Pasiego pretonic metaphor revisited*

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1. Introduction

Pasiego pretonic metaphor has been treated in the phonological literature as a phonological rule. However, this process exhibits several properties not usually expected of a rule of the phonology: it is optional and considerably variable within the Pasiego Montañés dialect area. In this paper, I argue that Pasiego pretonic metaphor is better regarded as a phonetic process. This analysis has several consequences which bear on the relationship between underspecified phonological representations and phonetic realization.

This paper proceeds as follows: in §2-4 I compare pretonic metaphor to tonic metaphor—a phonological rule—in order to demonstrate differences in patterning; in §5-7, I present an analysis of the patterning of pretonic vowels in Pasiego. §8 contains conclusions.

2. Tonic metaphor

The operation of tonic metaphor, a process that raises mid vowels to high in Pasiego, is illustrated in (1). (All examples in this paper are from Penny 1969.) Tonic metaphor is triggered by final high /-u/. The target vowels /ɛ, ɔ/ raise to [i, u] as a result of metaphor (1.a,b,c,d), while /i, a, u/ are unaffected. For example, as shown in (1.a), the stressed mid vowel [ɛ] raises to [i] when [u] follows, but remains [ɛ] when [o] follows; similarly, as shown in (1.b), [ɔ] raises to [u] when [u] follows, but remains [ɔ] when [o] follows. Finally, as shown in (1.h), metaphor can be analysed as a process which spreads the feature [high] from the final vowel (shown as extrametrical in (1.h)) to the preceding tonic vowel (shown as receiving main stress in (1.h)) (Hualde 1989, Kaze 1991, McCarthy 1984, Vago 1988).¹

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¹ See §4.5 for discussion of an alternative delinking account of tonic metaphor.
(1) **Tonic metaphony (centralization/laxing not shown):**

<table>
<thead>
<tr>
<th>Unmetaphonized</th>
<th>Metaphonized and neutral (only the mid vowels raise)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. a[fi]lits[ɛ]ros</td>
<td>a[fi]lits[ɪ]ru</td>
</tr>
<tr>
<td>b. g[ʊ]rdo</td>
<td>g[ʊ]rdu</td>
</tr>
<tr>
<td>c. a[bi]l[ɛ]rtos</td>
<td>a[bi]l[ɛ]rtu</td>
</tr>
<tr>
<td>d. k[we]l[ɛ]pos</td>
<td>k[we]l[ɛ]pu</td>
</tr>
<tr>
<td>e. lʊz m[ɪ]lysos</td>
<td>l m[ɪ]lu</td>
</tr>
<tr>
<td>g. b[ɬ][ɗ]uos</td>
<td>b[ɬ][ɗ]u</td>
</tr>
</tbody>
</table>

h. **Tonic metaphony as a spreading process:**

```
line 1
line 0
(*)
V
V
[high]
```

**Trigger:** final /-u/

**Target:** main-stress (tonic) mid /e/ and /o/

**Operation:** spread [high]

2.1. **Exceptions to tonic metaphony**

Tonic metaphony, as illustrated in (1), is nearly exceptionless. I have found 14 exceptions, which fall into two classes. The first class of exceptions consist of tonic (main-stress) diphthongs which incompletely raise to [je] and [we] (with a very close mid vowel) rather than to [ji] (with a slightly lowered high vowel) or [wi] (with a high vowel) (Penny 1969: 63; c.f. the completely raised forms in (1.c,d)).

(2) **Forms undergoing tonic metaphony, with incomplete raising:**

<table>
<thead>
<tr>
<th>Form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>[ɡe]r[ˈnu]</td>
</tr>
<tr>
<td>b</td>
<td>ð[ɬ]e][ˈlu]</td>
</tr>
<tr>
<td>c</td>
<td>ð[we]ku</td>
</tr>
<tr>
<td>d</td>
<td>ð[we]l[ˈtəu]</td>
</tr>
<tr>
<td>e</td>
<td>ðuð[ɬ]el[ˈɡu]</td>
</tr>
<tr>
<td>f</td>
<td>deʃu[ɬ]el[ˈɡu]</td>
</tr>
<tr>
<td>g</td>
<td>lamos[ɬ][ˈɡu]</td>
</tr>
</tbody>
</table>

Incompletely-raised diphthongs are realized with a very close mid vowel [e], while completely-raised diphthongs are realized with a slightly lowered high vowel [j]. While these exceptions are systematic, it is unclear what phonological importance, if any should be attached to the distinction between 'raised' and 'incompletely raised' vowels. I assume that the incompletely raised vowels are essentially equivalent to the more completely raised vowels.

The remaining examples of exceptions to tonic metaphony are shown in (3):
(3) Exceptions to tonic metaphony:

<table>
<thead>
<tr>
<th>Form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>éin</td>
</tr>
<tr>
<td>b</td>
<td>móstru</td>
</tr>
<tr>
<td>c</td>
<td>óču</td>
</tr>
<tr>
<td>d</td>
<td>ispíxu de médja lúna</td>
</tr>
<tr>
<td>e</td>
<td>mónstru</td>
</tr>
<tr>
<td>f</td>
<td>graθjósu</td>
</tr>
<tr>
<td>g</td>
<td>nóčo</td>
</tr>
</tbody>
</table>

In these forms, the tonic vowel is mid while the final vowel is high.

I suggest that the above forms are simply exceptions to the rule: They may be the result of influence from Standard Spanish, which has non-raised tonic vowels. Penny indicates that “In the speech of the Pasiegos who still use the old dialect, metaphony can be heard in any word ending with [-u], even in the terms of most recent borrowing,” (1969: 61; my translation and italics). In other words, tonic metaphony is a robust phenomenon.²

In summary, then, tonic metaphony in Pasiego is a virtually exceptionless process which raises the tonic mid vowels /ɛ/ and /o/ to high [i] and [u] when they are followed by final high [-u].

3. Pretonic metaphony

As described in the phonological literature, Pasiego pretonic metaphony is also exceptionless. It is triggered by high tonic vowels and targets mid vowels preceding the tonic vowels (c.f. Hualde 1989, McCarthy 1984, Penny 1969). This process is illustrated in (4):

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² McCarthy (1984: 297-298) and Vago (1988) also discuss another class of apparent exceptions to tonic metaphony, namely forms in which the tonic vowel is mid [ɛ] or [o] while the final vowel is high [u]. An example form is [dínɛɾy] money in which the tonic vowel [ɛ] differs in height from the final vowel, [-u]. (It is important to note that in examples (1) - (3) I have abstracted away from this issue by using the symbol [-o] to represent final [u] and the symbol [-u] to represent final [u²] (Penny's transcription), a high centralized vowel appearing in word-final position. It is the latter vowel which triggers tonic metaphony. McCarthy argues that in forms such as [dínɛɾy] money, the final vowel is an underlying mid vowel, /-o/, and that this vowel is realized as [-u] by means of a low-level word-final reduction process, thus creating surface-disharmonic forms. The final vowel in question is realized most often as a lowered high [u], and is sometimes also realized as raised mid [o] (Penny 1969: 51). I adopt McCarthy's analysis here.
(4) Pasiciego; pretonic metaphor triggered by tonic [i] and [uí] (Penny 1969: 52-53; 121); morphemes are separated by dots:

Metaphonized forms: Non-metaphonized forms:

a. r[i]gír.u  r[e]gír.os  marsh, marshes
k[u]bín.a  k[o]bínær  cooking (n.), to cook
k[u]bín.u  k[o]bínær  large type of pot, to cook
b. g[u]lós.u  g[o]lós.os  curious, nosy
m[u]trúc.u  m[o]trúc.os  colts
p[u]trúc.u  p[o]trúc.os  colts
θ[i]ríxu  θ[e]ríxos  bolt, bolts
k[u]níxu  k[o]níxos  rabbit, rabbits

Trigger: Tonic (main-stress) [i] and [uí] (from underlying /i/, /uí/, /le/, /lo/)
Target: Pretonic (pre-main-stress) /e/ and /ö/
Operation: Spread [high]

The examples in (4.a) show that when the tonic vowel is [i], the preceding (pretonic) mid vowel raises to high; (4.b) shows that when the tonic vowel is [uí], the preceding pretonic mid vowel raises to high. The non-metaphonized forms show that when the tonic vowel is non-high, the pretonic mid vowel is also non-high. (I have not included examples of pretonic /i,u,a/ in (4).)

In the phonological literature on Pasiciego, it is argued that all pretonic mid vowels must raise to high when the tonic vowel is high (cf. Hualde 1989, McCarthy 1984, Penny 1969). As described above, then, pretonic metaphor is as exceptionless as tonic metaphor. However, the above characterization fails to account for many exceptions to pretonic metaphor which I introduce below.

4. Exceptions to pretonic metaphor

Exceptions to pretonic metaphor, occurring in approximately 2.4% of the words in the Pasiciego dictionary, fall into the classes outlined below.

Verbal prefixes: Many of the exceptions to pretonic metaphor involve a specific group of prefixes, namely the verbal prefixes /re-/, /des-/, /tres-/, /en-/. These prefixes can be realized with the vowel [i], [e ~ ø] or [a], regardless of the height of the tonic vowel. Verbal prefixes are discussed more fully in §4.1.

Word-initially before nasals, and word-initially before 's + stop' clusters: The sole vowel that occurs in this environment displays free variation for height, being realized as [i], [e] or [a] regardless of the height of the tonic vowel. This phenomenon has been previously discussed in McCarthy (1984) and Spencer (1986), and is discussed further in §4.2-4.3 and §6.1.

Other pretonic vowels: Pretonic vowels manifest several patterns which are exceptional with respect to the rule of pretonic raising as formulated in (4): 1) pretonic mid vowels can be realized as either mid or high before tonic high vowels; in other words, metaphor before tonic high vowels is optional; 2) unstressed pretonic mid vowels can optionally raise to high even when the tonic vowel is non-high; in other

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3 The calculations are the following: The entire database consists of 6024 words; in approximately 80 percent of these words, the conditions for metaphor are met (this is an optimistic estimate).

Number of words with metaphor (approximately 80%): 6024x0.8 = 4819.2
Percentage of words with disharmonic pretonic vowels: (117/4819)x100=2.4
Percentage of words with disharmonic tonic vowels: (7/4819)x100=0.15
words, pretonic metaphony can overapply; and 3) underlying pretonic high vowels can lower to mid before non-high stressed vowels (there are fewer examples of this type of pattern than of the first two patterns). These patterns are discussed further in §4.4.

The above outline of the exceptional patterning of Pasiego pretonic vowels illustrates the main point of this section, namely that positing a phonological rule of pretonic metaphony—as in McCarthy (1984), Hualde (1989) and others—fails to account for the full range of phonetic realization of unstressed pretonic vowels in Pasiego. In the following section, I describe and exemplify the patterns discussed above in detail, and then argue against the phonological rule account.

4.1. Verbal prefixes

I examine the phonetic patterning of the verbal prefixes in this section, showing that the vowel of the verbal prefixes is variable for height in a manner inconsistent with the description in (4.h).

4.1.1. The prefixes /des-/ and /re-/

In the prefixes /des-/ and /re-/, the distribution of high variants of /e/ cannot be predicted by the phonological rule of pretonic raising assumed in (4.c). Examples (5)-(6) provide representative instances of the phonetic realization of the prefixes /des-/ and /re-/. The prefixes are highlighted with square brackets.

(5) The vowel in the prefix /des-/

<table>
<thead>
<tr>
<th>Form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>[dis]kubr̩r̩ discover</td>
</tr>
<tr>
<td>b</td>
<td>[dis]nugásə to undress</td>
</tr>
<tr>
<td>c</td>
<td>[des]akupá̄r to empty (a bottle, etc.)</td>
</tr>
<tr>
<td>d</td>
<td>[des]agur̩o dried out</td>
</tr>
<tr>
<td>e</td>
<td>[dɔs]mió̃r̩ to split branches (for basketmaking)</td>
</tr>
</tbody>
</table>

A comparison of all the examples in (5) illustrates that, against the analysis in (4), the height of /e/ is independent of the height of the main stress vowel. (5.a,b) illustrate that underlying /e/ can be realized as [i] whether the stressed vowel is low or high. (5.c,d) illustrate that /e/ can also be realized as [e] whether the stressed vowel is low or high. Finally, (5.e) illustrates that /e/ can be realized as non-high [ə] even when the stressed vowel is high. The examples in (5), then, illustrate that the phonetic realization of /e/ in the prefix /des-/ cannot be explained by the application or non-application of a raising rule. Instead, (5) illustrates that the vowel /e/ in /des-/ can be realized anywhere within the non-low range, regardless of the height of the tonic vowel.

The prefix /re-/ patterns in the same manner, as shown in (6).
(6) The vowel in the prefix /rc-/:

<table>
<thead>
<tr>
<th>Form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a [ri]bwíltu</td>
<td>turned over</td>
</tr>
<tr>
<td>b [ri]bosiyár</td>
<td>to gust</td>
</tr>
<tr>
<td>c [re]spondér</td>
<td>respond</td>
</tr>
<tr>
<td>d [re]strulí0a</td>
<td>type of fight among animals</td>
</tr>
<tr>
<td>e [re]swínú</td>
<td>happy</td>
</tr>
<tr>
<td>f [re]spixón</td>
<td>a frisky animal</td>
</tr>
</tbody>
</table>

A comparison of the total range of examples in (6) illustrates that the height of the vowel of the prefix /rc-/ is independent of the height of the main stress vowel: examples (6.a,b) illustrate that underlying /e/ can be realized as [i], regardless of the height of the main stress vowel. (6.c,d) illustrate that underlying /e/ can be realized as [ε], regardless of the height of the main stress vowel. (6.e,f) illustrate that underlying /e/ can be realized as [ə] regardless of the height of the main stress vowel. The examples in (6) thus show that the vowel /e/ in /rc-/ can be realized anywhere within the non-low range.

4.1.2. The prefix /tres-/

Example (7) illustrates the phonetic realization of the prefix /tres-/ which is even more phonetically variable than the previously described prefixes.

(7) Variation for height of /tres-/

<table>
<thead>
<tr>
<th>Form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a [tras]nočár</td>
<td>to spend a sleepless night</td>
</tr>
<tr>
<td>b [tres]nočár</td>
<td></td>
</tr>
<tr>
<td>c [tras]lapár</td>
<td>to overlap</td>
</tr>
<tr>
<td>d [tres]lapár</td>
<td></td>
</tr>
<tr>
<td>e [tras]plantár</td>
<td>transplant</td>
</tr>
<tr>
<td>f [tres]plantár</td>
<td></td>
</tr>
<tr>
<td>g [tris]kilár</td>
<td>to shear (sheep, etc.)</td>
</tr>
</tbody>
</table>

The prefix /tres-/ can be realized as low [a], mid [ε] or high [i], regardless of the height of the tonic vowel (which is [á] in all the examples in (7)).

4.2. Word-initially before nasals

Example (8) shows the variation for height of /e/ in an environment which includes that of the prefix /en-/. This environment can be described as 'word-initially before a nasal.' (McCarthy (1984), Penny (1969), and Spencer (1986) also discuss the variation that occurs in this environment.)
(8) Word-initial /e/ preceding a nasal:

Form                                  Gloss

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>[a]mfóřu</td>
</tr>
<tr>
<td>b</td>
<td>[i]mfóřu</td>
</tr>
<tr>
<td>c</td>
<td>[a]nántas</td>
</tr>
<tr>
<td>d</td>
<td>[e]nántas</td>
</tr>
<tr>
<td>e</td>
<td>[a]ngwédą</td>
</tr>
<tr>
<td>f</td>
<td>[e]ngwédą</td>
</tr>
</tbody>
</table>

As shown in (8), underlying /e/ can be realized as [a], [e], or [i] word-initially before a nasal. McCarthy (1984), Penny (1969) and Spencer (1986) argue that any vowel that appears word-initially before a nasal displays free variation.

4.3. Word-initially before an s+stop cluster

Another type of variation for height is shown in (9), where /e/ varies as [i,e,a] in initial position before /s/ plus stop clusters. (This type of variation is also discussed in McCarthy (1984), Penny (1969), and Spencer (1986).)

(9) Examples of variation within a single lexeme containing the initial grouping /es+stop/:

Form                                  Gloss

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>[a]skwéla</td>
</tr>
<tr>
<td></td>
<td>[e]skwéla</td>
</tr>
<tr>
<td></td>
<td>[i]skwéla</td>
</tr>
<tr>
<td>b</td>
<td>[a]skučár</td>
</tr>
<tr>
<td></td>
<td>[i]skučár</td>
</tr>
<tr>
<td>c</td>
<td>[a]skondéř</td>
</tr>
<tr>
<td></td>
<td>[e]skondéř</td>
</tr>
<tr>
<td>d</td>
<td>[e]stár</td>
</tr>
<tr>
<td></td>
<td>[i]stár</td>
</tr>
</tbody>
</table>

As an example of this variation, (9,a-c) illustrate that /e/ can be realized as [a], [e], or [i] in the same lexeme, /eskvela/ school. The patterning of the vowel that appears before s+stop clusters, then, is quite variable, with underlying /e/ being realized as [i,e,a], regardless of the height of the tonic vowel that follows.

4.4. Other pretonic vowels

Pretonic vowels other than the ones described in previous sections are also variable for height. This claim runs counter to the analysis in Hualde (1989) and McCarthy (1984), in which it is argued that pretonic metaphony applies obligatorily to all pretonic mid vowels when the tonic vowel is high (cf. (4)). I provide evidence against Hualde's and McCarthy's claim in the following sections.

4.4.1. Disharmonic vowels

Example (10) lists words in which the pretonic mid vowel, either /e/ or /o/, fails to raise to high when the stressed vowel is high, contra the rule posited in (4). The relevant disharmonic vowels are enclosed in square brackets.
(10) Pretonic mid vowels failing to undergo metaphor:

a. Pretonic [e] where raised [i] is expected:

i. Before high tonic [i]:

\[\begin{align*}
\text{θ[e]nifr} & \quad \text{to sift} \\
\text{ř[e]lyr} & \quad \text{to laugh} \\
\text{tr[e]ljis} & \quad \text{mischievous} \\
\text{tr[e]ntino} & \quad \text{30 month old colt} \\
\text{ř[e]spigu} & \quad \text{cabbage flower, lettuce flower, etc.} \\
\text{ř[e]lyša} & \quad \text{to smile} \\
\text{ója d [e]spíta} & \quad \text{pot for separating cream} \\
\text{púnta de řabétha p[e]rdida} & \quad \text{headless nail} \\
\text{kr[e]líd} & \quad \text{believed (past participle)} \\
\text{p[e]nsatíbu} & \quad \text{thoughtful} \\
\text{sum[e]nxídu} & \quad \text{submerged} \\
\text{tj[e]rardila} & \quad \text{clay, argil} \\
\text{tj[e]rardío} & \quad \text{clay, argil} \\
\text{agx[e]llítu} & \quad \text{small angel} \\
\text{ar[e]nifo} & \quad \text{gravelly soil mixture} \\
\text{b[e]nadíxa} & \quad \text{wild animal} \\
\text{[e]cádvíxu} & \quad \text{overrun by furze and ferns} \\
\text{[e]cáíóa} & \quad \text{exaggeration} \\
\text{imb[e]nmíóa} & \quad \text{adj. describing spring pastures} \\
\text{kub[e]tsíru} & \quad \text{basket, hamper} \\
\text{pr[e]kabíu} & \quad \text{astute} \\
\text{puč[e]rtíto} & \quad \text{puckering up one's face (as before crying)} \\
\text{ľob[e]říóta} & \quad \text{wolf pack} \\
\text{m[e]rkadíru} & \quad \text{small basket} \\
\text{p[e]d[ř]řóita} & \quad \text{small stone} \\
\text{alb[e]gadíru} & \quad \text{perch}
\end{align*}\]

ii. Before high tonic [ú]:

\[\begin{align*}
\text{m[e]nũto} & \quad \text{minute} \\
\text{θ[e]řadúra} & \quad \text{enclosed garden space} \\
\text{b[a]rgw[a]lnůusu} & \quad \text{shameful} \\
\text{ař[e]str[i]jadúras} & \quad \text{bits of hay left after haying} \\
\text{ař[e]str[i]jadúras} & \quad \text{bits of hay left after haying}
\end{align*}\]
b. Pretonic [o] where raised [u] is expected:

i. Before high tonic [i]:

\[
\begin{align*}
\text{x[o]štìyù} & \quad \text{bib fastened with buttons or string} \\
\text{g[o]ţù} & \quad \text{special paper liners for a baked good} \\
\text{t[o]rő[oo]lì} & \quad \text{nightingale} \\
\text{k[o]lìaţù} & \quad \text{very small lean-to} \\
\text{k[o]rč[o]mìo} & \quad \text{worm-eaten} \\
\text{m[o]lìaţo} & \quad \text{recently drawn milk} \\
\text{a[o]rìbù} & \quad \text{thrifty}
\end{align*}
\]

ii. Before high tonic [ú]:

\[
\begin{align*}
\text{k[o]lùrtùra} & \quad \text{shortness} \\
\text{[o]rìga} & \quad \text{borer that attacks corn} \\
\text{[o]skúra} & \quad \text{darkness} \\
\text{[o]túbra} & \quad \text{October} \\
\text{[o]lìyòko} & \quad \text{leaflet} \\
\text{m[o]ldúra} & \quad \text{grinding (n.)} \\
\text{r[o]nkùxu} & \quad \text{testicles} \\
\text{kalø[oo]núda} & \quad \text{sheep with lots of wool on its rump} \\
\text{k[o]lìdúra} & \quad \text{cooking (n.)} \\
\text{m[o]lìaţukù} & \quad \text{stack of hay 1 m. high} \\
\text{kam[o]skadúra} & \quad \text{sill or embrasure} \\
\text{esk[o]plìjadúra} & \quad \text{shroud}
\end{align*}
\]

The above examples illustrate that disharmonic [e] and [o] occur before high tonic [i] and [ú] alike, contra the description given in (4).

4.4.2. **Free variation between [e–i] and [o–u] of mid /e,o/**

Also not explained by the description in (4) is evidence that pretonic vowels can vary for height in the same manner as the vowels discussed in §4.1-4.3. Example (11) lists Pasiego stems which display free variation between [i], [e], [æ] and even [a]. The variable vowel is highlighted by square brackets in each example. Dots indicate morpheme boundaries in the first example of each lexeme in order to indicate the stems. The examples are grouped by tonic vowels in order to highlight the non-relationship between the tonic vowels and the pretonic vowels. In addition, many of the examples compare variant pronunciations of either a) identical lexemes, or b) lexemes which have the same stems.
(11) Free variation for height between [i], [e], [ə] and [a]:

(11.1) Before high tonic [i]:

a. m[e]l[e]θ.îna
   m[i]l[i]θîna
   medicine
   medicine

b. p[ə]r.in
   c.f. p[e]r.os
       p[e]r.əc.u
       p[i]r.əθ.u
   puppy, cub
   dogs
   disrespectful diminutive of 'dog'
   disrespectful diminutive of 'dog'

c. θ[ə]r.îl
   θ[ə]rîl
   uncultivated ground
   uncultivated ground
   uncultivated ground

d. θ[e]r.nîr
   θ[i]r.nîsə
   to grind
   to work alot

e. r[ə]θ.în.u
   r[i]θîn.u
   root
   root

f. r[ə]k.ît.îk.u
   r[i]kîtiku
   rickety
   rickety

g. r[e]spîg.u
   r[i]spîg.ə.sə
   lettuce, cabbage flower, etc.
   to seed a vegetable

h. r[e]nd.i.u
   r[i]ndîu
   to be panting as a result of having worked hard
   to be panting as a result of having worked hard

i. s[e]lnt.îr
   s[i]ntîr
   hear
   hear

j. s[e]θ.îna
   s[i]θîn.as
   small type of chestnut
   small and good species of chestnut

k. [i]s[e]θÎnâdiř.u
   d[e]s[p[i]]θÎndîř.u
   cliffy mountain
   cliffy mountain

(11.2) Before high tonic [u]:

a. p[i]r.əθ.u
   c.f. p[e]r.in
       p[e]r.os
       p[e]r.âc.u
   disrespectful diminutive of 'dog'
   puppy, cub
   dogs
   disrespectful diminutive of 'dog'

b. θ[e]s.úr.a
   θ[i]sûra
   a wound that bleeds a lot
   the red 'tide' of a burn
(11.3) Before non-high tonic [é]:

a. l[e]glatérn.a  
l[i]glatérn.a  
[la]glatérn.a  
a small lizard

b. r[ë]skéθ.a  
r[i]skéθ.a  
crevice

c. s[e]tjémbre  
s[i]tjémbre  
September

(11.4) Before non-high tonic [á]:

a. p[e]dríkár  
p[i]dríkár  
to preach

b. mel[e]ndrán  
m[a]l[a]ndrán  
mel[i]ndrán  
person clothed with ags

person clothed with rags

person clothed with rags

c. in.θ[e]mentár  
inθ[i]mentár  
to lay the cement foundations (of a house)

to lay the cement foundations (of a house)

d. l[é]n  
l[i]násk.u  
steep slope

steep slope

e. mend[e]ngjár  
mend[i]ngánta  
to laze about

idler

f. p[e]k[r(o)xál  
p[i]k[xál  
wild pear tree

wild pear tree

g. r[ë]spixár  
r[i]spixár  
to frisk, jump with joy

to frisk, jump with joy

h. t[i]ll.ár  
t[e]l.ár  
to plank, floor

to plank, floor

i. t[e]lláña  
t[i]lláña  
cobwebs

cobwebs

(11.5) Before non-high tonic [ó]:

a. m[e]gólo  
m[i]gólo  
crumb

crumb

b. p[e]sa.róso  
p[i]sa.róso  
penitent

penitent

c. r[ë]spixón  
c.f. r[e]spixár  
[ri]spixár  
frisky animal

to frisk, jump with joy

to frisk, jump with joy
As shown in (11.1) and (11.2), the vowel /e/ can be realized as [i], [e], [ə] or [a] before a high tonic vowel. Similarly, as shown in (11.3) - (11.5) the vowel /e/ can also be realized as [i], [e], [ə] or [a] before a non-high tonic vowel. The above examples illustrate that the presence of either pretonic [i] or [e] is not consistent with the description in (4). This type of example instead illustrates that pretonic /e/ can vary freely between a mid and a high vowel, regardless of the height of the tonic vowel.

Variation for height also occurs in the back vowels. Example (12) lists lexemes which vary between [u] and [o]. The examples are arranged as in (11).

(12) [u/o] variation:

(12.1) Before high tonic [i]:

a. k[o]rk.[o]mí.ũ
   k[u]rk.[u]mí.ã  
   worm-eaten
   primrose (?) (gloss uncertain to Penny)

b. ɪ[o]mb.ĩy.u
   ɪ[u]mb.ĩy.a  
   a one-meter pile of hay
   a one-meter pile of hay

(12.2) Before high tonic [u]:

a. k[o]θ.id.ũr.a
   k[u]θidũra  
   cooking
   cooking

b. m[o]ld.ũr.a
   m[u]ldũra  
   grinding (noun)
The bits of grain and rock that are left in the mill after grinding

c. ō[o]nk.ux.u
    ō[u]nkũxu  
    testicles
    testicles

(12.3) Before non-high tonic [ɛ]:

a. (de) ō[o]ld.ėt.ə
    ō[u]dėtə  
   covered with a scarf
   forehead

b. k[o]nt.in.ėr.a
    c.f. k[u]ntinárja  
   said of a very fertile cow
   said of a very fertile cow

(12.4) Before non-high tonic [á]:

a. is.kar.[o]nč.ár
   iskar[u]nčár  
   deshell (a nut)
   deshell (a nut)

b. a.f[u]rt.un.ã.ũ
   a.f[o]rtun:ũ  
   lucky (m.s.)
   lucky (f.s.)

c. g[o]mt.ār
   g[u]mitár  
   vomit
   vomit

d. p[e]lr.[o]x.āl
   pl[l]r[u]xāl  
   wild peartree
   wild peartree
e. p[o]rt.ál
p[u]rt.ál
a bin for firewood, etc.
a bin for firewood, etc.
f. a.Höllár
år[v]úllár
to hill a plant for the third time
to tuck up
g. ré.s[ø]b.ár
rós[v]úbrár
shake vigorously
shake vigorously
h. s[ø]llán.u
s[v]úllánu
south-facing site, slope
the east wind
i. tras.t[o]rn.jáu
tras[v]únnjáu
overturned
to overturn
j. t[o]x.á[r.a]
t[u]xára
hole left after cutting a branch off of a tree
hole left after cutting a branch off of a tree
k. [ó].a
[ø].ár
pot
to dent
l. [ø]mbr.á[ø]
[u]mbrál
shoulder
shoulder
m. [ø]k.á[ø].ito
[u]kálito
eucalyptus
eucalyptus
n. [ø]rák.án
[u]rákán
hurricane
hurricane
o. agarl[o]pjár
agarl[u]pjáre
hole left after cutting a branch off of a tree
to scrape with a long plane, leveller
to scrape with a long plane, leveller

(12.5) Before non-high tonic [ó]:

a. n[u]s.ótr.os
c.f. n[ø].s
we
us

b. [u]mad.ór
c.f. [ø]med.o
person in charge of humidifying bees
humid

The words in (12.1) and (12.2) illustrate that the phoneme /ø/ is realized as [u] or [ø] before high tonic vowels. Similarly, (12.3) - (12.5) illustrate that /ø/ varies between [u] and [ø] before non-high tonic vowels as well. These examples illustrate that the height of pretonic, unstressed /ø/ is not predictable from the description in (4), instead, varying for height regardless of the height of the main-stress or tonic vowel.

Examples such as (12.4.k) and (12.5.a) are also interesting. In these examples, the highlighted vowel is [ø] when stressed, but [u] when unstressed. This phenomenon is reminiscent of a type of reduction in which mid vowels reduce to high when in unstressed position (as observed by Penny 1969: 71). In this respect, Pasiego tends to pattern like Catalan, in which mid /e,ø/ reduce to [i, u] in unstressed position (Mascaró 1978).

Finally, the words listed in (13) illustrate variation for height of unstressed vowels into the low range. The vowels in square brackets in (13) can be realized as vowels of any height, even as [a].
(13) [e]/[a] and [o]/[a] variation in pretonic vowels:

(13.1) Variation before high tonic [i]:

a. \text{\[e\]k.\text{\textae}t.r\text{\textae}} \quad \text{cicatrice} \\
\text{\text{o\[e\]k.\text{\textae}t.r\text{\textae}}} \quad \text{cicatrice}

(13.2) Variation before high tonic [ú]:

a. \text{\[a\]sk.\text{\textae}r.a} \quad \text{dark} \\
\text{\text{o\[o\]sk.\text{\textae}r.a} \quad \text{dark}

(13.3) Variation before non-high tonic [é]:

a. \text{\text{k.o.m\[a\]dr.\text{\textae}x.a} \quad \text{weasel} \\
\text{\text{k.o\[o\]dr.\text{\textae}x.a} \quad \text{weasel}

b. \text{tr\[a\]\text{\textae}.w\text{\textae}l.a} \quad \text{tack} \\
\text{tr\[i\]\text{\textae}w\text{\textae}l.a} \quad \text{tack (cf.}

(13.4) Variation before non-high tonic [á]:

a. \text{\text{a.gur\[a\]k.\text{\textae}r} \quad \text{to hollow out a tree} \\
\text{\text{a.gur\[e\]k.\text{\textae}r} \quad \text{to hollow out a tree}

b. \text{\text{a.pis\[a\]d.ombr.\text{\textae}u} \quad \text{sad} \\
\text{\text{a.pis\[i\]dumbr\text{\textae}u} \quad \text{sad}

c. \text{\text{\text{o\[a\]r.b.e.l.\text{\textae}n} \quad \text{plant used for a sieve} \\
\text{\text{o\[e\]r.b.e.l.\text{\textae}n} \quad \text{plant used for a sieve}

d. \text{\text{a.l[a]targ.\text{\textae}u} \quad \text{drunk} \\
\text{\text{a.l[e]targ\text{\textae}u} \quad \text{drunk}

e. \text{\text{a.d[a].lant.\text{\textae}u} \quad \text{late} \\
\text{\text{a.d[e]lant\text{\textae}u} \quad \text{late}

f. \text{\text{ard\[a\]n.\text{\textae}r} \quad \text{to milk} \\
\text{\text{ard\[o\]n.\text{\textae}r} \quad \text{to milk}

(13.5) Variation before non-high tonic [ó]:

a. \text{\text{agw[a]n.\text{\textae}n} \quad \text{a bad horse, a lewd person} \\
\text{\text{agw[e]n.\text{\textae}n} \quad \text{a bad horse, a lewd person}

As shown above, variation between [e-a] is most common ((13.1), (13.4.d,e), (13.4.a,c), and (13.5)), but variation between [o-a] ((13.2), (13.3.a), (13.4.f)) and even between [i-a] ((13.3.b), (13.4.b)) is also attested. The examples in (13) illustrate the common theme of this section, that variation for height is commonly attested in unstressed pretonic vowels.
4.4.3. Variation of high vowels

There is some limited evidence that the phonologically high vowels /i/ and /u/ can also vary for height when they are pretonic, being realized as either [i,u] or [e,o]. Penny lists some derivational suffixes which have underlyingly high vowels, suffixes including [-iθ], [-ig], and [-ik] (Penny 1969: 104-111). Importantly, the latter suffixes also surface phonetically as [-eθ], [-eg] and [-ek], and even as [-aθ], [-ag], and [-ak] in some cases. For illustration, example (14) shows the suffix which Penny analyses as /-iθ/, with an underlying high vowel and the consonant /θ/.

(14) Variation for height of high vowels in unstressed position:

<table>
<thead>
<tr>
<th>Form</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>bōθ</td>
<td>a shout</td>
</tr>
<tr>
<td>bō[θ]iθar</td>
<td>to yawn</td>
</tr>
<tr>
<td>bōθiθljär</td>
<td>to yawn</td>
</tr>
<tr>
<td>bō[θ]aθljär</td>
<td>to yawn</td>
</tr>
</tbody>
</table>

(14.a) gives the stem /bōθ/ when it occurs without the suffix /iθ/. (14.b-d) illustrate the stem /bōθ/ with the suffix /iθ/, and also illustrate that /iθ/ surfaces as [eθ], [iθ] and [aθ] in the same environment, i.e. before a stressed low vowel [á]. (14.c,d) show the same lexeme, with variation between [i] and [a] in the suffix /iθ/.

If suffixes such as /-iθ/ are correctly analysed as having phonologically high vowels (and in the vast majority of cases, such suffixes have invariably high vowels) then examples such as (14) illustrate that phonologically high vowels can also be realized as mid and even low vowels. Again, such examples provide limited evidence for reduction.

There is also some limited evidence that originally high /i,u/ can lower to [e,o] before non-high stressed vowels. However, because the evidence is not extensive, accounts of Pasiiego pretonic vowels have treated this phenomenon very differently; for example, McCarthy (1984), based on the evidence for total height harmony like that presented below, posits an across-the-board feature-changing rule which turns [+high] atomic vowels into [-high] vowels in case the main stress vowel is [-high], and vice versa. However, Vago (1988: 353) argues, based on the same evidence, that lowering of high vowels before stressed non-high vowels is an aberration, while raising of atomic mid vowels before stressed high vowels is the rule. In between these two positions, Penny analyses the nature of pretonic vowel patterning as follows:

It can be observed that a system of only three atomic [unstressed] vowels is being produced: [e] and [i] are becoming allophones of the same vowel, realized as [e] or [i] according to the [height of the] tonic [main-stress] vowel, while the same occurs with [o] and [u]. In order that this change be complete, we would hope to encounter /i/ and /u/ realized as [e] and [o] respectively when the tonic vowel is [á], [é] or [ó]. In effect, we see that this change is coming into effect in a (still limited) series of words: [1] tregera 'trigera' [graminaceous plant], [2] egácos, diminutive of 'higos' [figs], [3] lexéros, plural of 'ligero' [light]; [4] kokáràca 'cucaracha' [cockroach], [5] oxána 'gusana' [type of worm], [6] orákán [hurricane], [7] moradál 'muladar' [dunghill], [8] ontáóa 'untaza' [grease, fat], [9] kóčar

Penny's citation thus provides some evidence for total height harmony in pretonic vowels: While some of Penny's examples constitute weak evidence, being based solely on a comparison of Standard Spanish with Pasiego forms (for example, Pasiego [kokaráca] (4) versus Standard Spanish 'cucaracha'), other examples present a better argument: for example, the initial vowel of the word [lxeðros] (3) ligh, (adj., pl.) is underliningly high, as shown by the presence of the high vowel in a non-raising environment in the related adverbial form a phrase also found in the Pasiego dictionary, [a lo lxeðro] rapidly, said of dancing. The presence of the mid vowel [e] in the initial syllable of the word [lxéðros] (3) light, (adj., pl.), then, argues that underlying /i/ lowers to [e] when followed by a non-high stressed vowel. This in turn provides some evidence for total height harmony.

However, the evidence that high vowels can lower in pretonic position is less extensive than the evidence showing that the non-high vowels /e/ and /o/ can raise or lower when pretonic (examples (10) - (13)). The evidence for the former consists of a handful of suffixes such as the one shown in (14) and the cases of total harmony in Penny's citation. In contrast, the evidence that the vowels /e, o/ can vary for height in pretonic position comes from a wide range of sources, including verbal prefixes, word-initial epenthetic vowels, and unstressed pretonic vowels (§4.1-4.4).

4.5. The characteristics of pretonic metaphony

I have shown in §4.1-4.4 that Pasiego pretonic vowels attest to two types of patterning. The first pattern involves the verbal prefixes (§4.1), word-initial /e/ before nasals (§4.2) and word-initial /e/ before s+stop clusters (§4.3), for which /e/ can be realized as [i, e, o] (§4.1) or as [i, e, a] (§4.2-4.3). The second pattern involves the remaining pretonic vowels. In the latter group, phonologically high vowels normally remain high, while phonologically non-high, non-low vowels show a more marked tendency to vary for height; the mid vowels /e/ and /o/ can be realized as [i, u], and even as [a]. In summary, it is not the case that the height of the pretonic vowel is straightforwardly predictable from the height of the tonic vowel.

The data in §4.4 show that pretonic metaphony—i.e. the process by which a mid vowel raises to high—is different from tonic metaphony. Tonic metaphony can be described as due to the application of a spreading rule which spreads the feature [high] from the tonic high vowel to the pretonic mid vowel, as in Hualde (1989), Kaze (1991), McCarthy (1984), Vago (1988); see example (1.h). However, pretonic metaphony cannot be described as an obligatory spreading rule for the following reasons: First, pretonic metaphony may fail to apply when the tonic vowel is high ((5.b, e), (6.a,d,e), (10), (11.1,2)), i.e. [high] does not spread. Thus, pretonic metaphony may be described as optional (c.f. especially (11)), while tonic metaphony is obligatory (§2). Second, pretonic metaphony may skip potential targets, thus applying discontinuously (6.b). In this respect, pretonic metaphony is unlike a spreading rule because the process of

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4 Several of the Pasiego words in this citation—including [orakán] and [apesadombráu]—were not provided with Standard Spanish glosses.

5 Tonic metaphony has also been analysed as a delinking rule (Goad 1993; see also Vago 1988, Wilson 1988 for discussion). However, the arguments here ruling out a spreading account of pretonic metaphony also rule out a delinking account of pretonic metaphony. A delinking account can be ruled out as a possible analysis of the patterning of Pasiego pretonic metaphony because a delinking rule has essentially the same characteristics as a spreading rule: a delinking rule also assumes 1) a trigger and 2) adjacent targets. As argued below, pretonic metaphony need not have a trigger nor adjacent targets.
spreading cannot skip adjacent targets. Third, pretonic metaphony may apply when there is no high trigger ((5.b), (6.b), (7.g), (8.b), (9.a,b,c,d), (11.4,5), (12.3,4,5), (13.3,4,5)). This latter observation argues conclusively that pretonic metaphony is not a spreading process, as a spreading rule requires a trigger.

If pretonic metaphony is not due to a process of spreading, then how do pretonic mid vowels become high in Pasiego? I hypothesize that pretonic metaphony is a type of feature-fill-in rule, a rule that "fill[s] in feature values without reference to context beyond the segment in question." (Keating 1988: 276). In Pasiego, this type of rule would minimally add the feature [high] to the representation of mid vowels in order to raise the latter to high (under the assumption that at least the feature [high] distinguishes mid from high vowels).

The hypothesis that pretonic metaphony is a feature-fill-in rule that adds the feature [high] to the representation of mid vowels explains the above-described puzzling aspects of the patterning of pretonic vowels: First, feature-fill-in rules have been described as post-lexical rules (Kiparsky 1985); if pretonic metaphony is a postlexical feature-fill-in rule, then the optionality of this rule is readily explained: Post-lexical rules may be optional; in contrast, lexical rules are obligatory, applying when their environment is met (Kiparsky 1982, 1985). Second, feature-fill-in rules refer to the internal structure of segments, but do not require reference to other context in order to apply. A consequence of this latter characteristic is that feature-fill-in rules can apply to any relevant segment. They do not, however, need to apply to adjacent segments; hence, they can 'skip' segments. Finally, feature-fill-in rules do not need triggers in order to apply, since they refer only to the internal structure of segments.

In summary, pretonic metaphony has the characteristics of a feature-fill-in rule. I will employ this observation in my analysis of Pasiego pretonic metaphony.

I have argued from the data presented in §4 that pretonic metaphony applies acontextually. However, recall that the data in §4 consists entirely of 'exceptions' to pretonic metaphony, and that in the majority of cases, the operation of pretonic metaphony could be consistent with the spreading analysis summarized in example (4). In other words, if one were to ignore the many exceptions in §4, it would be possible to analyse pretonic metaphony as a spreading process which is triggered by high tonic vowels and which targets mid pretonic vowels. I provide a comprehensive account of pretonic metaphony in §6.3.

5. Theoretical assumptions

Prior to analysing the Pasiego data, I introduce necessary background assumptions in this section, namely vowel geometry (§5.1), Modified Contrastive Specification (§5.2), the model of phonetic Enhancement (§5.3), and the concepts of domains and subinventories (§5.4).

5.1. Vowel Geometry

I assume a model of feature geometry along the lines of Clements (1985) and Sagey (1986). A partial geometry including only the relevant aperture (or vowel height)

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6 This generalization is apparently violated in some cases of vowel harmony. However, it has been argued that in such cases, the target of harmony is not a segment per se, but rather, a metrical position (cf. Hualde 1989 for metaphorizing dialects of Spanish). In the Pasiego case, however, the pretonic vowels all have the same metrical status (i.e. they are stressless). (This is based on the assumption that Stress Conflation—a procedure which erases secondary stresses—occurs in Pasiego as in Standard Spanish. It is also based on the observation that there are no recorded secondary stresses in Pasiego. See Halle, Harris & Vergnaud (1991) for Stress Conflation in Spanish.) Thus, it is not possible to appeal to metrical structure in order to preserve the argument that pretonic metaphony is a spreading process in Pasiego.
node is shown in (15). (Nodes intermediate between the root node and the aperture node are also omitted).\(^7\)

(15) \textbf{Vowel feature geometry}

```
Root
   Aperture
      [low]  [high]
```

As shown in (15), the aperture node dominates height two features, [low] and [high], whose characteristics are discussed below.


5.2. \textit{Modified Contrastive Specification}

I assume the model of underspecification known as Modified Contrastive Specification (MCS),\(^8\) as developed in Avery and Rice (1989), Dyck (1995), Rice (1993a,b), Rice and Avery (1993), Rose (1993), Walker (1993) and Wù (1994). In MCS it is claimed that 1) there is a monotonic algorithm for adding contrasts to vowel inventories, and that 2) as contrasts are elaborated within inventories, features are added in order to express these contrasts. I assume, based on evidence from Spanish and Italian dialects discussed in Dyck (1995), that the algorithm for adding height contrasts to inventories marks height contrasts in the order shown below:

(16) \textbf{Contrastive determination of vowel height:}

a. low vs. unmarked vowels
b. high vs. unmarked vowels

For example, in a two height system, low vowels are marked as [low], while other vowels are unmarked (Dyck 1995).\(^9\) (The upper case-symbols are explained below.)

(17) \textbf{Contrasts in a 3-vowel inventory:}

```
  | E, O | A | √ |
  | [low] |
```

A characteristic of the inventory in (17) is that the feature [high] is not contrastive or even present in the underlying inventory.

Example (18), on the other hand, shows the height features required in a 5-vowel inventory.

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\(^7\) Following Clements (1989a), Goad (1991), Odden (1991), van der Hulst (1989) and others, I assume that vowels have a place node and an aperture node. The place node includes features such as [coronal] (for front vowels) and [labial] (for back vowels) (Clements 1989b, 1991, Clements & Hume 1994, Hume 1992.) Subsequent discussion concerns the aperture node in this paper.

\(^8\) See Paradis and Prunet (1991) for this name.

\(^9\) I leave for further research the question as to whether the split in (17) is universal or particular to the Romance languages.
(18) Height contrasts in a symmetrical 5-vowel inventory:

<table>
<thead>
<tr>
<th></th>
<th>I, U</th>
<th>E, O</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>[high]</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[low]</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Following (16), the contrast between low and non-low vowels (eg. /A/ vs. /I,E,U,O/) is marked by the presence of the feature [low]. The contrast within the class of non-low vowels (/I,U/ vs. /E,O/) is marked by the presence of the feature [high] on high vowels. The mid vowels in (18) are unmarked for height (as opposed to being marked for both [high] and [low]). This is because the features [low] and [high], as well as the absence of either feature in the mid vowels, are sufficient to capture the three height contrasts in (18). (See Dyck (1995) for evidence that mid vowels in Spanish are unspecified for height features.)

The implications of the above model for the following analysis are as follows: In inventories which have only one vowel, this vowel will have the featureless representation symbolized by /E/ in (17) and (18). In inventories which have three vowels, the phonological inventory will be identical to that shown in (17), namely /E,A,O/. Finally, inventories which have five vowels will have the phonological representations shown in (18), namely /I,E,A,O,U/.

The reader will note that the upper-case letters used above and for the remainder of this paper abbreviate the representations and assumptions discussed in (16) through (18). /I,U/ are phonologically high vowels; /E,O/ are phonologically non-low vowels and have no underlying height features; /A/ is a phonologically low vowel. (The front and back vowels are additionally distinguished by place features not discussed here.)

5.3. Phonetic enhancement

I also adopt the model of phonetic enhancement developed within the MCS literature by Avery and Rice (1989), Dyck (1995), Rice (1993a, b), and Wu (1994). This model derives from work by Stevens, Keyser and Kawasaki (1986) and Stevens and Keyser (1989), whose work I will briefly describe by way of introduction.

Stevens and Keyser (1989; henceforth SK) distinguish between a group of features which are more basic (SK’s primary’ and ‘secondary’ features, which operate in the phonology) and a set of enhancement features. Functionally, enhancement features serve to increase either the perceptual salience of the more basic features, or the perceptual salience of a contrast. Enhancement itself is a type of feature-fill-in rule which "fill[s] in feature values without reference to context beyond the segment in question." (Keating 1988: 276).

In Avery and Rice (1989) and Rice (1993a,b)’s adaptation of this model, enhancement is argued to be a phonetic process which inserts certain non-contrastive features in phonetically underspecified representations. Non-contrastive features are features which are not present underlyingly for a given class. For example, [coronal] is the unmarked feature for place of articulation, [nasal] is the unmarked feature for sonorants (Avery and Rice 1989, Rice and Avery 1993), and [high] is the unmarked feature for vowel height (Dyck 1995).

Given an underspecified node, one available option is enhancement (i.e. fill-in of non-contrastive features). For example, given an underspecified aperture node, one may enhance by adding the unmarked feature [high]. However, another option is to do nothing—i.e. to leave the Aperture node underspecified—and to interpret the aperture node itself.
Example (16) illustrates the process of enhancement as it operates on the underspecified vowel representation of /E/. (As before, the place node is not shown here.)

(19) Enhancement of vowels /E/:

a. no enhancement  b. enhancement with [high]

\[
\begin{array}{cc}
[e] & [i] \\
\text{Root} & \text{Root} \\
\text{Aperture} & \text{Aperture} \\
\text{High} & \\
\end{array}
\]

Example (19) embodies the assumption that the vowel /E/ is unspecified for height features, following previous arguments. If enhancement does not take place, the resulting vowel will retain the underspecified representation in (19.a), and will be interpreted as the non-high, non-low, coronal (i.e. front) vowel [e]. If enhancement takes place, as in (19.b), a surface [i] will result from an underlyingly underspecified vowel. The enhancement feature is bolded in (19.b).

The process of enhancement for height, then, inserts the feature [high] (or alternatively, the feature [low], as discussed below) on vowels which are unspecified for height. Whether enhancement applies or not is a source of phonetic variation for height that derives from phonologically underspecified representations.

5.4. Paradigmatic domains and inventories

In this section, I argue that enhancement can apply in some inventories, but not in others. I also argue that the concept of inventory can be relativized to subinventories within a given language. In order to do this, I will demonstrate a hitherto unremarked correlation between sub-inventories and the patterning of Pasiego atomic vowels as described in §4, thus providing support for the idea of subinventories. This section is thus a preliminary argument necessary for clarifying the nature of the feature-fill-in rule responsible for the patterning of atomic vowels.

The types of patterns identified in §4—namely, that occurring in verbal prefixes, word-initially before nasals, word-initially before s+stop clusters, and in other pretonic vowels—also correlate with different subinventories of vowels in what may be described as paradigmatic domains. The latter include well-defined positions in the (canonical) Pasiego word.\textsuperscript{10} Paradigmatic domains can be defined by reference to morphological and phonological categories; some examples of paradigmatic domains include prefixes, suffixes or stems (cf. Steriade 1994), inflectional suffixes (cf. Roca 1990 for Spanish desinences), etc. These morphological paradigmatic domains are often also identifiable by their phonological characteristics. For example, Spanish 'desinences' comprise a domain which consists of final inflectional vowels that are also stressless (Roca 1990). Finally, paradigmatic domains can be entirely phonologically defined (an example is discussed in §6.1).

In Spanish, and in other languages, paradigmatic domains also typically contain a (sub)inventory of segments. In the Pasiego dialect, for example, the set of vowels that

\textsuperscript{10} See Dresher & van der Hout 1994, Kiparsky 1982 and Steriade 1994 for further discussion of this topic of positional neutralization.
can occur in desinences is a subset of the set that can appear in stems. Desinences employ the surface subinventory [ə, a, o, u], while stems make use of the surface inventory [i, e, a, o, u].

6. Analysis of Pasiego vowel patterning

In this section, I provide evidence that the following categories constitute paradigmatic domains with subinventories: 1) verbal prefixes, 2) word-initially before nasals and word-initially before s+stop clusters, 3) posttonic vowels (not previously discussed but introduced below), and 4) other pretonic vowels. I show that the inventories in each domain differ and that, by taking this factor into account, the operation of enhancement can be constrained to apply differently in each domain, deriving the attested patterning of Pasiego vowels.

6.1. Verbal prefixes and word-initial /e/ before nasals and before s+stop clusters

The verbal prefixes of Pasiego can be considered as a paradigmatic domain on the grounds that they are the only productive prefixes of the language. Nominal prefixes in Pasiego are moribund (Penny 1969: 103). The list of verbal prefixes includes /rE-/ /dEs-/ /trEs-/ and /En-. Penny (1969: 142) also includes /sO-/ and /A-/ as verbal prefixes. However, the prefix /so-/ is only attested in two verbs (ibid.), and can be excluded because of its infrequency as being unproductive. The prefix /A-, on the other hand, consistently adds no meaning to the verb it is added to (Penny 1969: 140). This prefix, then, can be considered as an unproductive prefix that has been reanalysed as part of the verb to which it attaches.

Based on the observation that the verbal prefixes are the only productive prefixes in Pasiego, I argue that they form a type of paradigmatic domain, namely that of prefixes.

The prefix domain is characterized by a small subinventory of vowels: In particular, there is no evidence for more than one vowel in the verbal prefix domain. This is because only one pattern is attested in the verbal prefixes, namely that the vowel of any given prefix can be realized as a non-back vowel of any height.

The environments of word-initially before s+stop clusters and word-initially before nasals are also well-defined domains. The environment of word-initially before s+stop clusters has been analysed as a site of epenthesis in Spanish (c.f. Harris 1983). If it can be singled out in this manner, I would argue that the environment of word-initially before s+stop clusters is well-defined prosodically, and that the same definition that gives the site for epenthesis can be referred to as a paradigmatic domain.

Vowels in word-initial position before nasals, discussed in §4.2, are by far and large part of the verbal prefix /En-, discussed above. Word-initially before nasals, then, is a subset of the domain described above as the 'verbal prefix' domain.

In summary, two domains can be identified on the basis of morphological and phonological characteristics: 1) word-initially before s+stop clusters and 2) the verbal prefix domain. In these domains, the subinventory of vowels contains only one vowel.

I argue that the single vowel that occurs in the above-defined subinventories is phonologically featureless; this is based on the evidence from the vowel that occurs word-initially before s+stop clusters. Recall that in the latter environment, the vowel is epenthetic. Following Archangeli (1984) and Itô (1989), I assume that since the vowel in this environment is epenthetic, it is also featureless. I conclude, then, that word-initially before s+stop clusters, a featureless vowel can be realized as a non-back vowel of any height. Because the vowel that appears in the verbal prefixes patterns in a manner identical to the epenthetic vowel, I argue that this vowel is also featureless. In conclusion, then, the two paradigmatic domains described above contain a subinventory of one featureless vowel.
According to the assumptions presented in §5.3 and §5.4, an inventory containing one vowel has no contrasts (and is therefore featureless.) Following assumptions in §5.4, this sole vowel can be enhanced via addition of [high] or [low], as neither feature is contrastive in this subinventory; alternatively, the vowel can fail to be enhanced. As shown in (20), enhancement by [high] or [low] or lack of enhancement gives the following representations.

\[(20) \quad \text{Enhancement of a subinventory containing one vowel:}\]

\[
a. /E/ \\
\quad [i] \\
\quad \text{Ap} \quad \text{Pl}
\]

\[
b. /E/ \\
\quad e \\
\quad \text{Ap} \quad \text{Pl}
\]

\[
c. /E/ \quad \text{phonological representation} \\
\quad \text{ap} \quad \text{Pl} \\
\quad [\text{high}]
\]

Enhancement by [high] gives the [i] variant, lack of enhancement for height gives the [e] variant, and enhancement for [low] results in the [a] variant. Enhancement or its lack thus derives the variation for height attested in the verbal prefixes and in the environment of word-initially before s+stop clusters.$^{11}$

6.2. Posttonic vowels: independent evidence for enhancement

Thus far, I have examined the patterning of pretonic vowels only, showing how enhancement derives their patterning. However, one good result of the model developed here is that it also explains the patterning of a group of vowels known as the posttonic vowels. Posttonic vowels occur after main-stress vowels but before final vowels; they occur in the penults of antepenultimately-stressed words.

In this section I describe the patterning of posttonic vowels and show that the feature-fill-in mechanism of enhancement can derive the attested patterning while a phonological rule of spreading/delinking cannot. The posttonic vowels, then, provide independent evidence for the model of enhancement. My analysis of the patterning of the posttonic vowels will also shed light on the patterning of the pretonic vowels (c.f. §4.4) which remain to be analysed (c.f. §6.4).

Hualde (1989) and McCarthy (1984) argue that posttonic vowels undergo a process of metaphony, or that the height of non-low posttonic vowels is predictable from the height of some trigger. However, Hualde (1989) notes that there is little independent evidence for a metaphony analysis, since evidence for underlying mid vowels in posttonic position is virtually absent. As illustrated below, posttonic vowels have a phonetic subinventory of three vowels, namely [i], [a], [u]; there are also some rare examples of posttonic [e] and [o]. My basic argument is that posttonic vowels draw from an impoverished phonological inventory, /E,A,O/, and that this fact, together with enhancement for [high], derives the patterning.

Examples (21) - (22) list all the words with posttonic vowels in Penny’s (1969) glossary. (21) shows antepenultimately-stressed words ending with the phonologically

---

$^{11}$ I have no explanation of the fact that there are no [a] variants attested for the prefixes /rE-/ and /dEs-/ while there are attested [a] variants for the prefixes /trEs-/ and /En-/ and for the environment of word-initially before s+stop clusters.
high desinence /-u/ ([-u]). This example is subdivided in order to compare the height of the penultimate vowel with that of the final vowel [-u].

(21) The penults of antepenultimately-stressed words ending with [-u]:

<table>
<thead>
<tr>
<th>a. [-u] desinence, [i] in the penult:</th>
</tr>
</thead>
<tbody>
<tr>
<td>simpāt[i]ku</td>
</tr>
<tr>
<td>sit[i]mu</td>
</tr>
<tr>
<td>ábr[i]gu</td>
</tr>
<tr>
<td>frjáti[k]u</td>
</tr>
<tr>
<td>řkít[i]ku</td>
</tr>
<tr>
<td>asmjáti[i]ku</td>
</tr>
<tr>
<td>díð[i]mu</td>
</tr>
<tr>
<td>mínd[i]gu</td>
</tr>
</tbody>
</table>

b. [-u] desinence, [a] in the penult:

| sáb[a]du | Saturday | kánt[a]ru | pitcher, jug |
| kár[a]bu | small boat, scarab | plá[t[a]nu | plantain |
| táb[a]nu | horsefly | řáb[a]nu | radish |
| řáng[a]nu | lazy | řáp[a]nu | cranberry |
| řár[a]ru | tartamudo | bál[a]gu | grain stalk |
| kwéb[a]nu | basket, hamper | relámp[a]gu | lightning |
| lát[a]gu | wooden neckband to hang a cowbell from | ispář[a]gu | esparagus |
| murjál[a]gu | bat (animal) | murgjáŋ[a]nu | bat (animal) |
| gwér[a]nu | orphan | gwír[a]nu | orphan |
| nán[a]gu | lución (type of reptile) | páx[a]ru | bird |
| deskánd[a]lu | scandal | eskánd[a]lu | scandal |
| pálp[a]du | fingertip (the side with the fingerprint) | pár[p[a]gu | eyelid |

The above words ending with the desinence [-u] have either [i] or [a] in the penult. Given the limited surface inventory in the penult, and especially given the absence of mid [e,o], one might wish to posit a process of raising that is triggered by desinential [-u] and which targets the penult. However, an argument against this hypothesis, shown in (22), is that antepenultimately-stressed words ending with the non-high desinences [o, ë, a] pattern identically to the words in (21). They also contain non-mid [i,a,u] in the penult.

---

12 Note that the posttonic vowel is adjacent to both the tonic vowel and the final vowel, and thus, either the tonic or the final vowel could be argued to be a trigger of metaphony. While the examples that follow in the body of the text are structured to show that the height of the final vowel is not an accurate indication of the height of the posttonic vowel, it would have been equally as possible to structure the examples to show that the height of the tonic vowel is not an accurate predictor of the height of the posttonic vowel: for example, posttonic [i] appears after high tonic [i] [sitimu], low tonic [ä] [asmjātiku], and mid tonic [e] [pěndětheta] alike.
(22) The penult of antepenultimately-stressed words ending with non-high [o, ø, a]:

a. [-ø] (mid) desinence, [i] in the penult:
    pesdíjøiøa 
    papáñjìra 
    appendicitis
    kestrel

b. [-ø] desinence, [u] in the penult:
    mjerúkùläs 
    Wednesday

c. [-a] desinence, [i] in the penult:
    setìjìma
    tábìjìla 
    seventh
    kite (falcon)
    plamáñtìkas
    astwèrdìlga
    stories, tales
    strips of cowhide
    used for making
    sandals
    last (pl.)
    lárqìjìma
    lástìjìka
    tear
    type of sweater
    últìjìmas
    bird similar to a
    bird similar to a
    barn-owl
    barn-owl
    nwëtìjìka
    nótìjìka

d. [-a] desinence, [a] in the penult:
    sábìjìna 
    káskìjìra 
    sheet
    bark
    16-litre liquid
    measure
    laugh impetuously
    and noisily
    aqájìjìras 
    kwêbìjìna
    gallnut
    cradle
    aðúkìjìra
    čáñtìjìra
    sugar
    rubber shoes
    fingertips (the side
    with the fingerprint)
    kámìjìra
    opening for
    waterchannel in a
    mill
    pámìjìna

e. [-a] desinence, [u] in the penult:
    andíjìlla
    bitákìjìlla
    bibìjìra
    gángìjìlas
    árgìjìma
    mandible
    tavern
    viper
    adenitis
    clay
    mandíjìla
    bríñkìjìla
    dúñìjìra
    gáñdìjìlas
    mandible
    clavicle
    sweet
    adenitis

e. [-o] desinence, [i] in the penult:
    pólpijìto 
    ídrìjìo 
    pulpît
    large, imported
    grains
    es líñjìto
    ponér en édìjìtos
    eucaliptus
    said if one does not
    know if it is the truth
    to publish by posting
    in the church or
    town hall
g. [-o] desinence, [a] in the penult:

| istóm[a]go | stomach | ċát[a]ros | rubber boots |
| řapapáx[a]ros | kestrel | kwér[a]gos | rivulets in melting |
| řáθ el pár[a]mo | unidentified plant | bwét[a]gos | snow |
| mášk[a]ros | that is used to cure a stomach ailment | lungs |
| mášk[a]ros | crackling |

The words in (22) end with [a,a,o], and have [i,a,u] in the penult. A comparison of (22) and (21), then, illustrates that the phonetic realization of the penults of antepenultimately-stressed words is independent of the height of the final desinence, i.e. no rule of raising applies in these instances. Instead, it is simply the case, as observed by Hualde (1989: 797; 802, ft. 16) that the presence of [e] and [o] in the penult of antepenultimately-stressed words is extremely rare in Pasiego, and also in Spanish (outside of learned or scientific vocabulary).

Illustrating the rarity of [e] and [o] in penults of antepenultimately-stressed words in Pasiego, only 8 of the 90 antepenultimately-stressed words in Penny's (1969) monograph of Pasiego have mid vowels in the penult. These words are listed in (23):

(23) The penult of antepenultimately-stressed words containing [e, a, o] in the final syllable:

a. [-o] desinence, [o] in the penult:

tórd[o]lo | nightingale |

b. [-a] desinence, [ə] in the penult:

tréb[ə]də | tripod | ðesp[ə]də | sod |

c. [-a] desinence, [o] in the penult:

bjésp[o]ra | vespers |

d. [-o] desinence, [e] in the penult:

xén[e]ro | species | ðm[e]dø | humid |

e. [-u] desinence, [e] in the penult:

pálp[e]du | eyelid | pálp[e]gu | eyelid |

In examples (23.a,b), the penult is a copy of the final vowel. The remaining examples, four out of a total of 90 antepenultimately-stressed words, can be analysed as exceptions to the generalization that posttonic vowels contain only the vowels [i,u,a]. However, given the limited number of exceptions (8/90) we can consider the generalization to be fairly robust.

The posttonic environment can be defined as a special paradigmatic domain on the basis of the stress patterns of Spanish. Spanish antepenultimately-stressed words are

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13 This type of phenomenon is reminiscent of 'total harmony' in Italian dialects. See Maiden (1988) for discussion of this type of harmony.
lexically marked for stress, while penultimately-stressed words are unexceptional (cf. Halle, Harris & Vergnaud 1991, Harris 1983, 1991). In many analyses of Spanish, it is argued that antepenultimately-stressed words are marked with a lexical foot (a trochee on the antepenult and penult) in the lexicon (Harris 1983). Given this latter assumption, the posttonic vowel can be identified as a special paradigmatic position—the weak branch of a lexical trochee.

In summary, posttonic position is a special paradigmatic domain in which the inventory of vowels is reduced in comparison to the inventory of vowels that is possible in, for example, tonic (main-stress) position: only three vowels can occur posttonically, while five can occur in tonic position.

According to the assumptions outlined in §5.2, a domain with a three-vowel inventory has two phonologically non-low vowels /E, O/ and one phonologically low vowel, /A/. To derive the patterning of posttonic vowels, then, we need only assume that enhancement for [high] is obligatory in that inventory and domain.

(24) Enhancement of the non-low vowels in the posttonic vowels:

\[ \begin{array}{cc}
\text{Ap} & \text{Pl} \\
[\text{high}] & [\text{coronal}] \\
\text{Ap} & \text{Pl} \\
[\text{high}] & [\text{dorsal}]
\end{array} \]

As shown in (24), enhancement for [high] of the non-low vowels /E/ and /O/ will give the surface inventory of [i, u]. (The vowel [a], a phonologically low vowel, undergoes no processes.) Enhancement for [high] results in the surface inventory of [i, a, u] from underlying /E, A, O/ in the posttonic vowels.

The patterning of posttonic vowels thus provides independent evidence for enhancement. Posttonic vowels are not subject to metaphony, as their height is not predictable from either the tonic or the final vowel. Instead, the height of posttonic vowels is derivable from 1) the fact that only three vowels occur in posttonic position, and 2) enhancement for [high] is nearly obligatory in this three-vowel inventory.

6.3. Pretonic vowels

A comparison of the patterns of enhancement of the subinventory in (20) with that in (24) illustrates a condition constraining the operation of enhancement. I will discuss this condition further, as it bears on the issue of the patterning of the remaining pretonic vowels described in §4.4. The condition on enhancement can be stated as follows:

(25) The Contrastiveness Exclusivity Principle: features which are used for contrastive purposes within a (sub)inventory cannot also be used for enhancement purposes within that inventory.

In brief, enhancement features cannot also be contrastive. In (24), for example, the feature [low] is contrastive and only the feature [high] is used for enhancement purposes. However, in (20), there are no contrastive features, and both [high] and [low] can be used for enhancement purposes.

The Contrastiveness Exclusivity Principle (henceforth CEP) is well attested in other Spanish dialects (cf. Dyck 1995). However, if we analyse Pasiego pretonic metaphony as being the result of a feature-fill-in rule such as enhancement, as I have
argued we should do in §4.5, then pretonic metaphony presents a counterexample to the CEP. Given the subinventory of pretonic vowels, the CEP predicts that enhancement should not even apply pretonically, as explained below:

First, the pretonic vowels occur in a special paradigmatic domain: Typically, the rightmost stem vowel in Spanish receives main stress, and so pretonic vowels are stem vowels which do not receive main-stress. The paradigmatic domain for pretonic vowels is therefore a type of metrical domain. Within this domain, the inventory of pretonic stem vowels is /I,E,A,O,U/, as shown in (26).

(26) Pretonic vowels in Pasiego:

a. /I/ an[i]yár to put a nose ring in a pig's nose
b. /E/ am[p]stár to infest
c. /A/ ag[a]trár to take (i.e. when speaking of an impregnated cow)
d. /O/ ab[o]trár to abort
e. /U/ ab[u]yár to roar (said of a bull)

(26) illustrates that in before a non-high tonic vowel, the inventory of segments is [i,e,a,o,u].

In the pretonic paradigmatic domain, then, Pasiego has a five-vowel subinventory. Furthermore, in this type of inventory, enhancement for [high] should not occur, as the feature [high] marks the contrast between mid and high vowels (c.f. §5.2). Paradoxically however, as argued in §4.5, pretonic metaphony has the characteristics of a feature-fill-in rule such as enhancement. Enhancement should be the type of rule that accounts for the patterning of Pasiego pretonic vowels, but if enhancement is employed, then Pasiego pretonic vowels represent a counterexample to the CEP—an otherwise well-attested condition.

I argue below that enhancement does apply pretonically in Pasiego, contravening the CEP. However, I also argue that there is a good explanation for this violation of the CEP in Pasiego.

Recall from §4.5 that in Pasiego, pretonic vowels pattern as in (27):

(27) Pasiego pretonic vowels:

<table>
<thead>
<tr>
<th></th>
<th>Pretonic vowels:</th>
<th>Tonic vowels:</th>
</tr>
</thead>
<tbody>
<tr>
<td>/I/</td>
<td>[i]</td>
<td>[i], [u]</td>
</tr>
<tr>
<td>/E/</td>
<td>[i]</td>
<td></td>
</tr>
<tr>
<td>/A/</td>
<td>[a]</td>
<td>[a], [o]</td>
</tr>
<tr>
<td>/O/</td>
<td>[u]</td>
<td>[u], [o]</td>
</tr>
</tbody>
</table>

In general, as shown in (27.a,b), mid vowels raise to high when the tonic vowels are also high. However, as shown in (27.c,d), in many cases the mid vowels are realized as either high or mid (and even as low [a]) regardless of the height of the tonic vowel. In addition, unstressed /I,U/ are usually realized as high vowels (27.a,b), but are sometimes also realized as [e,o] before non-high tonic vowels (27.d). The total range of patterning in (27) cannot be explained by the standard raising account (example (4)), which gives only (27.a,b).

I hypothesize that the contradictory patterns in (27) arise because Pasiego is in the process of losing the mid/high contrast pretonically. In other words, the Pasiego pretonic vowel inventory is becoming like the posttonic inventory (§6.2). A difference is that is the posttonic inventory /E,A,O/ with no alternations, while the pretonic inventory is undergoing reanalysis as a reduced inventory of /E,A,O/, for which alternations still exist. I hypothesize that the change in progress in Pasiego could have arisen as follows:
Functionally, all three of the patterns in (27.a,b,d) neutralize the mid/high contrast, while only the pattern in (27.b) maintains the mid/high contrast in pretonic position. The preponderance of the available evidence, then, indicates that Pasiego has no mid/high contrast pretonically. I hypothesize that this fact has had a great influence on pretonic vowel patterning in Pasiego. The original situation in Pasiego may have been that shown in (27.a,b), where a rule of pretonic metaphony applied to raise mid vowels to high in case the tonic vowel was high. This rule would have created many instances of neutralization of pretonic non-low vowels. I hypothesize, then, that neutralization of the mid/high contrast in most contexts could have been reinterpreted as evidence for vowel reduction. A similar process of reduction of non-low vowels to high in atonic position is attested in Catalan (Mascaró 1978) and in many Italian dialects (Rohlfs 1949/1966).

Note that the rule of tonic metaphony (1) would also have created many instances of neutralization of the mid/high contrast. However, the targets of tonic metaphony are main-stress vowels while the targets of pretonic metaphony are stressless vowels. In the case of the tonic vowels, a reanalysis of neutralization as reduction is precluded by the fact that the main-stress vowels are not in a position that favours reduction. However, the fact that pretonic vowels are stressless may well have contributed to a reanalysis of neutralization as reduction.

In Pasiego, then, I argue that the patterns in (27.c,d) represent a change in progress from a full 5-vowel inventory to reduction pretonically. I explain the patterns in (27.c,d) as follows, drawing on the literature on phonologization, which can be applied as well to the phenomenon of dephonologization or loss of contrasts.

In the literature on phonologization—i.e. the means by which foreign sounds become incorporated into the phonology of a borrowing language—it is argued that phonologization starts with the incorporation of new elements into the phonetic component, and that these elements ultimately work their way into the phonological component. See Davis (1994), Haugen (1950), Holden (1976), Hyman (1970), Itô and Mester (1993), Kaye and Nikkel (1979), Paradis (1993), Paradis and LaCharité (1994), Prunet (1990), Silverman (1992), and Singh (1987) for further discussion. In a similar spirit, I would argue that the opposition of phonologization—namely 'de-phonologization' or neutralization of a mid/high contrast—might also infiltrate the phonology of a language by becoming first an optional phonetic process, then a phonological rule.

In Pasiego, then, neutralization of the mid/high contrast could have begun via the introduction of a phonetic process of enhancement for [high] of /E,O/ before stressed high vowels. This process is illustrated for two words taken from example (4) in (28). (As before, features inserted by enhancement are bolded.)

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14 Alternatively, however, this rule could be viewed as a variable rule—that is, as an optional rule that is associated with a certain frequency of usage (cf. Chambers and Trudgill 1980: 155-161 for discussion of variable rules).

15 My hypothesis is similar in spirit to Maiden's (1991) picture of the role of pretonic metaphony in dialects of Italian. Maiden places pretonic metaphony in the context of an historical continuum which has several reflexes in present-day Italian dialects: The initial historical state is one in which pretonic vowels display the maximal number of contrasts in pretonic position. A second stage is that of pretonic metaphony, in which there is some neutralization of pretonic mid and high vowels. A third stage is reduction, in which vowels in pretonic position regularly reduce to three vowels, or even just one vowel. A final stage is deletion of pretonic vowels.

16 Related discussion is also found in Kiparsky (1985), in which Kiparsky argues that rules may apply at different levels of the grammar, i.e. lexically, postlexically, and phonetically.
(28) Pretonic metaphony (27.a,b):

a. \[\text{r[i]gir.u, r[e]gér.os}\] \[\text{marsh, marshes}\]

b. Enhancement for [high] c. Lack of enhancement for high

\[
\begin{array}{c|c|c}
\text{r[i]} & \text{gi} & \text{r.u} \\
\hline
\text{Ap} & \text{Ap} & \text{Ap} \\
\end{array}
\]

\[
\begin{array}{c|c|c}
\text{r[e]} & \text{gé} & \text{r.os} \\
\hline
\text{Ap} & \text{Ap} & \text{Ap} \\
\end{array}
\]

As shown in (28) enhancement would have applied to vowels preceding tonic high vowels (28.a) but not to vowels preceding tonic non-high vowels (28.b). (See Dyck 1995 for discussion of the motivation for this type of context-sensitive feature-fill-in rule.) The operation of enhancement shown in (28) would have created a situation similar to that of present-day Pasiegco, in which the neutralized inventory [i,a,u] occurs before stressed high vowels (as in 27.a,b)).

However, this process could have then become more general, such that it applied both contextually (27.a,b) and acontextually (27.c,d), as shown in (29). The words in (29) are taken from example (11).

(29) Acontextual operation of enhancement:

a. Examples of acontextually enhanced words:

\[
\begin{array}{c|c|c}
\text{i. m[e][e]ó.in.a} & \text{medicine} & \text{no enhancement} \\
\hline
\text{ii. m[i][i]óína} & \text{medicine} & \text{enhancement} \\
\end{array}
\]

\[
\begin{array}{c|c|c}
\text{iii. p[e]dr.i.kár} & \text{to preach} & \text{no enhancement} \\
\hline
\text{iv. p[i]drikár} & \text{to preach} & \text{enhancement} \\
\end{array}
\]

b. \text{mE IE θI nA (i)} \text{mE IE θI nA (ii)}

\[
\begin{array}{c|c|c}
\text{Ap} & \text{Ap} & \text{Ap} \\
\hline
\text{[high]} & \text{[high]} & \text{[high]} \\
\end{array}
\]

c. \text{pE drI kAr (iii)} \text{pE drI kAr (iv)}

\[
\begin{array}{c|c|c}
\text{Ap} & \text{Ap} & \text{Ap} \\
\hline
\text{[high]} & \text{[low]} & \text{[high]} \\
\end{array}
\]

As shown in (29.b,c) generalized enhancement would optionally apply to any underlying mid vowel (such as /E/), regardless of the height of the tonic vowel (/I/ in (29.b) and /A/ in (29.c)).

In addition, the change towards neutralizing the mid/high contrast pretonically could also have been achieved via the introduction of a process of delinking of [high] from /I,U/ before non-high tonic vowels, a type of total harmony discussed in §4.4.3. The introduction of this process in the phonetic component would explain the sporadic instances in which underlying high vowels become mid before tonic high vowels (27.d), illustrated in (30).
(30) Delinking ('total harmony') in Pasiego:

a. i. [a lo lijéro] rapidly (said of dancing)
   ii. [lexéros] light (plural adjective)

b. II xE rO (i) c. II xE rO (ii)

As shown in (30.b,c), delinking sometimes applies in order to lower underlying high vowels before tonic non-high vowels.\(^\text{17}\)

My hypothesis that Pasiego is in the process of losing the mid/high contrast pretonically gives a unified explanation of the patterning in (27). It is based on the idea that enhancement applies to any mid vowel—regardless of syntagmatic context and in contravention of the CEP—in the (27.c,d) cases. This hypothesis is reinforced by the relative paucity of evidence for a mid/high contrast pretonically, favouring a reanalysis along the lines of reduction. It is supported as well as by the patterning of posttonic vowels which are nearly invariably realized as phonetically high.

6.4. Summary

In the preceding sections, I have argued that there is a relationship between the inventory of vowels characteristic of a given domain and the realization of those vowels:

(31) Pasiego inventories in domains and phonetic realization:

<table>
<thead>
<tr>
<th>Domain</th>
<th>Inventory (excluding low /A/)</th>
<th>Process</th>
<th>Realization</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Verbal prefixes,</td>
<td>/E/</td>
<td>Optional enhancement for [high] or for [low];</td>
<td>[i] ~ a</td>
</tr>
<tr>
<td>word-initially</td>
<td></td>
<td>lack of enhancement for height</td>
<td></td>
</tr>
<tr>
<td>before nasals, word-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>initially before s-stop</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>clusters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Posttonic vowels</td>
<td>/E, O/</td>
<td>Obligatory enhancement for [high]</td>
<td>[i, u]</td>
</tr>
<tr>
<td>c. Pretonic vowels</td>
<td>/I, U/ \rightarrow {E, O}</td>
<td>Optional reduction (delinking of [high])</td>
<td>[i<del>e], [u</del>o]</td>
</tr>
<tr>
<td></td>
<td>/E, O/</td>
<td>Optional enhancement for [high]</td>
<td>[e<del>i], [o</del>u]</td>
</tr>
</tbody>
</table>

As shown in (31.a), certain domains in Pasiego have only one vowel. This vowel can be realized as a non-back vowel of any height (mirroring the patterning of epenthetic or

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\(^{17}\) Examples such as (14) can be derived as follows: the feature [high] form the high vowel of the suffix /fo/ is optionally delinked. If delinking takes place, the subsequent representation of /I/ is an intermediate representation, /E/. This representation can in turn be subject to enhancement for [low], giving [a]. Alternatively, /E/ can fail to be enhanced, giving [e].
empty vowels crosslinguistically). (31.b) summarizes the patterning of a domain which has a 3-vowel inventory; in this inventory, as in many 3-vowel inventories, the three vowels are realized as [i,a,u] (c.f. Maddieson 1984). I have argued that this type of patterning is due to enhancement for [high] of non-low vowels. Finally, as shown in (31.c) pretonic vowels in Pasiego provide evidence for a transitional situation in which a mid/high contrast is still attested, but in which the loss of a mid/high contrast is also evident. Loss of the mid/high contrast is realized by optional delinking of [high] from the representations of phonologically high vowels (§4.4.3). The loss of a mid/high contrast is also realized by the rule of enhancement. This rule is syntagmatically conditioned in the majority of cases (27.a,b), but is being generalized such that it applies to any mid vowel (27.c,d).

7. Conclusion

I have argued in this paper that the patterning of non-final vowels in Pasiego provides evidence for the operation of a feature-fill-in rule, enhancement. I have shown that the patterning of non-final vowels is predictable, given three assumptions: 1) vowel inventories are contrastively-determined; 2) vowel inventories can be relativized to subdomains; and 3) non-contrastive features can be added to vowel representations. I have also shown that these assumptions derive the variation for height of vowels in the verbal prefixes and word-initially before s+stop clusters (31.a), as well as the invariable [i,a,u] pattern of the posttonic vowels (31.b). The approach outlined here also sheds light on the otherwise intractible problem of Pasiego pretonic vowels (31.c): The CEP predicts that the attested patterning of pretonic vowels should not occur. Assuming an ongoing reanalysis of the pretonic subinventory, however, the patterning of pretonic vowels is derivable from the generalization of enhancement for [high] to any mid vowel. This approach thus elucidates an otherwise intractible problem of language change.

8. References


