geq 3 \)
- **Contraction:**  \( D+ \rightarrow \emptyset \)

It has been demonstrated that these processes apply in different languages and under different conditions.

3. Preferential Application of Processes

Linguistic evolution is not only conditioned by the inherent qualities of a linguistic element, but also by the inherent qualities of its position and its environments. These qualities can be represented numerically. A given development
(strengthening or weakening) is therefore expected to evolve
unidirectionally: starting at the right end of a scale for
strengthening, and at the left hand of the scale for weakening
processes. Phonological processes manifest themselves in
expanding rule schemata. The expansion however is predictable on
the basis of the IDP. The rule schema for the contraction of
prenasal au has been shown to have the following expansion:

Contraction:

1. \( au \rightarrow o \ ( \_ \ n \ C ) \ \ n + C = 3 + 1 = 4 \) plcmna
2. \( au \rightarrow o \ ( \_ \ m ) \ \ m = 3 \) loma
   \( au \rightarrow o \ ( \_ \ n \ C ) \ \ n + C = 2 + 1 = 3 \) plonta

Noncontraction:

3. \( au \rightarrow au \ ( \_ \ n ) \ \ n = 2 \) plauna
   \( au \rightarrow au \ ( \_ \ q \ C ) \ \ q + C = 1 + 1 = 2 \) plaunka
4. \( au \rightarrow au \ ( \_ \ g ) \ \ g = 1 \) saung
III. The Development of Open Mid Vowels

Concentrating on French as the most developed and on Italian as a very conservative Romance language, philologists observed that in both languages open mid vowels diphthongize in open syllables. They reasoned that diphthongization should therefore be a consequence of the lengthening of originally short mid vowels in open syllables. This conclusion led to generalisations such as:

La seule diphthongaison véritable est celle qui provient du dédoublement ou segmentation d'une voyelle accentuée longue et libre:... 2

The philological view can be summarized with the following rules:

Lengthening: \( V \rightarrow V: (\ -\ %\ )\ )

Duplication: \( V \rightarrow VV\)

Differentiation: \( VV \rightarrow V(x)V(y)\)

---

1 For monosyllables in French and proparoxytones in Italian see 3.2, for vowels combining with a metathesized glide see 3.3.

2 Bourciez, p. 142 and elsewhere
In Spanish and Sursilvan however, diphthongization is not restricted to open syllables:

<table>
<thead>
<tr>
<th>Latin</th>
<th>Italian</th>
<th>French</th>
<th>Spanish</th>
<th>Sursilvan</th>
</tr>
</thead>
<tbody>
<tr>
<td>novu</td>
<td>nuovo</td>
<td>neuf</td>
<td>nuevo</td>
<td>nief</td>
</tr>
<tr>
<td>mortu</td>
<td>morto</td>
<td>mort</td>
<td>muerto</td>
<td>miert</td>
</tr>
</tbody>
</table>

Instead of giving up their claims in face of the Spanish counterexamples, philologists did not hesitate to reshape the data according to the 'open syllable hypothesis'. The fact that certain consonant clusters, such as 'muta cum liquida', do not close a syllable (peXtra -> pieXtra (I), feXbre -> fieXvre (P)), led them to believe that this may be the case for other clusters in Spanish, but not in French or Italian:

<table>
<thead>
<tr>
<th>French</th>
<th>petra -&gt; pieXvre</th>
<th>but</th>
<th>morta -&gt; morXte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italian</td>
<td>petra -&gt; pieXtra</td>
<td>but</td>
<td>morta -&gt; morXta</td>
</tr>
<tr>
<td>Spanish</td>
<td>petra -&gt; pieXdra</td>
<td>and</td>
<td>morta -&gt; mueXrta</td>
</tr>
</tbody>
</table>

Those philologists who were suspicious of such an ad hoc solution, simply explained the Spanish diphthongization as a result of a generalization.

---

3 Cf. Bourciez, ibid.
The Sursilvan data, however, suggests neither reanalysis of the syllable nor the generalization of diphthongization from open to closed syllables, but rather the influence of the final vowel.

<table>
<thead>
<tr>
<th>open syllable</th>
<th>closed syllable</th>
</tr>
</thead>
<tbody>
<tr>
<td>u#</td>
<td>mortu -&gt; miert</td>
</tr>
<tr>
<td>novu -&gt; niev</td>
<td></td>
</tr>
<tr>
<td>mediu -&gt; miez</td>
<td>ferru -&gt; fier</td>
</tr>
<tr>
<td>a#</td>
<td>morta -&gt; morta</td>
</tr>
<tr>
<td>nova -&gt; nova</td>
<td></td>
</tr>
<tr>
<td>media -&gt; mesa</td>
<td>terra -&gt; tiara</td>
</tr>
</tbody>
</table>

Open mid vowels diphthongize to ie regardless of the syllable structure, but only when followed by final u. Moreover seems to diphthongize preferentially in closed syllables even in words ending in a: terra -> tiara.

This situation is the reason why Palle Spore, in his summary work on the Romance diphthongization, refers to the diphthongization in the Raetoromansh languages as "yet to be explained":

Si certaines langues presentent la diphthongaison generalisée, c'est ou bien que la diphthongaison en syllabe fermée est un phénomène relativement moderne (wallon) ou bien que la coupe syllabique a changé (espagnol); les idiomètes rhétiques restent encore à expliquer.

* Spore, p. 35
The purpose of this chapter is to present an explanation of the two diphthongized reflexes of open mid vowels:

1. \textit{ie} from \textit{O} and \textit{E} before final \textit{u},
2. \textit{ia} from \textit{E} before certain consonant clusters, in words ending in a vowel other than \textit{u}.

In 3.1, the change of \textit{E} to \textit{ia} will be interpreted not as a genuine diphthongization, but as the result of the addition of a metathesized schwa generated between two consonants.

In 3.2, diphthongization is analyzed and interpreted as a universal phonological process governed by a universal condition, although this condition may assume various forms on the phonetic surface of different languages.

In 3.3, the influence of the final vowel on diphthongization is investigated. The philological explanation (metaphony) will be rejected in favour of a more abstract solution: the fluxion of phonological strength (polarization).
3.1 Pseudodiphthongization of E

Regardless of the syllable structure, Sursilvan open mid vowels diphthongize to \( i\varepsilon [i\varepsilon] \) in words ending in a final \( y \), whereas in words ending in a final \( a \) no diphthongization takes place.

<table>
<thead>
<tr>
<th>open syllable</th>
<th>closed syllable</th>
</tr>
</thead>
<tbody>
<tr>
<td>( u\varepsilon )</td>
<td>( novu \rightarrow niev )</td>
</tr>
<tr>
<td>( mediu \rightarrow miez )</td>
<td>( ferru \rightarrow fier )</td>
</tr>
<tr>
<td>( a\varepsilon )</td>
<td>( nova \rightarrow nova )</td>
</tr>
</tbody>
</table>

In closed syllables, open \( e \), changes to \( ia\varepsilon [ya] \) in words ending in vowels other than \( u \):

| media | mesa | festa \rightarrow fiasta |

Since the change of \( E \) to \( ia \) is clearly not related to the general diphthongization before final \( y \) (as outlined in the following pages), two distinct configurations are proposed:
1. Diphthongization proper as the result of polarization, discussed in 3.3:

\[ O,E \rightarrow \text{ie} \quad (\_ \text{CX}u \#) \]
\[ O,E \rightarrow \text{idem} \quad (\_ \text{CX}a \#) \]

2. The apparent diphthongization of \( E \) in closed syllables:

\[ E \rightarrow \text{idem} \quad (\_ \text{Ca} \#) \]
\[ E \rightarrow \text{ia} \quad (\_ \text{C}a \#) \]

In this chapter, the diphthongization of \( E \) restricted to closed syllables (configuration 2), is interpreted, not as a genuine diphthongization, but as the result of the addition of a metathesized schwa generated between two consonants.

Our investigation begins with questions based on the two relevant configurations.

\[ ^5 \text{X indicates one or two optional consonants} \]
1. \( E \rightarrow \text{idem \ (\_ \%)} \) \( \text{meder \ (< \text{metere})} \)  
   \( E \rightarrow \text{ia \ (\_ \ C \%)} \) \( \text{piarder \ (< \text{perdere})} \)  

Why does \( E \) change into a diphthong in closed but not in open syllables?

2. \( O \rightarrow \text{idem \ (\_ \ C \%)} \) \( \text{sort \ (< \text{sorte})} \)  
   \( E \rightarrow \text{ia \ (\_ \ C \%)} \) \( \text{siarp \ (< \text{serpe})} \)  

Why does \( O \) which otherwise underwent the same development as \( E \) (ie before final \( u \)), not diphthongize in the same environment?

Although philologists claimed that \([ya]\) is the result of a stress shift applied on \([ia]\), explaining the relationship between \(ie\) and \(ia\) in the following equation,

\[ ia \rightarrow ya \text{ as } V:V \]

the change of \( E \) to \( ia \) cannot be the result of a proper diphthongization, and therefore is not related to the change of \( E \) to \( ie \), for the following reasons:

\[ 6 \] Based on the observation that \( ia \) only appears in closed syllables, i.e. only for short \( e \)\( \text{vowel}, \text{c.f. Lu¨dtke, p.238} \]
1. Historical reason:

The conversion of E to ia must be of a much more recent date than the diphthongization induced by palatalization. In a Sursilvan text from 1648⁷, the following orthographic representations can be found:

niev for novu
chierp for corpu
tschiel for caelu
tiers for tertius

but festa, bella, serpe, which in modern Sursilvan yield fiasta, biala and siarp, have no other orthographic manifestation.

2. Phonetic reasons:

a. A simple stress shift would convert i'e to ie' (as in fact it did in French, Spanish and Italian), but not to ia'.

b. Sursilvan ia corresponds to Sutsilvan ea (pearder, beala, teara), the development of E to ia must therefore have been: E > E'a > ea' > ia'.

---

⁷ Cf. Ulrich, p.9
3. Theoretical reasons:

a. The philological contention that diphthongization is the result of a previous lengthening in open syllables contradicts Luedtke's claim that diphthongization of \( E \) to \( ia \) should be the result of a previous shortening in closed syllables.

b. The preferential diphthongization in closed syllables contradicts our interpretation of diphthongization as a strengthening process (cf. 2.1 above and 3.2 below).

Because of these reasons, the change from \( E \) to \( ia \) is treated as a separate development, governed by another process than diphthongization.

The claim that the diphthongization of \( E \) is restricted to closed syllables is based on data such as: perdere \( > \) piarder, but metere \( > \) meder. If however diphthongization depended on a closed syllable, it should also occur in \( mel \) and \( fel \), in which diphthongization fails: \'/m\ell/\), \'/f\ell/\).

The correct configuration therefore should indicate that the change of \( E \) to \( ia \) takes place in closed syllables but only before two consonants:

\[
\begin{align*}
E & \rightarrow \text{idea (} \_ \ C \text{ )} \\
E & \rightarrow \text{ia (} \_ \ C \% C \text{ )}
\end{align*}
\]
As a result of strengthening, epenthetic elements may be inserted between two consonants:

<table>
<thead>
<tr>
<th>genru</th>
<th>syncope:</th>
<th>V → ŋ + S*</th>
</tr>
</thead>
<tbody>
<tr>
<td>gendru</td>
<td>epenthesi1:</td>
<td>(nr)+ → ndr</td>
</tr>
<tr>
<td>gendr+</td>
<td>apocope:</td>
<td>V → ŋ + S</td>
</tr>
<tr>
<td>gender</td>
<td>epenthesi2:</td>
<td>(dr)+ → der</td>
</tr>
</tbody>
</table>

Cluster strengthening, resulting in the insertion of a glide between two consonants, is evident in the various reflexes for PEI *nokt-:

<table>
<thead>
<tr>
<th>German</th>
<th>Roumanian</th>
<th>French</th>
<th>Sursilvan</th>
</tr>
</thead>
<tbody>
<tr>
<td>nokte</td>
<td>nokte</td>
<td>nokte</td>
<td>nokte</td>
</tr>
<tr>
<td>nokhte</td>
<td>nokyte</td>
<td>nokyte</td>
<td>glide insertion</td>
</tr>
<tr>
<td>noXte</td>
<td>noyte</td>
<td>&quot;</td>
<td>contraction</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>noktye</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>noktsye</td>
</tr>
<tr>
<td>Nacht</td>
<td>noapte</td>
<td>nuit</td>
<td>notg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MR (orthography)</td>
</tr>
</tbody>
</table>

---

* S = unit of phonological strength

9 Cf. Poley, 1981, pp. 95-96

10 Spanish underwent the same development as Sursilvan: nokyte > noktye > noche.
Inserted glides may be vocalized and appear as anaptyctic vowels as in English substandard *fil@ for *film, in Latin *ager from *ag or in Russian gorod from PIE *ghortos.

But how could anaptyxis be related to the change of *E to ia? Although diphthongization proper is a consequence of a previous strengthening of the vowel (as shown in 2.1), some diphthongs are a result of a combination of an original vowel and a metathesized glide, as in English oyster from *ostrea, or in French:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>coriu</td>
<td>cor</td>
</tr>
<tr>
<td>coiru</td>
<td>&quot;</td>
</tr>
<tr>
<td>cuiru</td>
<td>&quot;</td>
</tr>
<tr>
<td>cuir</td>
<td>&quot;</td>
</tr>
<tr>
<td>MR (orthography)</td>
<td></td>
</tr>
</tbody>
</table>

The change of *E to ia may be interpreted as a result of an addition of a metathesized anaptyctic vowel.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>perdere</td>
<td>metere</td>
</tr>
<tr>
<td>perådere</td>
<td>&quot;</td>
</tr>
<tr>
<td>perårdere</td>
<td>&quot;</td>
</tr>
<tr>
<td>piårdere</td>
<td>&quot;</td>
</tr>
<tr>
<td>piarder</td>
<td>meder</td>
</tr>
<tr>
<td>MR (orthography)</td>
<td></td>
</tr>
</tbody>
</table>

11 In Sursilvan cuir developed further: cuir > cuir > tgir.

12 Anaptyctic cluster reductions are common in Sursilvan: genru -> schiender, macru -> magher
Anaptyxis however fails if an oral stop is followed by a liquid, thus: *petra* $\rightarrow$ *pedra*. In the Romance languages, consonant clusters such as *tr*, *pr*, and *pl*, which are referred to as *muta cum liquida*, generally fail to close the preceding syllable. This is evident in the diphthongization of open mid vowels in French and Italian before original *tr-clusters* which contrasts with the nondiphthongization of open mid vowels in closed syllables:

French: *pE % tr* $\rightarrow$ *pierre*, but *fE r % ru* $\rightarrow$ *fer*

Italian: *pE % tr* $\rightarrow$ *pietra*, but *fE r % ru* $\rightarrow$ *ferro*

*Muta cum liquida* in initial position have therefore been treated as single consonants\(^{13}\) where the liquid is interpreted as an offglide of the voiceless stop, i.e. *tr* $\rightarrow$ *p*. Failure of anaptyxis is further evident in the development of Sursilvan *U*, from Latin *short u*, which appears as the diphthong *uo* [Uɔ] in the same environment as *ia* from *E*; both diphthongs are claimed to be the result of an addition of a metathesized schwa.

\[
\begin{array}{c|c|c}
\text{duplica} & \text{culpa} & \\
\text{duplica} & & \text{pl} \rightarrow \hat{p} \\
\text{fails} & \text{culap} & \text{anaptyxis} \\
\text{culap} & \text{metathesis} \\
\text{duplica} & \text{culopa} & \text{MR (orthography)}
\end{array}
\]

\(^{13}\) Cf. Lausberg, p.98
Thus:

<table>
<thead>
<tr>
<th>perdere</th>
<th>petra</th>
</tr>
</thead>
<tbody>
<tr>
<td>perdere</td>
<td>fails</td>
</tr>
<tr>
<td>perdere</td>
<td>&quot;</td>
</tr>
<tr>
<td>piarder</td>
<td>pedra</td>
</tr>
</tbody>
</table>

So far it has been hypothesized that the appearance of a diphthong in perdere (piarder) and culpa (cuolpa) is the result of a metathesized anaptyctic schwa.

Turning to the second configuration that has been isolated above,

\[
\begin{align*}
0 & \rightarrow \text{idem (}_\text{C} \text{C}_\text{C}) \text{ morta} \\
E & \rightarrow \text{ia (}_\text{C} \text{C}_\text{C}) \text{ fiasta}
\end{align*}
\]

the question arises what phonological reasons could account for the restricted occurrence of this process after two vowels as phonetically different as ə and ū, and its apparent failure if the vowel is 0.

Metathesis seems to be related to the strength of the vowel, for metathesized schwa is only evident in stressed position:

<table>
<thead>
<tr>
<th>tu'rnat</th>
<th>turna're</th>
</tr>
</thead>
<tbody>
<tr>
<td>tu@rnat</td>
<td>tu@nare</td>
</tr>
<tr>
<td>tu@rnat</td>
<td>fails</td>
</tr>
<tr>
<td>tuorna</td>
<td>turnar</td>
</tr>
</tbody>
</table>
Metathesis depends on the attracting influence of a strong preceding vowel. The question is, what is the sufficient strength for a vowel to induce metathesis of an anaptyctic schwa? In the combined eta/omega parameter for the Romance languages,

```
 2 u  u
 1 i  e  E  a
```

the following values obtain: \( a, O = 5 \)
\( E, U = 4 \)
\( e, u = 3 \)
and \( i = 2 \)

Metathesized anaptyctic schwa is evident after vowels with the relative phonological strength 4 (cuolpa, piarder), but not after stronger (orta), or weaker vowels (ferma).

---

1*Since \( o \) does not exist in Sursilvan, the same relation that obtains for \( e \) and \( \varepsilon \) is assumed for \( u \) and \( \eta \), unless evidence to the contrary is adduced.
Given the failure of metathesis in *turnair* and in *ferma*, which suggests that metathesis depends on the attraction exerted by a sufficiently strong vowel, the following condition is arrived at:

\[ V C a C \rightarrow V a C C \]

for \(|V| > 4\)

Since the claim made above implies metathesis of schwa if preceded by a vowel with equal or greater phonological strength than 4, such as \(a\) and \(0\), the next question is: why does schwa not appear phonetically after \(a\) or \(0\) (\(|V| = 5\))? Before proposing a solution, another related process is considered.

In the Romance vowel shift, all short vowels, except \(a\), were lowered one position (cf. above). This coherent shift has been proposed to be the result of a general schwa addition rule, which caused short vowels to be lowered but not long vowels, and, most importantly, not short \(a\):

\[
\text{thus: } \quad a + a \rightarrow a a \rightarrow a.
\]

The absorption of a schwa by \(a\) can be interpreted as a consequence of sufficient phonological strength.

\[15\] James Foley, personal communication
The conditions on the two distinct processes, metathesis and absorption, can be represented in the following way:

1. **Metathesis:** \[ |V| = 5 : aC\alpha C \rightarrow a\alpha CC, \ O\alpha C \rightarrow o\alpha CC \]
\[ |V| = 4 : eC\alpha C \rightarrow e\alpha CC, \ uC\alpha C \rightarrow u\alpha CC \]

\[ \text{but:} \quad |V| = 3 : eC\alpha C \rightarrow \text{idem} \]
\[ |V| = 2 : iC\alpha C \rightarrow \text{idem} \]

2. **Absorption:** \[ |V| = 5 : a\Theta \rightarrow a, \ o\Theta \rightarrow 0 \]

\[ \text{but:} \quad |V| = 4 : E\Theta \rightarrow \text{idem}, \ u\Theta \rightarrow \text{idem} \]

The previous analyses of anaptyxis, metathesis and absorption lead to the following derivation:

<table>
<thead>
<tr>
<th>porta</th>
<th>hērba</th>
<th>tūrnat</th>
<th>ferma</th>
</tr>
</thead>
<tbody>
<tr>
<td>porēta</td>
<td>hērēba</td>
<td>tūrnēt</td>
<td>ferēma</td>
</tr>
<tr>
<td>poərta</td>
<td>hērēba</td>
<td>tūrnēt</td>
<td>fails</td>
</tr>
<tr>
<td>porta</td>
<td>fails</td>
<td>fails</td>
<td>&quot;</td>
</tr>
<tr>
<td>porta</td>
<td>jarva</td>
<td>tuorna</td>
<td>ferma</td>
</tr>
</tbody>
</table>
In this section, the change of $E$ to $\text{ia}$ has been interpreted as a result of the addition of a metathesized ana­ptycic schwa generated between two consonants rather than the result of a proper diphthongization. Moreover, this process has been found to apply to $U$, which changes to $\text{uo}$ (tuorna, cuolpa), in the same environment as $E$ to $\text{ia}$.

The three processes that have been isolated, have been found to apply preferentially rather than indiscriminately:

1. Anaptyxis has been shown to fail in muta cum liquida clusters which have been interpreted as single consonants: piarder, but pedra; cuolpa, but dupla.

2. Metathesis of the ana­ptycic schwa depends on the strength of the preceding vowel:
   tu'rna $\rightarrow$ tu'arma, but tu'nar $\rightarrow$ idem.

3. Absorption of the metathesized schwa takes place if the vowel with which the schwa combines is sufficiently strong:
   Since $O$ is stronger than $E$, the metathesized schwa does not show on the phonetic surface if it combines with $O$:
   morta $\rightarrow$ idem, but terra $\rightarrow$ tiara.
3.2 A Universal Condition on Diphthongization

Contrary to the superficial treatment of diphthongization by philologists whose goal was phonetic description, description in Theoretical Phonology is not a goal, but rather the stage in an investigation where questions are asked. Although every explanation is (implicitly or explicitly) preceded by questions, not every question elicits a scientific explanation. Bertrand Russell distinguished two types of questions:

When we ask 'why?' concerning an event, we may mean either of two things. We may mean 'What purpose did this event serve?' or we may mean; 'What earlier circumstances caused this event?' The answer to the former question is a teleological explanation, or an explanation by final causes; the answer to the latter question is a mechanistic explanation ... experience has shown that the mechanistic question leads to scientific knowledge while the teleological does not. 16

Phonemicists tried to interpret the purpose of linguistic changes (such as diphthongization) with phonemic pressure. Romeo17, for instance, claimed that the early monophthongization of Latin au to 0 exerted pressure on the phonemic systems of the postclassical period, since 0 (from au) was merging with 0 (from o).

16 Russell, p. 84
17 Romeo, p. 70
In order to escape the impending merger, \(o\) (from \(o\)) had to diphthongize. This claim contradicts the data in two ways:

1. In Tuscany, where \(au\) monophthongized to \(o\) (\(p\)\(0\)co, \(O\)ro, \(t\)\(0\)ro etc.\(^{18}\)), \(o\) did not diphthongize (\(O\)vo, \(f\)\(o\)co, \(c\)\(o\)re, \(r\)\(o\)ta etc.\(^{19}\)) despite the alleged phonemic pressure:

\[au \rightarrow o \quad \text{but} \quad o \rightarrow \text{idem}\]

2. In Sursilvan on the other hand, \(au\) stayed the same (\(p\)au\(c\), \(a\)ur, \(t\)aur etc.), but \(o\) diphthongized (\(n\)iev, \(m\)iert etc.) in the absence of said pressure:

\[au \rightarrow \text{idem} \quad \text{but} \quad o \rightarrow \text{ie}\]

The teleological position held by phonemicists which maintains that the purpose of diphthongization is the maintenance of phonemic discreteness (i.e. ease of perception), has to be rejected not only because it is contradicted by the data, but because it raises a plethora of unanswerable questions, and because it says nothing about the complex nature of linguistic change as illustrated in the preferential development of vowels before nasals above.

\(^{18}\) Cf. Rohlfs, 1949, p. 110

\(^{19}\) ibid., p. 186
In Theoretical Phonology, the question is not for what purpose there exists a phonological rule such as diphthongization, but under which conditions does it apply and what are the linguistic principles that govern it?

In Theoretical Phonology therefore, to explain a phonological rule means:

1. to isolate its preferential application with contrastive configurations,

2. to summarize these conditions in a more abstract way, by relating rules to other rules and general phonological processes, and,

3. to interpret the behaviour of phonological elements in terms of universal principles such as the IDP, the principle of strength fluxion and strength conservation, and the principle of attenuation and concentration as introduced by Foley (1977, 1979 and 1981).

In chapter two (2.1), it has been shown that diphthongization can be interpreted as a manifestation of phonological strength. In support of this claim illustrative configurations are considered according to the types of phonological strength(-ening) involved.
1. Diphthongization as a Result of Inherent Strength:

a. Qualitative Strength:

Since open mid vowels are stronger than closed mid vowels\(^{20}\), they diphthongized first in French, and in Spanish and Italian exclusively:

\[
\begin{align*}
\text{nö'du} & \rightarrow \text{node} \ (I), \ \text{nodo} \ (Sp) & V & \rightarrow \text{idem} \ (V \leq m) \\
\text{növ'vu} & \rightarrow \text{nuovo} \ (I), \ \text{nuevo} \ (Sp) & V & \rightarrow D \ (V > m)
\end{align*}
\]

b. Quantitative Strength:

In English, diphthongization was restricted to comparatively strong (long) vowels:

\[
\begin{align*}
\text{full} & \rightarrow \text{full} & V & \rightarrow \text{idem} \\
\text{ful'l} & \rightarrow \text{foul} & V' & \rightarrow D
\end{align*}
\]

c. Intonative Strength:

In Spanish, as in other languages, diphthongization applies preferentially in strong stressed position (as shown in 2.1):

\[
\begin{align*}
\text{festivo} & \rightarrow \text{idem} & V & \rightarrow \text{idem} \\
\text{fe'sta} & \rightarrow \text{fie'sta} & V' & \rightarrow D
\end{align*}
\]

\[\text{20} \ \text{Cf. p.60 above}\]
d. **Intonative Strength**: 

Although in Sicilian, open mid vowels are not diphthongized in normal speech, they are diphthongized in emphatic speech:21

\[
\begin{align*}
\text{To'ni} & \rightarrow \text{idem} & V' & \rightarrow \text{idem} \\
\text{To'ni} & \rightarrow \text{Tuoni} & V'' & \rightarrow \text{D}
\end{align*}
\]

2. **Phonological Strength and the Size of the Linguistic Unit:**

a. **Attenuation in the Syllable:**

The preferential diphthongization in open syllables can be explained with reference to the absolute strength of a vowel in relationship to the syllable:

\[
\begin{align*}
\text{m o r' 9to} & \rightarrow \text{merto} & V & \rightarrow \text{idem} \quad (\text{for } |V| = 1/3) \\
\text{n o' %vo} & \rightarrow \text{nuovo} & V & \rightarrow \text{D} \quad (\text{for } |V| = 1/2)
\end{align*}
\]

21 Der Name TÔni, Vincenzo wurde in ruhiger Rede mit offenem Vocal gesprochen. Rief aber jemand die Namen, so hiess es Tuoni, Vincenzo. (Schneegans, Heinrich: *Laute und Lautentwicklung des sicilianischen Dialektes*, Diss., Strassburg, 1888, p. 18)
b. Attenuation in the Word:
Although Italian open mid vowels diphthongize in open syllables of paroxytones, they do not diphthongize in proparoxytones where the absolute strength of each syllable is less than 1/2.

pe'nde → piede  \( V \rightarrow D \) (for \( |S| = 1/2 \))
te'pi'ndo → tepido  \( V \rightarrow \text{idem} \) (for \( |S| = 1/3 \))

---

22 Wartburg's remarks are apposite: "Die Wörter, die durchgebendes E haben, tragen alle ihre Erklärung in sich: pecora, tepido... sind Proparoxytone; hier hemmt die Druckverteilung." (p. 118)

---

c. Strength Concentration in the Word:
Although in French, Œ and È did not diphthongize in closed syllables of paroxytones, this is not true for monosyllabic words, in which the absolute strength of the vowel is sufficiently great to diphthongize even in closed syllables.

morta → morte  \( V \rightarrow \text{idem} \) (for \( |V| < 1/3 \))
cor → coeur  \( V \rightarrow D \) (for \( |V| = 1/3 \))
3. Diphthongization as a Result of Environmental Strengthening:

Prenasal Strengthening:
As shown in chapter two, vowels may diphthongize as a result of prenasal strengthening.

la'ku $\rightarrow$ lag  $V \rightarrow$ idem ( _ oral C )

ma'nu $\rightarrow$ maun  $V \rightarrow$ D ( _ nasal C )

Although the question why diphthongization occurs at all remains unanswered, it is possible to show why some vowels diphthongize but not other vowels, and why diphthongization occurred in some environments but not in others.

As a manifestation of phonological strength, diphthongization occurs preferentially to sufficiently strong or strengthened vowels:

Universal Rule:  $V \rightarrow$ D

Universal Condition: $|V| > \mathbf{m}$

Parochial Conditions: $\mathbf{m}$ varies from language to language
3.3 Metaphony or Polarization?

Sursilvan is the only Romance language in which both open mid vowels yield identical reflexes when diphthongized:
ferru -> fier, hortu -> iert.

Although Italian, Spanish, French and Sursilvan diphthongize E to ie, they differ in the extent to which diphthongized O developed. Diphthongization proper converts O to uo, occurring in medieval Spanish and modern Italian (nuovo). In Spanish, French and Sursilvan, the second part of the diphthong was derounded by syneresis: nuovo -> nuevo. Syneresis is a repetition of the Latin rule which derounded o after a labial element: vorto > verto > verto > verto. In modern French, ue contracted to o (orthographic eu: neuf) and in Sursilvan, ue derounded to ie:
nuev > nüev > niev. 23

1. Diphthongization o -> uo Italian
2. Syneresis uo -> ue Spanish
3.a Contraction ue -> o French
3.b Derounding ue -> ie Sursilvan

23 Although there seems to be no obvious reason for derounding, English, German and Sursilvan data suggest that it applies preferentially to central rounded vowels. In English and Swiss German e.g.:
bus -> idem, but müs -> mis.
As shown above, diphthongization in Sursilvan depends on an
original final y:

\[
\begin{align*}
\text{cor} & \rightarrow \text{cor} & \text{mel} & \rightarrow \text{mel} \\
\text{nova} & \rightarrow \text{nova} & \text{media} & \rightarrow \text{mesa} \\
\text{but} & \rightarrow \text{niew} & \text{mediu} & \rightarrow \text{miez}
\end{align*}
\]

Similar situations in Italian dialects (nuovi, nuovi but nove, nova) led to the philological hypothesis that diphthongization
in the Romance languages was originally caused by metaphor.
Rohlfs distinguished two different phonological changes induced
by metaphor: raising and diphthongization followed by
differentiation:

Es erleidet der Öffnungsgrad der unter Starkton
stehenden Silbe entweder eine Schliessung um eine
Vokalstufe (O > o, o > u, E > e, e > i) oder es wird im
Falle der Diphthongierung der betonte Vokal in zwei
Teile zerlegt, wobei in der ersten Teil der
Harmonisierungsprozess stärker zum Ausdruck kommt als
in dem zweiten Teil: O > oo, E > ie. Artikulatorisch
gesehen, beruht der Umlaut (wenn er durch -i oder -u
ausgelöst ist) auf einer Hebung der Zunge gegen das
Velum bzw. gegen den Vordergaumen.24

24 Rohlfs, 1949, p. 55
Although metaphor seems to account for the data on the surface, it has to be rejected for the following reason:

Metaphony has been referred to as a type of assimilation ("assimilation a distance", Spore, p. 294) or as vowel harmony ("Fernharmonisierung", Lausberg, p. 168), which influences the previous vowel. Assimilatory fronting is apparent in English words such as feet (< fōti < foti) and mice (< músi < musi). But a priori there is neither a phonetic, nor phonological reason why the stressed vowel should diphthongize because of a following high vowel. In fact the only environment blocking diphthongization in Spanish is a following glide which raises the stressed vowel; in Sursilvan a similar situation obtains.

<table>
<thead>
<tr>
<th>Spanish:</th>
<th>cEntu</th>
<th>vEnyo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>venyo</td>
<td>raising</td>
</tr>
<tr>
<td>cientu</td>
<td>fails</td>
<td>diphthongization</td>
</tr>
<tr>
<td>ciento</td>
<td>vēngc</td>
<td>MR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sursilvan:</th>
<th>n0v0u</th>
<th>fōlyu</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>fōlyu</td>
<td>fronting</td>
</tr>
<tr>
<td>n0v0v0u</td>
<td>fails</td>
<td>diphthongization</td>
</tr>
<tr>
<td>niev</td>
<td>fegl</td>
<td>MR</td>
</tr>
</tbody>
</table>

73
Having rejected metaphor as a plausible cause for diphthongization, we proceed by asking the following questions:

1. If metaphor, which raises or fronts the vowel, does not induce diphthongization, what else does?

2. If diphthongization is in some way related to the final vowel, why does neither the strongest vowel a, nor no final vowel induce diphthongization: nova / cor -> iem,
   but nova -> niev ?

In 2.1 it has been shown that diphthongization has to be interpreted as a strengthening process. In French this strengthening was counteracted by the strongest vowel a:

\[
\begin{align*}
tenet & \rightarrow tient \\
\text{but} & \quad levat \rightarrow lève
\end{align*}
\]

This otherwise inexplicable phenomenon has been explained with reference to the principle of polarization, the fluxion of phonological strength between two elements:

\[
\begin{align*}
tenet & \quad levat \\
\text{le-va} + & \quad \text{polarization}
\text{tienet} & \quad \text{fails} \quad \text{diphthongization} \\
\text{tient} & \quad lève \quad \text{MR}
\end{align*}
\]

---

Another example for polarization is evident in the preferential syncope in Sursilvan proparoxytones ending in strong a:

\[
\begin{array}{ccc}
\text{asinu} & \text{asina} & \text{polarization} \\
\text{asina} & \text{asi-} & \\
\text{asin} & \text{a} & \text{syncope} \\
\text{asen} & \text{asna} & \text{apocope of } V < a \\
\end{array}
\]

The fluxion of phonological strength (polarization), from the radical vowel (on the left) to the final vowel (on the right), prevents diphthongization in French. In Sursilvan however, the fluxion of phonological strength has taken place in the opposite direction: 2

\[
\begin{array}{ccc}
\text{nOvu} & \text{nCva} & \text{cor} \\
\text{nOvu} & \text{c} & \text{polarization} \\
\text{nOvu} & \text{fails} & \text{fails} \\
\text{niev} & \text{nova} & \text{cor} \\
\end{array}
\]

---

26 If non-diphthongization in Sursilvan depended on the presence of a strong final vowel, monosyllabic words should have diphthongized, but cor -> idem.
In Sursilvan, the difference between the phonological strength of the final and the radical (stressed) vowel results in a fluxion of phonological strength which strengthens the stressed vowel and causes it to diphthongize. On the basis of this claim it has been shown that final a is sufficiently strong to prevent diphthongization whereas final u is sufficiently weak to induce it.

At this point, the influence of other final vowels on the stressed, radical vowel needs to be investigated.

<table>
<thead>
<tr>
<th>Radical Vowel</th>
<th>E</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Vowel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i  #</td>
<td>heri -&gt; ier</td>
<td>no example</td>
</tr>
<tr>
<td>e  #</td>
<td>leve -&gt; lev</td>
<td>bcve -&gt; bov</td>
</tr>
<tr>
<td>o  #</td>
<td>no example</td>
<td>octo -&gt; otg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Final Vowel followed by s</th>
</tr>
</thead>
</table>

| us  #²⁷ | medius -> mezs | novus -> novs |
| os  #   | medios -> mezs | novos -> novs |
| es  #   | leves -> levs | boves -> bovs |
| as  #   | medias -> mesas | novas -> novas |

²⁷ In Sursilvan, the original Latin nominative form is still used for predicative adjectives:
this is a good man = quei ei in bien um. (bonum, acc.)
this man is good = quei um ei huns. (bonus, nom.)
Diphthongization seems to be induced in words ending in final i (ier) or u (niev) but not in words ending in e, o, a, es, os, as and us (novs).

Given the two different reflexes novu > niev, but novus > novs, the question arises, how the final u (from Latin -um) could differ from the u in -us. In order to answer this question, other phonological processes need to be considered:

In the Romance vowel shift, all short vowels except a, were lowered one position:

\[
\begin{align*}
 i & \rightarrow e, e & \rightarrow E \\
 u & \rightarrow o, o & \rightarrow O
\end{align*}
\]

But long vowels did not change their quality:

\[
\begin{align*}
 i: & \rightarrow i, e: & \rightarrow e \\
 u: & \rightarrow u, o: & \rightarrow o, a: & \rightarrow a
\end{align*}
\]

As a result of the Romance vowel shift, short u in -um and in -us and long o in -os should all have changed to o: bonum > bonum, bonus > bonus, porcum > porco and porcos > porcos.
In Sursilvan, however, as in all other Romance languages, final (accusative) \( \text{i} \) was lost (novum > niev\(_{-}\), but novus > novs\(_{-}\)). The elision of final \( \text{i} \) must have changed the preceding original \( \text{v} \), for \( \text{c} \) in porcu assibilated to [tS], whereas the \( \text{c} \) in porcos did not:

\[
\text{porc:s} \rightarrow \text{pors} (\ < \text{porcs}), \text{ but } \text{porcu:} \rightarrow \text{piertg} [\text{piertS}].
\]

Assibilation fails in Sursilvan both before \( \text{g} \) (cornos > corns) and before \( \text{v} \) (currere > cuorrer), but it applies before front vowels (cura > [tS\(_{\text{t}}\text{r}\text{a}])\), including \( \text{i} \) from Latin \( \text{u} \) (cura > tgira).

The elision of final \( \text{i} \) seems to have lengthened the preceding vowel compensatorily, allowing for the Sursilvan change \( \text{u} \rightarrow \text{i} \), which resulted in assibilation in *porci, but not in porcos. The development of final -\text{um} and final -\text{us} must therefore have had the following form:

\[
\begin{array}{ll}
\text{novum} & \text{novus} \\
\text{novu:} & \text{um} \rightarrow \text{u:} \\
\text{novu} & \text{novos} \text{ vowelshift} \\
\text{novi} & \text{ü} \rightarrow \ddot{\text{u}} \rightarrow \text{i}
\end{array}
\]

Further evidence for the different development of Latin -\text{um} and Latin -\text{us} is mentioned by Luedtke who observed the preferential lowering of \( \text{u} \) before \( \text{g} \), but not before \( \text{u} \) in Old Spanish.
Having established the qualitative difference between u (in -um) and u (in -us), the process of polarization is calculated as the absolute difference between the phonological strength of the radical and the phonological strength of the final vowel with reference to the eta parameter:

```
<table>
<thead>
<tr>
<th></th>
<th>u</th>
<th>o</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>e</td>
<td>2</td>
<td>a</td>
</tr>
</tbody>
</table>
```

Latin: Romance: Sursilvan:

```
<table>
<thead>
<tr>
<th></th>
<th>novum</th>
<th>nova</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>nCvi</td>
<td>nCva</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>novus</th>
<th>nCVo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>nOVos</td>
<td>nOv</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>novos</th>
<th>nova</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>nOVos</td>
<td>nOv</td>
</tr>
</tbody>
</table>
```

---

Luedtke, p. 235
Polarization, which strengthens the open mid vowel vowel, and causes it to diphthongize, is induced if the difference between the radical and the final vowel is sufficiently great:

Polarization: \((V') \times (V\#) \rightarrow (V') + C \times (V\#)\)

Condition: \(|V'\) - \(|V\#) \geq 2\)

Thus:

<table>
<thead>
<tr>
<th>nCvi</th>
<th>nOwe</th>
<th>nOva</th>
<th>polarization</th>
</tr>
</thead>
<tbody>
<tr>
<td>nO+vi-</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>nuovi</td>
<td>&quot;</td>
<td>&quot;</td>
<td>diphthongization</td>
</tr>
<tr>
<td>niev</td>
<td>nov</td>
<td>nova</td>
<td>MR (orthography)</td>
</tr>
</tbody>
</table>
Summary

In contrast to previous analyses made by philologists, who explained diphthongization now as a result of vowel lengthening in open syllables, now as a result of the assimilatory (raising) influence of a high vowel in final position, the solution proposed within the framework of Theoretical Phonology rests on notions such as the concept of phonological strength, which abstract the behavior of the linguistic elements from the phonetic surface.

The puzzling variety of language specific conditions on the process of diphthongization, which invariably appear as constellations of the type,

\[ V \rightarrow \text{idem} \]  
\[ V^+ \rightarrow \text{D} \]

can be formulated as a universal condition acting on a universal phonological process:

Universal Process: \[ V \rightarrow \text{D} \]

Universal Condition: \[ |V| > m \]
Spore's mention of the Raetic idioms as 'yet to be explained' reflects not only a lack of interest in less standardized and more marginal languages, but the inability to approach a linguistic phenomenon such as the Romance diphthongization without preconceived notions derived from superficial analyses of language specific manifestations.

Based on phonetic, orthographic and theoretical evidence, the development of Sursilvan open mid vowels before oral consonants has been analyzed as two different, unrelated processes:

1. The anomalous diphthongization of ɛ in closed syllables has been found to be the result of a combination of the stressed vowel and a metathesized vocalized glide generated between two consonants (anaptyxis).

The analysis of the phonetic change Ž to ia entails three different phonological processes. All of these processes apply preferentially.
a. **Anaptyxis**, which has been related to other glide insertions in strong clusters, such as Spanish *nokxe > *nokyte > noche. Anaptyxis appears to be blocked in *muta cum liquida clusters*: thus Sursilvan *dupla but cuolpa*.

Anaptyxis: \[ CC \rightarrow C\tilde{a}C \]
Condition: \[ CC = CxC \]

b. **Metathesis**, which has been found to depend on the phonological strength of the preceding vowel as measured by the combined *eta/omega* parameter:

Metathesis: \[ VC\tilde{a}C \rightarrow V\tilde{a}CC \]
Condition: \[ |V| > m \]
Parochial Condition: \[ m = 4 \] for Sursilvan: a/o/E

c. **Absorption**, which makes the added schwa disappear on the surface, again applies preferentially, namely if the preceding vowel is stronger than 4 on the combined *eta/omega* parameter.

Absorption: \[ V\tilde{a} \rightarrow V \]
Condition: \[ |V| > m \]
Parochial Condition: \[ m = 5 \] for Sursilvan: a/o
2. Diphthongization proper which, contrary to the philological assumption, is not a result of vowel raising due to regressive assimilation or metaphony, (metaphony in fact blocks diphthongization in Spanish and Sursilvan), but, as shown in 2.1, a manifestation of phonological strength induced by the preferential weakening of weak vowels in weak position 29, resulting in the polarization of phonological strength between the radical and the final vowel. The condition on polarization has been expressed numerically as a sufficiently great difference between the two vowels under consideration.

Polarization: \( V \ \text{CV} \ \text{V} \rightarrow V^{+} \ \text{CX} \ \text{V}^{-} \)

Universal Condition: \( |V_1| - |V_2| \geq d \)

Parochial Condition: \( d = 2 \) for Sursilvan

\[ ^{29} \text{Cf. the analysis of apocope in 1.2} \]
IV. Conclusions

The first linguistic description of Sursilvan can be found in Ascoli's "Saggi Ladini" published in 1873. Since then, there have been many more philological descriptions of the Sursilvan language and the phonetic changes which distinguish it from other Romance languages. None of these descriptions, however, evaluated the phonological rules of Sursilvan with reference to universal linguistic processes.

This thesis presents the first principled account of the two most distinct phonological developments of stressed vowels in Sursilvan:

1. The development of prenasal vowels
2. The development of open mid vowels

Although philological descriptions are basically incommensurable with analyses made in a linguistic theory, the philological treatment of Sursilvan vowels is briefly compared to the theoretical analyses and solutions which have been presented in this thesis.
1. Prenasal Changes:

Since philologists are aware of phonetic changes rather than linguistic processes, their description of prenasal reflexes of stressed vowels in Sursilvan remains a list of arbitrary and unrelated phonetic facts interspersed with phonetic pseudoexplanations such as the claim that the velar glide of the prenasal diphthong /aw/ is expected in the environment of a velar nasal:

plangka → plaugka but planta → plenta

This claim, typical of philological surfacism, is contradicted by the appearance of /aw/ before dental clusters in Engadinian:

plangka → plaugka and planta → plaunta

In the theoretical analysis presented in chapter two, both prenasal reflexes of stressed a (au and o) have been related to each other by distinguishing two universal processes, diphthongization and contraction. The business of phonologists is not only to relate superficially disparate phonetic manifestations, but to formulate the conditions under which linguistic processes operate.
Thus, diphthongization and contraction have both been found to be phonological strengthening processes, although, phonetically, they are contrary processes:

Diphthongization of \(a\) to \(au\) has been shown to apply to strengthened (nasalized) vowels in preference to oral vowels:

\[
\begin{align*}
a &\rightarrow au \\
a &\rightarrow idem
\end{align*}
\]

whereas contrastive configurations revealing the preferential application of contraction, reconfirmed the strength relations predicted by the alpha parameter for the Romance languages:

<table>
<thead>
<tr>
<th>Velar Nasals:</th>
<th>(au) \rightarrow idem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental Nasals:</td>
<td>(au) \rightarrow idem</td>
</tr>
<tr>
<td>Labial Nasals:</td>
<td>(au) \rightarrow om</td>
</tr>
</tbody>
</table>

The different vocalic reflexes of all Sursilvan vowels before labial and dental nasals could thus be explained coherently as a consequence of a difference in phonological strength between the two nasal consonants (\(om\) vs. \(aw\), \(em\) vs. \(ey\), \(um\) vs. \(un\), \(en\) vs. \(iym\)).
2. Pseudodiphthongization of \( E \) to \( ia \):

One of the few philological comments made about the change of \( E \) to \( ia \) is Gartner's observation that \( ia \) appears "vor starken Konsonantengruppen". Although the observation is correct, Gartner fails to give an explanation.

The theoretical solution, on the other hand is based on an analysis, which reveals that

1. the reflex \( ia \) for \( E \) and the reflex \( uo \) for \( U \) can both not be the result of a proper diphthongization (as defined in 3.2).

2. With the exception of muta cum liquida, \( ia \) and \( uo \) occur exclusively before consonant clusters. Therefore it has been hypothesized that they are the result of the addition of a metathesized anaptyctic schwa.

The theoretical analysis led to an interesting theoretical problem: why is the metathesized anaptyctic schwa only evident on the phonetic surface when the preceding vowel has the strength value of 4 (eta/omega parameter) \((E \rightarrow ia, U \rightarrow uo)\) \(^2\)?

This curious requirement, has been found to be the result of:

---

1 p. 623, in Groebler, Gustav (ed.) *Grundriss der Romanischen Philologie*, vol. 1, Strassburg, 1904-1906

2 This problem naturally never occurred to philologists which, lacking a theory, had to avoid questions in general.
1. A condition on metathesis:

Metathesis of the anaptyctic schwa occurs if the vowel which attracts the metathesizing element is sufficiently strong:

\[
\begin{align*}
\text{ferma} & \rightarrow \text{idem} \quad |V| = 3 \\
\text{pèrdere} & \rightarrow \text{piarder} \quad |V| = 4
\end{align*}
\]

2. The process of absorption:

which causes the added schwa to disappear if adjacent to the strongest vowels a and o.

\[
\begin{align*}
\text{scørte} & \rightarrow \text{sort} \quad |V| = 5 \\
\text{schørpe} & \rightarrow \text{siarp} \quad |V| = 4
\end{align*}
\]

3. Metaphony and the Romance Diphthongization:

Philologists occasionally went beyond mere description and formulated hypotheses such as the open syllable hypothesis and the metaphony hypothesis. Facing contradictory data, however, they either reshaped the data or ignored important evidence. The failure of the open syllable hypothesis to account for diphthongization in Spanish was explained away by claiming that Spanish, although no other Romance language, possessed a syllable structure which allowed for initial ñ clusters:

Italian: ñor % to but Spanish: mue ñ rto
The Sursilvan diphthongization of open mid vowels before final ū and ů, was explained with reference to the raising influence of final high vowels; the same raising influence, which in Spanish and Sursilvan in fact blocks diphthongization.

In the theoretical analysis on the other hand it was possible to isolate a universal condition on diphthongization which accounts for the constellations found in all the Romance languages:

\[ V \rightarrow D \]
\[ |V| > m \]

On the basis of this condition, the Sursilvan diphthongization of open mid vowels could be explained in terms of phonological strength.

By relating the blockage of diphthongization in words ending in strong vowels in French, to the induction of diphthongization in words ending in weak vowels in Sursilvan, the Sursilvan diphthongization of open mid vowels has been formulated as the result of a polarization by calculating the difference of the absolute strength of the stressed and the final vowel:

\[ V \rightarrow D \]
\[ \text{if } |V_1| - |V_2| > a \]
Despite the countless phonetic variations and phonological rules of natural languages, there exists a limited set of universal phonological processes such as diphthongization, contraction, nasalization, denasalization, insertion, elision, etc. In Theoretical Phonology, these processes are interpreted as manifestations of phonological strengthening or weakening processes. The two possible directions for a given linguistic element to change are governed and predicted by the Inertial Development Principle: Strong elements strengthen first, weak elements weaken first.

Since this thesis is concerned with the preferential development of Sursilvan vowels in stressed position, i.e. the strongest position in the word, all the analyzed processes have proved to be strengthening processes. But although stressed position may be a sufficient condition for a strengthening process, as is evident in the general diphthongization of open mid vowels in Spanish, all the strengthening processes that have been investigated in this thesis applied preferentially, that is, they are conditioned by specific phonological environments. The diphthongization of low vowels before nasals \( \text{lan}a > \text{law}n_{a} \), \( \text{b}0\text{nu}n_{a} > \text{b}0\text{n}_{a} \), \( \text{b}u\text{n}_{a} > \text{be}\text{y}_{n} \), thus contrasts with the nondiphthongization of low vowels in nonnasal environments \( \text{ala} > \text{ala}, \text{n}0\text{va} > \text{n}0\text{va} \), \( l\text{e}\text{y} > l\text{e}\text{y} \), whereas the diphthongization of open mid vowels in words where polarization additionally strengthened the stressed vowel \( n0\text{v}u- > \text{n}i\text{e}v \) is contrasted by words where polarization failed \( \text{n}0\text{va} > \text{i}0\text{d}e\text{m} \).
The open mid vowel ə, for instance, was therefore subject to two different diphthongizations:

\[
\begin{array}{cccc}
\text{novu} & \text{bonu} & \text{nova} & \text{bona} \\
\text{nievu} & \text{bienu} & " & " \\
& " & " & \text{bo}+\text{nu}a \\
\text{niev} & \text{bien} & \text{nova} & \text{buna} \\
\end{array}
\]

\text{Diphthongization (1)}
\text{Diphthongization (2)}

Despite the fact that the two preferentially applying diphthongizations seem unrelated on the phonetic surface (different reflexes, different time of application), the interpretation of phonological processes as manifestations of strengthening or weakening processes makes it possible to relate the two phonological changes on a more abstract level to one another:

Both diphthongizations are the result of phonological strengthening processes arising from preferentially induced strength imbalances among the phonological elements.
The concept of the preferentiality of linguistic change, as illustrated in this thesis, therefore allows for an understanding and a systemic explanation of linguistic change by revealing a complex, but less complicated, and abstract linguistic reality.
<table>
<thead>
<tr>
<th>Romance</th>
<th>Sursilvan</th>
<th>Phonetic</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. au (Latin au)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>auru</td>
<td>aur</td>
<td>[awr]</td>
<td>gold</td>
</tr>
<tr>
<td>auca</td>
<td>auca</td>
<td>[awkə]</td>
<td>goose</td>
</tr>
<tr>
<td>laudat</td>
<td>lauda</td>
<td>[lawdə]</td>
<td>to praise, 3.sg.</td>
</tr>
<tr>
<td>audit</td>
<td>auda</td>
<td>[awdə]</td>
<td>to hear, 3.sg.</td>
</tr>
<tr>
<td>2. a (Latin a:, a)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) a (_ oral C _)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>aia</td>
<td>ala</td>
<td>[alə]</td>
<td>wing</td>
</tr>
<tr>
<td>albu</td>
<td>alv</td>
<td>[alf]</td>
<td>white</td>
</tr>
<tr>
<td>arat</td>
<td>ara</td>
<td>[arə]</td>
<td>to plough, 3.sg.</td>
</tr>
<tr>
<td>faceye</td>
<td>far</td>
<td>[fa]</td>
<td>to do</td>
</tr>
<tr>
<td>carne</td>
<td>carn</td>
<td>[karm]</td>
<td>meat</td>
</tr>
<tr>
<td>lacte</td>
<td>latg</td>
<td>[latʃ]</td>
<td>milk</td>
</tr>
<tr>
<td>sale</td>
<td>sal</td>
<td>[sal]</td>
<td>salt</td>
</tr>
</tbody>
</table>

The data for Sursilvan is from Vieli/Decurtins (1962), the data for all other Romance languages is from Koerting (1922) (Lateinisch-Romanisches Woerterbuch).

Symbolism: O, E, U = open vowels; o, e, u = closed vowels S, Z, ny, ly = palatal s, z, n, l; ø = schwa, ng = velar n
b) a ( _ nasal C )

(i) a -> au ( _ ng )

| anque   | aunk  | [awngk] | as well |
| angelu  | aunghel | [awnggøl] | angel |
| planca  | plaunka | [plawngkø] | slope |
| banca   | baunca  | [baawngkø] | bank |
| mankat  | maunka  | [maawngkø] | to lack, 3.sg. |
| sangue  | saung   | [sawng]   | blood |

(ii) a -> aû ( _ n )

| planu   | plaun   | [plawn]   | flat |
| manu    | maun    | [sawn]    | hand |
| sanu    | saun    | [sawn]    | healthy, m.sg. |
| granu   | graun   | [grawn]   | corn |
| pane    | paun    | [pawn]    | bread |
| cane    | tgaun   | [tSawn]   | dog |
| laña    | launa   | [lawnø]   | wool |

(iii) a -> O ( _ n C )

<p>| anu     | onn     | [Øn]     | year |
| damnu   | dcnn    | [dØn]    | damage |
| grande  | grond   | [gØn]    | big |</p>
<table>
<thead>
<tr>
<th>amita</th>
<th>onda</th>
<th>[Onda]</th>
<th>aunt</th>
</tr>
</thead>
<tbody>
<tr>
<td>infante</td>
<td>affon</td>
<td>[əfɔn]</td>
<td>child</td>
</tr>
<tr>
<td>tantu</td>
<td>tcn</td>
<td>[tɔn]</td>
<td>a lot, m.</td>
</tr>
<tr>
<td>tanta</td>
<td>tonta</td>
<td>[tontə]</td>
<td>a lot, f.</td>
</tr>
<tr>
<td>cantat</td>
<td>ccnta</td>
<td>[kɔntə]</td>
<td>to sing, 3.sg.</td>
</tr>
<tr>
<td>planta</td>
<td>plonta</td>
<td>[plɔntə]</td>
<td>plant</td>
</tr>
<tr>
<td>romanicu</td>
<td>romontsch</td>
<td>[romontʃ]</td>
<td>romansh, m.sg.</td>
</tr>
<tr>
<td>cania</td>
<td>cgonia</td>
<td>[kɔnyə]</td>
<td>bitch</td>
</tr>
<tr>
<td>montaneu</td>
<td>muntogna</td>
<td>[muntɔŋa]</td>
<td>mountain</td>
</tr>
<tr>
<td>calcaneu</td>
<td>calcogn</td>
<td>[kɔlkɔny]</td>
<td>heel</td>
</tr>
<tr>
<td>sanctu</td>
<td>scgn</td>
<td>[sɔny]</td>
<td>holy, m.sg.</td>
</tr>
<tr>
<td>manica</td>
<td>mngia</td>
<td>[mɔnydʒə]</td>
<td>handle</td>
</tr>
</tbody>
</table>

(iv) a -> O ( _ m )

<table>
<thead>
<tr>
<th>fame</th>
<th>fom</th>
<th>[fom]</th>
<th>hunger</th>
</tr>
</thead>
<tbody>
<tr>
<td>ramu</td>
<td>rom</td>
<td>[ɾɔm]</td>
<td>branch</td>
</tr>
<tr>
<td>clamat</td>
<td>cloma</td>
<td>[klɔmə]</td>
<td>to shout, 3.sg.</td>
</tr>
<tr>
<td>lama</td>
<td>loma</td>
<td>[lɔmə]</td>
<td>soft, f.sg.</td>
</tr>
<tr>
<td>aeramen</td>
<td>irom</td>
<td>[iɾɔm]</td>
<td>copper</td>
</tr>
<tr>
<td>flassa</td>
<td>floma</td>
<td>[flɔmə]</td>
<td>flame</td>
</tr>
<tr>
<td>camera</td>
<td>cmbra</td>
<td>[kɔmbrə]</td>
<td>room</td>
</tr>
<tr>
<td>camba</td>
<td>comba</td>
<td>[kɔmbə]</td>
<td>leg</td>
</tr>
</tbody>
</table>
3. 0 , 0

a) 0 (Latin o)

(i) 0 -> idem ( _ CX {e,o,a,us,es,os,as} )

<table>
<thead>
<tr>
<th>Latin</th>
<th>English</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>cor</td>
<td>heart</td>
<td>[kor]</td>
<td></td>
</tr>
<tr>
<td>n0ve</td>
<td>nine</td>
<td>[n0f]</td>
<td></td>
</tr>
<tr>
<td>sorte</td>
<td>fate</td>
<td>[sort]</td>
<td></td>
</tr>
<tr>
<td>sortes</td>
<td>fate,pl.</td>
<td>[sorts]</td>
<td></td>
</tr>
<tr>
<td>pollice</td>
<td>thumb</td>
<td>[polis]</td>
<td></td>
</tr>
<tr>
<td>Octo</td>
<td>eight</td>
<td>[otg]</td>
<td></td>
</tr>
<tr>
<td>novus</td>
<td>new, m. sg. nom.</td>
<td>[nofs]</td>
<td></td>
</tr>
<tr>
<td>grossus</td>
<td>big, m. sg. nom.</td>
<td>[gros]</td>
<td></td>
</tr>
<tr>
<td>mortus</td>
<td>dead, m. sg. nom.</td>
<td>[mort]</td>
<td></td>
</tr>
<tr>
<td>novos</td>
<td>new, m. pl.</td>
<td>[nofs]</td>
<td></td>
</tr>
<tr>
<td>grossos</td>
<td>big, m. pl.</td>
<td>[gros]</td>
<td></td>
</tr>
<tr>
<td>mortos</td>
<td>dead, m. pl.</td>
<td>[mort]</td>
<td></td>
</tr>
<tr>
<td>novas</td>
<td>new, fem. pl.</td>
<td>[novas]</td>
<td></td>
</tr>
<tr>
<td>grossas</td>
<td>big, fem. pl.</td>
<td>[grossas]</td>
<td></td>
</tr>
<tr>
<td>morta</td>
<td>dead, fem. sg.</td>
<td>[morta]</td>
<td></td>
</tr>
<tr>
<td>porta</td>
<td>door</td>
<td>[porta]</td>
<td></td>
</tr>
<tr>
<td>rota</td>
<td>wheel</td>
<td>[roda]</td>
<td></td>
</tr>
</tbody>
</table>
(ii) 0 -> iØ ( _ CX u $ )

<table>
<thead>
<tr>
<th>Ovu</th>
<th>iev</th>
<th>[iøf]</th>
<th>egg</th>
</tr>
</thead>
<tbody>
<tr>
<td>nOvu</td>
<td>niev</td>
<td>[niøf]</td>
<td>new, m.sg.</td>
</tr>
<tr>
<td>grossu</td>
<td>gries</td>
<td>[griøs]</td>
<td>big, m.sg.</td>
</tr>
<tr>
<td>mOrtu</td>
<td>miert</td>
<td>[miørt]</td>
<td>dead, m.sg.</td>
</tr>
<tr>
<td>bOnu</td>
<td>bien</td>
<td>[biøn]</td>
<td>good, m.sg.</td>
</tr>
<tr>
<td>sOmnu</td>
<td>sien</td>
<td>[siøn]</td>
<td>sleep</td>
</tr>
<tr>
<td>sOøniu</td>
<td>sieni</td>
<td>[siøni]</td>
<td>dream</td>
</tr>
<tr>
<td>pOpulu</td>
<td>pievel</td>
<td>[piøvel]</td>
<td>people</td>
</tr>
</tbody>
</table>

b) o (Latin o:, u)

(i) 0 -> u: ( _ % )

<table>
<thead>
<tr>
<th>cruce</th>
<th>crusch</th>
<th>[kruς]</th>
<th>cross</th>
</tr>
</thead>
<tbody>
<tr>
<td>voce</td>
<td>vusch</td>
<td>[vuς]</td>
<td>voice</td>
</tr>
<tr>
<td>flore</td>
<td>flur</td>
<td>[flur]</td>
<td>flower</td>
</tr>
<tr>
<td>colore</td>
<td>cclur</td>
<td>[kulur]</td>
<td>color</td>
</tr>
<tr>
<td>nodu</td>
<td>nuv</td>
<td>[nuf]</td>
<td>knot</td>
</tr>
<tr>
<td>coda</td>
<td>cua</td>
<td>[kua]</td>
<td>tail</td>
</tr>
<tr>
<td>lupu</td>
<td>luf</td>
<td>[luf]</td>
<td>wolf</td>
</tr>
<tr>
<td>pastore</td>
<td>pastur</td>
<td>[pæStur]</td>
<td>shepherd</td>
</tr>
<tr>
<td>excutere</td>
<td>scuder</td>
<td>[Skudær]</td>
<td>to thrash</td>
</tr>
</tbody>
</table>
(ii) $c \rightarrow U \; (\_ \% \; CC)$

<table>
<thead>
<tr>
<th>bucca</th>
<th>bucca</th>
<th>[buka]</th>
<th>mouth</th>
</tr>
</thead>
<tbody>
<tr>
<td>cuppa</td>
<td>cuppa</td>
<td>[cupa]</td>
<td>cup</td>
</tr>
<tr>
<td>dupla</td>
<td>dubla</td>
<td>[duba]</td>
<td>double, f.sg.</td>
</tr>
<tr>
<td>crusta</td>
<td>crista</td>
<td>[krista]</td>
<td>crust</td>
</tr>
<tr>
<td>ruptu</td>
<td>rut</td>
<td>[rut]</td>
<td>broken, m.sg.</td>
</tr>
<tr>
<td>tottu</td>
<td>tut</td>
<td>[tut]</td>
<td>whole, m.sg.</td>
</tr>
</tbody>
</table>

(iii) $o \rightarrow U\emptyset \; (\_\_ CC)$

<table>
<thead>
<tr>
<th>turre</th>
<th>tuor</th>
<th>[tuor]</th>
<th>tower</th>
</tr>
</thead>
<tbody>
<tr>
<td>currere</td>
<td>cuorere</td>
<td>[kuorere]</td>
<td>to run</td>
</tr>
<tr>
<td>curtu</td>
<td>cuort</td>
<td>[kuort]</td>
<td>short, m.sg.</td>
</tr>
<tr>
<td>cuute</td>
<td>cuort</td>
<td>[kuort]</td>
<td>court</td>
</tr>
<tr>
<td>surdu</td>
<td>sucrd</td>
<td>[suercd]</td>
<td>deaf, m.sg.</td>
</tr>
<tr>
<td>turnat</td>
<td>tuorn</td>
<td>[tuorn]</td>
<td>to turn, 3.sg.</td>
</tr>
<tr>
<td>urasu</td>
<td>uors</td>
<td>[uors]</td>
<td>bear</td>
</tr>
<tr>
<td>culpa</td>
<td>cuolpa</td>
<td>[kuolpa]</td>
<td>guilt</td>
</tr>
</tbody>
</table>
c) 0, o ( _ nasal C )

(i) [0,0] -> u: ( _ n )

<table>
<thead>
<tr>
<th>bōna</th>
<th>buna</th>
<th>[bunə]</th>
<th>good, f.sg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>bōnos</td>
<td>buns</td>
<td>[buns]</td>
<td>good, m.pl.</td>
</tr>
<tr>
<td>ratione</td>
<td>raschun</td>
<td>[rəSun]</td>
<td>reason</td>
</tr>
<tr>
<td>sabulone</td>
<td>sablun</td>
<td>[səblun]</td>
<td>sand</td>
</tr>
<tr>
<td>sapone</td>
<td>savun</td>
<td>[səvun]</td>
<td>soap</td>
</tr>
</tbody>
</table>

(ii) [0,0] -> u ( _ m )

<table>
<thead>
<tr>
<th>cōma</th>
<th>cuma</th>
<th>[kumə]</th>
<th>hair</th>
</tr>
</thead>
<tbody>
<tr>
<td>domina</td>
<td>dunna</td>
<td>[dunnə]</td>
<td>woman</td>
</tr>
<tr>
<td>hōmo</td>
<td>um</td>
<td>[ʊm]</td>
<td>man</td>
</tr>
<tr>
<td>nomen</td>
<td>num</td>
<td>[nʊm]</td>
<td>name</td>
</tr>
<tr>
<td>pomu</td>
<td>puμ</td>
<td>[pʊμ]</td>
<td>fruit</td>
</tr>
<tr>
<td>autumnu</td>
<td>atun</td>
<td>[ətʊn]</td>
<td>fall</td>
</tr>
</tbody>
</table>
3. E, e

a) E (Latin e)

(i) E -> idem ( _ C )

<table>
<thead>
<tr>
<th>Uses</th>
<th>Sound</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>mel</td>
<td>[mɛl]</td>
<td>honey</td>
</tr>
<tr>
<td>lev</td>
<td>[lɛf]</td>
<td>light</td>
</tr>
<tr>
<td>meder</td>
<td>[mɛdər]</td>
<td>to mow</td>
</tr>
<tr>
<td>veder</td>
<td>[vɛdər]</td>
<td>old, m. sg.</td>
</tr>
<tr>
<td>leger</td>
<td>[lɛdər]</td>
<td>to read</td>
</tr>
<tr>
<td>tschera</td>
<td>[tʃɛra]</td>
<td>wax</td>
</tr>
<tr>
<td>era</td>
<td>[ɛrə]</td>
<td>to be, 3. sg.</td>
</tr>
<tr>
<td>sega</td>
<td>[sɛɡə]</td>
<td>to cut, 3. sg.</td>
</tr>
<tr>
<td>leva</td>
<td>[lɛvə]</td>
<td>to raise, 3. sg.</td>
</tr>
<tr>
<td>gela</td>
<td>[dʒɛlə]</td>
<td>to freeze, 3. sg.</td>
</tr>
<tr>
<td>pedra</td>
<td>[pɛdɾa]</td>
<td>jewel</td>
</tr>
<tr>
<td>febra</td>
<td>[fɛbra]</td>
<td>fever</td>
</tr>
</tbody>
</table>
\((ii) \ E \rightarrow \text{ya} \ (\_\ C\!\!\!\!\!\!\!\!\!C\ )\)

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>irons</td>
<td>[fyars]</td>
<td></td>
</tr>
<tr>
<td>words</td>
<td>[vyarfs]</td>
<td></td>
</tr>
<tr>
<td>nerves</td>
<td>[nyarfs]</td>
<td></td>
</tr>
<tr>
<td>earth</td>
<td>[tyara]</td>
<td></td>
</tr>
<tr>
<td>beautiful, f.sg.</td>
<td>[byal@]</td>
<td></td>
</tr>
<tr>
<td>skin</td>
<td>[pyal]</td>
<td></td>
</tr>
<tr>
<td>to lose</td>
<td>[pyardar]</td>
<td></td>
</tr>
<tr>
<td>grass</td>
<td>[yarv@]</td>
<td></td>
</tr>
<tr>
<td>feast</td>
<td>[fyast@]</td>
<td></td>
</tr>
<tr>
<td>seven</td>
<td>[syat]</td>
<td></td>
</tr>
</tbody>
</table>

\((iii) \ E \rightarrow \text{i@} \ (\_\ CX \{i,u\} \ #\ )\)

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>yesterday</td>
<td>[i@r]</td>
<td></td>
</tr>
<tr>
<td>sky</td>
<td>[tSi@l]</td>
<td></td>
</tr>
<tr>
<td>hundred</td>
<td>[tSi@n]</td>
<td></td>
</tr>
<tr>
<td>brother in law</td>
<td>[Si@ndar]</td>
<td></td>
</tr>
<tr>
<td>iron</td>
<td>[fi@r]</td>
<td></td>
</tr>
<tr>
<td>half, m.sg.</td>
<td>[ni@ts]</td>
<td></td>
</tr>
<tr>
<td>word</td>
<td>[vi@rf]</td>
<td></td>
</tr>
<tr>
<td>nerve</td>
<td>[ni@rf]</td>
<td></td>
</tr>
<tr>
<td>hell</td>
<td>[ufi@rn]</td>
<td></td>
</tr>
</tbody>
</table>
### (i) e -> ey ( _ % )

<table>
<thead>
<tr>
<th>English</th>
<th>Latin</th>
<th>Sound</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>site</td>
<td>seit</td>
<td>[sɛyt]</td>
<td>thirst</td>
</tr>
<tr>
<td>seta</td>
<td>seida</td>
<td>[sɛydə]</td>
<td>silk</td>
</tr>
<tr>
<td>nive</td>
<td>neiv</td>
<td>[ɲɛyf]</td>
<td>snow</td>
</tr>
<tr>
<td>fide</td>
<td>fei</td>
<td>[fey]</td>
<td>trust</td>
</tr>
<tr>
<td>pilu</td>
<td>peil</td>
<td>[pɛyl]</td>
<td>hair</td>
</tr>
<tr>
<td>cena</td>
<td>tscheina</td>
<td>[tʃeɪnə]</td>
<td>meal</td>
</tr>
<tr>
<td>candela</td>
<td>candeila</td>
<td>[kændələ]</td>
<td>candle</td>
</tr>
</tbody>
</table>

### (ii) e -> E ( _ CC )

<table>
<thead>
<tr>
<th>English</th>
<th>Latin</th>
<th>Sound</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>fiumu</td>
<td>ferm</td>
<td>[fɛrm]</td>
<td>firm, m.sg.</td>
</tr>
<tr>
<td>friscu</td>
<td>frestg</td>
<td>[frɛstɡ]</td>
<td>fresh, m.sg.</td>
</tr>
<tr>
<td>pisce</td>
<td>pesch</td>
<td>[pɛʃ]</td>
<td>fish</td>
</tr>
<tr>
<td>viride</td>
<td>verd</td>
<td>[vɛrd]</td>
<td>green, m.sg.</td>
</tr>
<tr>
<td>siccu</td>
<td>sec</td>
<td>[sɛk]</td>
<td>dry, m.sg.</td>
</tr>
<tr>
<td>mittere</td>
<td>metter</td>
<td>[mɛtɛɾ]</td>
<td>to put</td>
</tr>
<tr>
<td>crista</td>
<td>cresta</td>
<td>[kɾɛstɑ]</td>
<td>comb</td>
</tr>
</tbody>
</table>
(i) \{E, e\} \rightarrow \text{ey} (\_ n )

- Bëñe  
- Pënu  
- Fënu  
- Verammente

\begin{align*}
\text{bein} & \quad \text{[beyn]} & \quad \text{well} \\
\text{plein} & \quad \text{[pleyn]} & \quad \text{full, m. sg.} \\
\text{fein} & \quad \text{[feyn]} & \quad \text{hay} \\
\text{veràmein} & \quad \text{[veràmeyn]} & \quad \text{really}
\end{align*}

(ii) \{E, e\} \rightarrow \text{E} (\_ m )

- Femina 
- Semita 
- Semen 
- Mëmbra

\begin{align*}
\text{fënsna} & \quad \text{[fënsnå]} & \quad \text{woman} \\
\text{senda} & \quad \text{[sëndå]} & \quad \text{path} \\
\text{sem} & \quad \text{[sëm]} & \quad \text{semen} \\
\text{mëmbra} & \quad \text{[mëmbrå]} & \quad \text{members}
\end{align*}
5. i, u (Latin i:, u:)

   a) i, u ( _ oral C )

   (i) {i, u} -> i: ( _ % )

   amicu  amitg  [amitS]  friend
   acutu  git    [tSit]    sharp, m. sg.
   filu   fil    [fil]     string
   duru   dir    [dir]     hard, m. sg.
   muru   mir    [mir]     wall
   scribere  scriver  [Skrivør] to write
   dicere  di     [di]     to say

   (ii) {i, u} -> e ( _ CC )

   triste  trest  [treSt]  sad
   dictu   detg   [detS]   said
   fictu   fetg   [fetS]   very
   fructu  fretg  [fretS]  fruit
b) i, u (_ nasal C )

(i) {i, u} → i: (_ n )

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>farina</td>
<td>frina</td>
<td>flower</td>
</tr>
<tr>
<td>luna</td>
<td>glina</td>
<td>moon</td>
</tr>
<tr>
<td>molinu</td>
<td>mulin</td>
<td>mill</td>
</tr>
<tr>
<td>unu</td>
<td>in</td>
<td>indef.art.m.</td>
</tr>
<tr>
<td>vinu</td>
<td>vin</td>
<td>wine</td>
</tr>
</tbody>
</table>

(ii) {i, u} → e (_ m )

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>pluma</td>
<td>plema</td>
<td>feather</td>
</tr>
<tr>
<td>pruna</td>
<td>prema</td>
<td>plums</td>
</tr>
<tr>
<td>fumu</td>
<td>fem</td>
<td>smoke</td>
</tr>
<tr>
<td>lima</td>
<td>lema</td>
<td>file</td>
</tr>
<tr>
<td>simia</td>
<td>schemia</td>
<td>monkey</td>
</tr>
<tr>
<td>inprimo</td>
<td>amprema</td>
<td>first</td>
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BIBLIOGRAPHY


Huonder, Josef. Der Vokalismus der Mundart von Disentis. Erlangen, 1901.


