

Autosegmental and metrical spreading in the vowel-harmony systems of northwestern Spain*

JOSE IGNACIO HUALDE

Pieter Muysken
Amsterdam

Joachim Neuhaus
Münster

Frans Plank
Konstanz

Rebecca Posner
Oxford

Geoffrey K. Pullum
Santa Cruz, Calif.

S. G. Pulman
Cambridge

Tanya Reinhart
Tel Aviv

Suzanne Romaine
Oxford

Pieter Seuren
Nijmegen

Petr Sgall
Prague

Neil Smith
London

Arnim von Stechow
Konstanz

Mark Steedman
Edinburgh

Keith Stenning
Edinburgh

Theo Vennemann
Munich

Brian Wenk
Nijmegen

Dieter Wunderlich
Düsseldorf

Arnold Zwicky
Columbus, Ohio

Abstract

This paper studies the vowel-harmony processes found in the dialects of Asturias-Cantabria (Spain). These dialects present a variety of harmony systems. Harmonization may be triggered by certain high final vowels (metaphony) or by high stressed vowels. These rules can be in a feeding relation, and up to three different processes may be found in one single dialect. We find three major types of metaphony:

- 1. metaphony extends throughout the domain of a phonological word;*
- 2. metaphony affects vowels only up to the stressed vowel;*
- 3. only the quality of the stressed vowel is affected by a metaphony-inducing final vowel.*

This variation is of great theoretical significance. Whereas the first type can be straightforwardly analyzed as autosegmental spreading, the other two types require a metrical analysis. The feature percolates to all vowels in the foot in type 2 metaphony processes; but only to the head of the foot (the stressed vowel) in type 3 metaphony.

It is thus shown that a seemingly unitary process (vowel harmony) can be implemented in radically different ways in closely related dialects. It is argued that the metrical nature of vowel harmony in certain dialects does not add complexity to the grammar, since metrical structure must be built for stress assignment.

Introduction

A number of dialects spoken in northwestern Spain (regions of Asturias and Cantabria) present vowel-harmony processes triggered by the word-final vowel or by the stressed vowel. Harmonization that has its source in the word-final vowel is known as metaphony in the Romanist tradition.

Although the phenomenon has been relatively well studied from a

triggering stressed vowel is final, as in /komi/kumi 'I ate' (from *komér* 'to eat'), /meti/miti 'I put in' (from *metér* 'to put in') (Penny 1978; similar examples also in Penny 1969a).

As for metaphony, the question of whether stressed final vowels can be triggered obviously only arises in dialects with type 1 metaphony, where the harmonizing feature can spread to the left beyond the stressed vowel. The only process of this type in the dialects that we will consider is centralizing metaphony in Pasiego. It so happens that, for this particular process, the trigger must be a high back vowel. Front vowels do not trigger the process, regardless of stress properties. As we mentioned above, we lack examples of polysyllabic words ending in /-ú/. Nevertheless, the stressed monosyllabic pronoun *tú* 'you-sg.' does not present a centralized vowel. This would indicate that centralization is only present in items ending in unstressed /-u/. The general conditions on the trigger of each of the two processes can be summarized as follows:

- (1) Metaphony: + high, + final, (+ back), - stress
 UVR: + high, ± final, + stress

In this paper, we will first give analyses of two dialects representing the two types of stress-conditioned metaphony: the dialect of Tudanca in Cantabria, where metaphony affects all vowels in the metrical foot, and the Asturian dialect of Lena, where only the stressed vowel undergoes metaphony. The facts of Pasiego, which have been the object of several other analyses, will then be reconsidered. Pasiego presents, as mentioned above, two metaphony processes: one stress-conditioned (raising) and the other independent of stress (centralization). In addition, unstressed vowel raising, a process also found in Tudanca, is fed by raising metaphony in this dialect.

The conclusion will be that processes of vowel harmony might be of either an autosegmental or a metrical nature. In principle, an autosegmental analysis would seem always simpler and, therefore, preferable from the point of view of the learner. This is not, however, necessarily so in a stress language, where metrical structure needs to be built for the assignment of stress features. In the case of the stress-sensitive harmony processes that we deal with in this paper, the same metrical structure built for stress assignment is then utilized to percolate a different feature, the harmonizing feature. Little complexity is, thus, added to the harmony process by the use of metrical structure, since this is already present for independent purposes.

The evidence presented here, then, argues for the use of metrical devices in the analysis of certain vowel-harmony processes (see Halle and Vergnaud 1981; Poser 1982; Van der Hulst and Smith 1982; Zubizarreta

1979, 1982). In particular, there are stress-conditioned processes, which must be treated metrical-

1. Vowel harmony in Tudanca Montañés

The dialect spoken in Tudanca, in Cantabria, shows several vowel harmony processes. One of them is triphthongization of stressed vowels and causes the centralization of unstressed vowels in the stressed syllable. The other process is triphthongization of unstressed vowels which cause pretonic nonlow vowels to harmonize with the stressed vowel. All from Penny's (1978) excellent monograph on the variety of Tudanca.

1.1 Centralizing metaphony in Tudanca

Tudanca Montañés has ten vowels in its vowel space, which pattern together in two systems, showing a contrast between noncentralized vowels (a) and five centralized vowels (b) (from Penny 1978: 54). Following McCauley (1978), we will use the following symbols for the centralized vowels with capitals:

Phonetically, centralization does not affect the

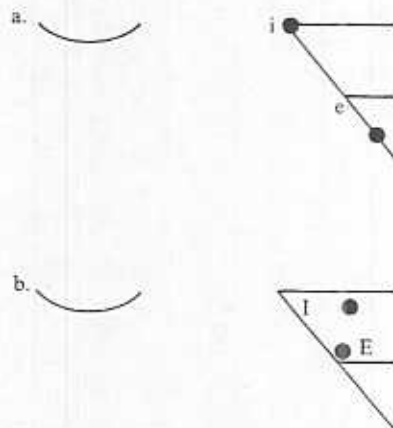


Figure 1. The vowels of Tudanca Montañés

n /komi/kumi 'I ate' (from *komér* 'to
 tér 'to put in') (Penny 1978; similar

whether stressed final vowels can be
 cts with type I metaphony, where the
 e left beyond the stressed vowel. The
 ts that we will consider is centralizing
 s that, for this particular process, the
 l. Front vowels do not trigger the
 es. As we mentioned above, we lack
 ng in /-ú/. Nevertheless, the stressed
 oes not present a centralized vowel.
 on is only present in items ending in
 ons on the trigger of each of the two
 lows:

† back), — stress
 † stress

lyses of two dialects representing the
 taphony: the dialect of Tudanca in
 s all vowels in the metrical foot, and
 e only the stressed vowel undergoes
 /hich have been the object of several
 lered. Pasiego presents, as mentioned
 ie stress-conditioned (raising) and the
 zation). In addition, unstressed vowel
 lanca, is fed by raising metaphony in

esses of vowel harmony might be of
 I nature. In principle, an autosegmen-
 ler and, therefore, preferable from the
 ot, however, necessarily so in a stress
 eeds to be built for the assignment of
 ress-sensitive harmony processes that
 ne metrical structure built for stress
 late a different feature, the harmoniz-
 us, added to the harmony process by
 his is already present for independent

, argues for the use of metrical devices
 -harmony processes (see Halle and
 r Hulst and Smith 1982; Zubizarreta

1979, 1982). In particular, there are stress-conditioned vowel-harmony
 processes, which must be treated metrically.

1. Vowel harmony in Tudanca Montañés

The dialect spoken in Tudanca, in Cantabria, presents two vowel-
 harmony processes. One of them is triggered by high word-final un-
 stressed vowels and causes the centralization of other vowels up to the
 stressed syllable. The other process is triggered by high stressed vowels
 which cause pretonic nonlow vowels to harmonize in height. My data are
 all from Penny's (1978) excellent monographic study on the Montañés
 variety of Tudanca.

1.1 Centralizing metaphony in Tudanca Montañés

Tudanca Montañés has ten vowels in stressed syllables, which phonologi-
 cally pattern together in two systems, shown in Figure 1. There are five
 noncentralized vowels (a) and five centralized vowels (b) (figures adapted
 from Penny 1978: 54). Following McCarthy (1984), I represent central-
 ized vowels with capitals.²

Phonetically, centralization does not affect all five vowels in the same

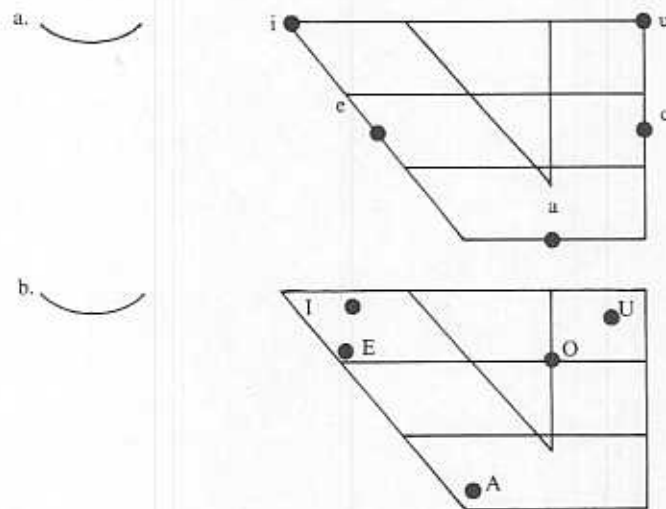


Figure 1. The vowels of Tudanca Montañés

manner, as can be seen in (b). Whereas *O* is a very centralized vowel, centralized *E* is only slightly centralized and centralized *A* is raised and fronted; that is [æ].

The stressed vowel is centralized if the word ends in an (underlyingly) high vowel. Otherwise, the stressed vowel is noncentralized. In (2), examples are given of words with a final high back vowel (left column) and related forms with a mid or low vowel in the last syllable (right column). The words in the left column present a centralized stressed vowel, which is noncentralized in the related forms of the right column. A final high back vowel is always centralized:

(2)	pÍntU	'male calf'	pÍnta	'female calf'
	čÍkU	'boy'	čÍka	'girl'
	sĚkU	'dry' (masc)	sĚka	'dry' (fem)
	kĚsU	'cheese'	kĚsos	'cheeses'
	ahambrÁU	'hungry' (masc)	ahambráa	'hungry' (fem)
	sekÁIU	'to dry him'	sekálo	'to dry it' (mass)
	ÓhU	'eye'	óhos	'eyes'
	sÓIU	'alone' (masc)	sóla	'alone' (fem)
	bjÚdU	'widower'	bjúda	'widow'
	θÚrdU	'left-handed'	θúrdos	'left-handed'
		(sg masc)		(pl masc)

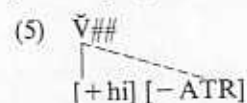
Centralization of the stressed vowel also takes place when the vowel of the last syllable is underlyingly a high front vowel. A complication is introduced in this case by the fact that the distinction between final /i/ and /e/ is always neutralized, both with allophones ranging in height from mid to high and including [ə] and [i]. The underlying quality of the final vowel can, however, be detected from its effects on the stressed vowel. /i/ causes centralization and /e/ does not. Thus compare the imperative forms in the left column of (3), with final /-i/, with the /-e/ final third-person singular present indicative forms of the same verbs, in the right column:

(3)	/abri/[Ábrə]	'open!'	/abre/[ábrə]	'opens'
	/meti/[mĚti]	'put in!'	/mete/[méti]	'puts in'
	/komi/[kÓmə]	'eat!'	/kome/[kómə]	'eats'

In Tudanca Montañés, as in the standard dialects of Spanish, word stress may fall in any of the three last syllables of the word. In the examples given in (2)–(3), stress falls uniformly on the penult. If stress falls on the antepenultimate syllable, the unstressed penultimate also surfaces as centralized. As the examples in (4) show, centralization affects all vowels up to the stressed vowel starting from the right end of the word but does not go beyond the stressed syllable:³

(4)	antigwÍsmU	'very old'
	kÁrAbU	'tawny owl'
	hÍgAdU	'liver'
	orĚgAnU	'oregano'
	pÓrtIkU	'hall'
	pÚlpItU	'pulpit'
	θÁngAnU	'drone'
	rakÍtIkU	'rachitic'

Final, unstressed,⁴ high vowels are assigned the centralizing feature [-ATR], by a rule like (5):⁵



Rule (5) is actually a schematic in which different phonological features are organized at different nodes (see Clements 198 and Pulleyblank (i.p.) and Archangeli's formulation which consists of the number of parameters that is taken into account: the trigger or target parameters that need to be determined, the type of operation that the rule performs: spreading, insertion, deletion of the rule; that is, the elements inserted, deleted, or delinked.

The rule represented schematically in (5) inserts the feature [-ATR] on the appropriate unstressed high vowel. This rule is

- (6) Centralization of final high vowels:
 operation: insert
 argument: [-ATR]
 target conditions: V, [+high stress foot]

The feature [-ATR] must then be spread to the other vowels. How to stop the spreading of the feature [-ATR] to the underlying vowels are possible [-ATR] (P-bearing units), autosegmentally, cause all possible feature-bearing units to acquire the spreading feature.

s *O* is a very centralized vowel, *l* and centralized *A* is raised and

e word ends in an (underlyingly) vowel is noncentralized. In (2), a high back vowel (left column) vowel in the last syllable (right in present a centralized stressed ated forms of the right column. A zed:

ta	'female calf'
a	'girl'
a	'dry' (fem)
os	'cheeses'
ambráa	'hungry' (fem)
álo	'to dry it' (mass)
os	'eyes'
a	'alone' (fem)
ida	'widow'
rdos	'left-handed'
	(pl masc)

takes place when the vowel of the front vowel. A complication is the distinction between final /i/ and phones ranging in height from mid underlying quality of the final vowel ts on the stressed vowel. /i/ causes mpare the imperative forms in the the /-e/ final third-person singular rbs, in the right column:

ɔ/[ábrə]	'opens'
e/[mɛti]	'puts in'
ie/[kómə]	'eats'

andard dialects of Spanish, word ast syllables of the word. In the uniformly on the penult. If stress the unstressed penultimate also s in (4) show, centralization affects ing from the right end of the word yllable:³

(4)	antigwísImU	'very old'
	kÁrAbU	'tawny owl'
	hÍgAdU	'liver'
	orĒgAnU	'oregano'
	pÓrIkU	'hall'
	pÚlpItU	'pulpit'
	θÁngAnU	'drone'
	rākÍtIkU	'rachitic'

Final, unstressed,⁴ high vowels are noncontrastively centralized. They are assigned the centralizing feature, which I will take to be the feature [-ATR], by a rule like (5):⁵

(5)	V̄###
	[+hi] [-ATR]

Rule (5) is actually a schematic vision of the process. I assume that phonological features are organized in a hierarchical manner under different nodes (see Clements 1985; Sagey 1986). Following Archangeli and Pulleyblank (i.p.) and Archangeli (1987), I will adopt a system of rule formulation which consists of the specification of the value of a short number of parameters that is taken, as well as any specific conditions imposed on the trigger or target of the process. The two fundamental parameters that need to be determined in any phonological process are the type of operation that the rule involves (there being four basic processes: spreading, insertion, deletion, and delinking), and the argument of the rule; that is, the element (feature or node) that is spread, inserted, deleted, or delinked.

The rule represented schematically in (5) consists of the insertion of the feature [-ATR] on the appropriate place of the structure of a word-final unstressed high vowel. This rule will be formulated as in (6):

(6)	Centralization of final high vowels in Tudanca Montañés
	operation: insert
	argument: [-ATR]
	target conditions: V, [+high], __##, [-stress] (that is, nonhead in stress foot)

The feature [-ATR] must then spread leftward by rule. The problem is how to stop the spreading of the feature at the stressed syllable. If all five underlying vowels are possible feature-bearing units for the feature [-ATR] (P-bearing units), autosegmental spreading of the feature would cause all possible feature-bearing units in the word or phrasal domain to acquire the spreading feature. Consider the effects of autosegmental

spreading of centralization in a word such as /antigwísimu/ 'very old'. I start with the output of centralization of final high vowels /antigwísimU/:

- (7)
- | | |
|-------------------------|----------------|
| | antigwísimU |
| P-bearing units | a i i i U |
| Autosegmental spreading | a i i i U |
| | \ \ \ \ \ |
| | [-ATR] |
| | *[AntIgwísImU] |

What we want is for the centralizing feature to spread leftward only up to the stressed syllable, to obtain the attested form [antigwísImU] 'very old'. The solution is to make this vowel-assimilation rule which depends on stress features operate in a domain defined by the assignment of stress: the metrical foot (see van der Hulst and Smith 1982 for a study of harmony processes restricted to metrical domains).

I take stress assignment to be a structure-building process and will assume that the structure created in this process can be utilized for the spreading of other features. The spreading of a feature may thus take place in one of two ways: in an autosegmental manner, utilizing the hierarchical structure of segments (see Archangeli and Pulleyblank i.p.), or in a metrical manner, through prosodic structure. I assume that stress is not a feature which is part of the segmental feature hierarchy but, rather, is assigned by building metrical structure. If the spreading of a feature is constrained by the position of a stressed element, this indicates that the feature in question is percolated through the metrical structure built for stress assignment. I take the autosegmental or metrical character of the rule to constitute a parameter of variation in spreading rules. [-ATR] spreading is a stress-conditioned, metrical process in Tudanca Montañés, but a non-stress-conditioned, autosegmental operation in the neighboring Pasiego dialect (see section 3).⁶

We can thus percolate the feature [-ATR], assigned to begin with to a high word-final vowel, to all vowels in a metrical foot defined by stress, causing the harmonization in the feature [-ATR] of the stressed vowel and a possible other vowel within the metrical foot.⁷

The assignment of stress in the Tudanca dialect takes place in a similar way as in Standard Castilian Spanish (see Harris 1983; Roca 1988 for two different analyses of stress assignment in Standard Spanish). Here I will assume that the basic rule responsible for stress assignment in Montañés or Castilian is one that builds a left-headed foot from the right end of the stress domain, giving the unmarked oxytone pattern, as in (8a). This is unless the last syllable is marked as a head, as in (8b), or is marked in the lexicon as extrametrical, as in (8c):⁸

- (8) a. $\sigma\acute{\sigma}\sigma\sigma$ b. $\sigma\sigma\sigma$
- \

I will further assume that, in the stress, (8c), the extrametrical syllable

- (9) $\sigma\acute{\sigma}\sigma\sigma$
- \ \

Through these metrical structures rule (6) to a final unstressed high penultimate, the two vowels in the f vowel) will be centralized. If stress three last syllables of the word v [-ATR]). The rule of centralizing m as a process that spreads the feature stress foot:

- (10) Centralizing metaphony in T
operation: spread
mode: metrical
domain: stress-foot
argument: [-ATR]
target (P-bearing units): V

Some derivations are given in (11)

- (11) a. Underlying representation
/kukiyégu/⁹ /ant
- b. Stress assignment:
kukiyégu anti
- \
- c. Centralization of final hi
kukiyégU anti
- |
- [-ATR] [-
- d. Centralizing metaphony:
kukiyÉgU ant
- \
- [-ATR] [-
- [kukiyÉgU] [an
- 'a lamb born late' 've

As mentioned above, the front vowels /e/ and /i/ are neutralized in word-final position. In particular, in the realization of our example /komi/ we may obtain a vowel [i] that is not centralized. Since the stressed vowel will, however, be centralized, we need to assume that there are intermediate stages /kómI/ and /kŌmI/, as in the derivation in (12), and that the decentralization of final /-I/ or its lowering to a schwalike vowel is effected by a low-level phonetic rule that applies after the spreading of the centralizing feature [-ATR].

The process of high final-vowel-induced centralization, illustrated in (2)–(4), affects the stressed vowel and vowels to its right, as just mentioned, but not pretonic vowels.

Centralized vowels can, however, also be found to the left of the stressed vowel, but in this case, centralization is caused by a totally independent process. A vowel to the left of the stressed vowel will be centralized if it is in contact with a labial consonant, either to its left or to its right, and fulfills one of two additional conditions: it either is mid, or is in a word that ends with a high vowel (that is, if the stressed vowel is centralized). The examples in (12a) show labial-induced centralization of /e/ and /o/ in non-high-final words. The examples in (12b) show that high and low vowels are not centralized in analogous circumstances:

- (12) a. mEñika 'pinky'
 gwEbéra 'egg-basket'
 bOnúka 'weasel'
 mOrθiya 'blood-sausage'
- b. piyihkos 'pinches'
 pintáa 'painted' (fem)
 buhános 'worms'
 puntáa 'stitch'
 pasár 'to pass'
 mařános 'pigs'

If the final vowel is high, on the other hand, all five phonological vowels are centralized to the left of the stressed vowel if in contact with a labial consonant:

- (13) a. pEřÚčU 'little dog'
 bEhÚčU 'old person'
 bEřÁkU 'boar'
 řEmjÉndU 'patch'
 sObÁkU 'armpit'
 mOkÍyU 'snot'
 pOtrÚkU 'colt'

- b. piyÍhkU 'pinch'
 ehplnÁθU 'spinal c'
 mUřÍyU 'stone'
 bUhÁnU 'worm'
 mAřÁnU 'pig'
 tAmbÚhU 'short a'

This labial-induced centralization adjacency to a labial consonant or glide this is not a vowel-harmony process as here (see Penny 1978: 32–35 for more of centralization). We will be concern

1.2 Unstressed vowel raising in Tud

Tudanca Montañés possesses a se Unstressed nonfinal mid vowels are contains a high vowel or a prevocalic be observed by comparing related fi and prevocalic glides in the stressed

- (14) θéra 'wax'
 séka 'dryness'
 merendár 'to have a snack'
 mÉdjU 'middle'
 koθér 'to boil, cook'
 molér 'to grind'
 hÓrnU 'oven'

This raising process, unlike cent exceptions. Systematically, there is n and /es-/ (which often correspond to

The raising of pretonic vowel is an (15) show:

- koθér 'to cook' kuθiúra
 (compar
 metér 'to put in' mitiría
 (compar
 komér 'to eat' kumiría
 (compar

This process can be understood as au [+high] leftward from the stressed v

s /e/ and /i/ are neutralized in realization of our example /komi/ realized. Since the stressed vowel assume that there are intermedi-derivation in (12), and that the vering to a schwalike vowel is applies after the spreading of the

ed centralization, illustrated in vowels to its right, as just

o be found to the left of the lization is caused by a totally t of the stressed vowel will be consonant, either to its left or to conditions: it either is mid, or is that is, if the stressed vowel is labial-induced centralization of xamples in (12b) show that high alogous circumstances:

b.	pIyĭhkU	'pinch'
	chpInÁθU	'spinal cord'
	mUřĭyU	'stone'
	bUhÁnU	'worm'
	mAfÁnU	'pig'
	tAmbŪhU	'short and fat person'

This labial-induced centralization process operates only under strict adjacency to a labial consonant or glide. Although it does not lack interest, this is not a vowel-harmony process and thus will not be further examined here (see Penny 1978: 32–35 for more details and some less systematic cases of centralization). We will be concerned only with vowel-harmony rules.¹⁰

1.2 Unstressed vowel raising in Tudanca Montañés

Tudanca Montañés possesses a second process of vowel harmony. Unstressed nonfinal mid vowels are raised to high if the stressed syllable contains a high vowel or a prevocalic glide. The operation of this rule can be observed by comparing related forms with nonhigh and high vowels and prevocalic glides in the stressed syllable:

(14)	θéra	'wax'	θiriya	'match'
	séka	'dryness'	sikúra	'thirst'
	merendár	'to have a snack'	mirjénda	'snack'
	mĕdjU	'middle'	mIdjÁnU	'medium'
	koθér	'to boil, cook'	kuθína	'kitchen'
	molér	'to grind'	muljénda	'grinding'
	hÓrnU	'oven'	hurniya	'stove'

This raising process, unlike centralization, has a number of lexical exceptions. Systematically, there is no raising in the initial syllables /re-/ and /es-/ (which often correspond to prefixes).

The raising of pretonic vowel is an unbound process, as the examples in (15) show:

koθér	'to cook'	kuθiúra	'cooking (noun)
			(compare Castilian [koθedúral])
metér	'to put in'	mitiría	'would put in'
			(compare Castilian [meterial])
komér	'to eat'	kumiría	'would eat'
			(compare Castilian [komerial])

This process can be understood as autosegmental spreading of the feature [+high] leftward from the stressed vowel:

ind, all five phonological vowels /vowel if in contact with a labial

- (16) komería → kumiría
 [+high] [+high]

McCarthy (1984) describes this spreading process, which, as we will see, is also found in Pasiego, as being fundamentally bidirectional. To do that we would have to exclude the final vowel from the domain of spreading, which, when it is /-o/ (as in the plural masculine or in the singular masculine of uncountable mass nouns and adjectives and some exceptional nonmass masculine nouns), is not affected by raising; for example, *θúrdos* 'left-handed' (masc. pl.), not **θúrdus*. McCarthy does in fact exclude final vowels from consideration, since these are affected by other processes in Pasiego. As we will see below, word-final /-o/ in Pasiego is realized as a vowel that ranges in height from open [ɨ] to closed [ɔ]. It is, however, phonetically different from a true high vowel.

In the case of proparoxytones, we could in theory find a test ground for the bidirectionality of the process, even excluding the final vowel from consideration. But proparoxytones with a mid vowel in the posttonic syllable are extremely rare in Spanish, and the few that are found mostly belong to the learned lexicon (*método*, *cátodo*). If we add the requirement that the stressed vowel be high we have probably only one possible example: *húmedo* 'humid'. If the process of [+high] spreading were bidirectional we would expect *úmidos/úmidus* for the plural in Tudanca and Pasiego respectively. The fact is, however, that this is not a valid example in Pasiego, since the attested form is *ómedus*, with a mid stressed vowel, and the word is not listed by Penny (1978) in his study of Tudanca Montañés. We are thus left without examples to show the bidirectionality of the process if we exclude the final syllable from consideration. However, given the fact that there is no compelling reason to exclude the final syllable from the domain, I conclude that this is an unbound, directional, leftward process of autosegmental spreading. The process is formulated as in (17):¹¹

- (17) Unstressed vowel raising in Tudanca Montañés:
 operation: spread
 mode: autosegmental
 direction: leftward
 argument: [+high]
 trigger condition: [+stress]
 target condition: V

We have characterized the target of the rule simply as a vowel. The fact is, however, that the low vowel is not affected by the rule. This follows

directly if we assume that the impo
 +high] which the spreading of the fe
 create, is universally resolved in the
 This is not necessarily the case, howe
 the Lena dialect; but it can be safe
 universal grammar.

Whether a low vowel blocks furt
 further spreading even though it doe
 ascertain for the Tudanca dialect, gi
 are not rare and that the process, ur
 does not affect cliticizing elements st

2. Vowel harmony in Lena Bable

In the Asturian dialect of Lena, mas
 present in their stressed syllable a hig
 corresponding masculine plural (er
 (singular [-a], plural [-as]/[-es]).¹² As
 raising of the stressed vowel in one d
 stressed low vowel [á] in words with
 vowel [é] in [-u]-final masculine sing
 vowels [é] and [ó] correspond the l
 There is no change if the stressed vc
 other than the masculine singular:

- (18)
- | | masc. sg. | masc. pl. | f |
|----|-----------|-----------|---|
| a. | gétu | gátos | g |
| | séntu | sántos | s |
| | benténu | bentános | t |
| | tsamérgu | tsamárgos | t |
| | pélu | pálos | |
| | šénu | šános | š |
| b. | kabiðu | kabéθos | l |
| | nínu | nénos | r |
| | kordíru | kordéros | l |
| | kaldíru | kaldéros | l |
| | tsúbu | tsóbos | t |
| | kúku | kókos | |
| | kúšu | kóšos | |
| c. | kúbu | kúbos | |
| | fíu | fíos | |
| | kabrítu | kabritos | |

The same vocalic alternations in the stressed vowels are found in adjectives and participles. Interestingly, adjectives with masculine singular in [-u]¹⁴ and participles oppose a form in [-o], used in agreement with uncountable or 'mass' nouns, to the masculine singular. Some examples of masculine singular, feminine singular, and mass forms of adjectives are given in (19):¹⁵

(19)	masc. sg.	fem. sg.	mass	
	blénku	blánka	blánko	'white'
	éltu	álta	álto	'tall'
	gwépu	gwápa	gwápo	'handsome'
	moyéu	moyá	moyáo	'wet'
	fértu	fárta	fárto	'stuffed'
	andéu	andá	andáo	'walked'
	búnu	bóna	bóno	'good'
	bwinu	bwéna	bwéno	'good'
	fúndu	fóna	fóno	'deep'
	reúndu	reóna	reóno	'round'
	túntu	tóna	tóno	'stupid'
	flúšu	flóša	flóšo	'lazy, loose'
	fíu	féa	féu	'ugly'
	fondíru	fondéra	fondéro	'lower'
	síku	séka	séko	'dry'

Masculine nouns that can refer either to a mass or to countable objects present an ending [-u] in the singular countable form and an ending [-o] in the mass form. The presence of one or the other ending has consequences for the height of the stressed vowel:

(20)	countable sg.	mass	
	pílu	pélo	'hair'
	fyíru	fyéro	'iron'

The few items that present final [-i] (such as the demonstratives) show that raising of the stressed vowel also takes place in this case:

(21)	masc sg.	fem sg.	
	ísti	ésta	'this'
	isi	ésa	'that'

As in Castilian or Tudanca Montañés, in the Asturian dialect of Lena, word stress may fall in any of the three last syllables. It is, thus, possible to have an intervening syllable between the raising-triggering high final vowel and the target of raising, the stressed vowel. In these cases, raising operates as in the cases examined so far where trigger and target are

adjacent. The vowel intervening unaffected, unlike what we saw w

(22)	masc sg.	masc pl.
	burwíbanu	burwébanos
	péšaru	pášaros
	kékabu	kákabos
	kéndanu	kándanos
	sébanu	sábanos
	silikútiku	silikótikos
	trwíbanu	trwébanos

The most striking fact of raising the fact that this is an assimilation locality requirement generally assumes the same underlying quality as that occur between trigger and target examples in (22) show.

Let us assume that the raising spreading of the feature [+high] (I shall return shortly). An example problem. The low vowel can be the target for the spreading feature [+high]. The mid stressed vowel feature [+high] that is closest to the only P-bearing units (segments). Clements 1980, 1981) count in this condition which requires adjacency respected in an example like /trwíbanu/ 'boy':

(23)	P-bearing units:
	Autosegmental spreading:

Examples like /kándanu/ 'dry' indeed a possible target of the raising mid by raising metaphony.

Given standard assumptions a vowel that can change a mid vowel to a

stressed vowels are found in adjectives with masculine singular in [-o], used in agreement with masculine singular. Some examples and mass forms of adjectives are

white'
all'
handsome'
wet'
stuffed'
walked'
good'
good'
leap'
round'
stupid'
azy, loose'
tightly'
power'
dry'

o a mass or to countable objects
stable form and an ending [-o] in
: other ending has consequences

ch as the demonstratives) show
takes place in this case:

in the Asturian dialect of Lena,
t syllables. It is, thus, possible to
be raising-triggering high final
ed vowel. In these cases, raising
ir where trigger and target are

adjacent. The vowel intervening between trigger and target remains unaffected, unlike what we saw was the situation in Tudanca.¹⁶

(22)	masc sg.	masc pl.	fem sg.	
	burwibanu	burwébanos		'wild strawberry'
	péšaru	pášaros	pášara	'bird'
	kékabu	kákabos		'wreck'
	kéndanu	kándanos		'dry branch'
	sébanu	sábanos	sábana	'sheet'
	silikútiku	silikótikos	silikótika	'suffering from silicosis'
	trwibanu	trwébanos		'beehive'

The most striking fact of raising metaphony in Lena Bable is precisely the fact that this is an assimilation process that seems to violate the locality requirement generally assumed in spreading rules. A vowel of the same underlying quality as that which undergoes the rule can patently occur between trigger and target without being affected, as some of the examples in (22) show.

Let us assume that the raising of the stressed vowel is caused by spreading of the feature [+high] of the word-final vowel, a point to which I shall return shortly. An example like /trwebanu/ [trwibanu] presents no problem. The low vowel can be taken not to be a possible P-bearing unit for the spreading feature [+high], since a vowel cannot be [+low] and [+high]. The mid stressed vowel would then be the possible bearer of the feature [+high] that is closest to the trigger of the process. Assuming that only P-bearing units (segments that can bear a particular feature; see Clements 1980, 1981) count in the computation of locality, the locality condition which requires adjacency between relevant segments would be respected in an example like /trwébanu/ 'beehive', just as it is in /nénu/ 'boy':

(23)	trwébanu	nénu
P-bearing units:	e u	e u
Autosegmental spreading:	e u	e u
	\	\
	[+high]	[+high]
	[trwibanu]	[ninu]

Examples like /kándanu/ 'dry branch' show us, however, that /a/ is indeed a possible target of the rule. Low stressed vowels are changed to mid by raising metaphony.

Given standard assumptions about vowel features, there is no feature that can change a mid vowel to high and a low vowel to mid. Since these

two changes are undoubtedly produced by the same process, I will claim that indeed the feature that spreads to the stressed vowel is always the same feature, [+high]. The spreading of this feature will raise stressed /e/ to [i] and stressed /o/ to [u] under the usual assumptions. It is then the raising from /a/ to [e] that requires some comment. My claim is that the impossible feature combination [+low, +high] that would result from the metaphony process is changed to [-high, -low], that is, a mid vowel (see Calabrese 1987 for a more detailed and unrestricted treatment of feature incompatibility in vowel harmony). Whether this mid vowel is realized as [e] or as [o] will depend on the specification of /a/ as [-back] or [+back]. In Lena /a/ becomes [e] by metaphony. The low vowel is thus specified as [-back] in this dialect. In the neighboring variety of the Nalón Valley, where metaphony seems to take place otherwise than in Lena (Blaylock 1965; Penny 1970), /a/ is raised to [o] and not to /e/; thus /gatu/ 'cat' which in Lena is pronounced [gétu], in the Nalón Valley is pronounced [gótu]. The difference is that in the Nalón Valley variety /a/ is [+back].

Universal grammar thus provides a parameter with two options to solve the case when two incompatible features are combined. The unmarked option seems to be not to allow the linking of the feature that would create an incompatible feature combination. The Lena facts show that there is a second option: to change the value of both features to create a possible combination.¹⁷

There are processes of other languages that also suggest that the option of changing the incompatible specifications [+high, +low] into [-high, -low] is taken. These are rules where, as in Lena, a high vowel causes the raising of a vowel from low to mid. A process of this type is found in Basque. In many Basque dialects /a/ is raised to [e] when the preceding vowel is high (see Hualde 1988). This is shown with the article /-a/ in the examples in (24):

(24)	gison-a	'the man'	tšakuř-e	'the dog'
	bašo-a	'the forest'	buru-e	'the head'
	etše-a	'the house'	mendi-e	'the mountain'
	akeř-a	'the billygoat'	lapin-e	'the rabbit'

An almost identical process is found in the Galician-Leonese dialect of Ancares (see Fernández González 1981). These processes could be interpreted as the spreading of the feature [+high] of /i/, /u/ to /a/; thus producing a [+high, +low] combination that, as in Lena, is then changed to [-high, -low].¹⁸

Having established that /a/ is a possible target of raising metaphony, let us consider again the effects of the autosegmental spreading of the

[+high] feature of the final *v* [trwibanu] and /kándanu/ [kéndu]

(25)

P-bearing units:

Autosegmental spreading:

An analysis of this process as a problem that pretonic vowels sh-giving *[kurdíru] from /kordéru/ Lena, as we saw happened with *c* at the stressed vowel. The correc-

(26)

P-bearing units:

Autosegmental spreading:

All these facts suggest that spr place in an autosegmental man metaphony in Tudanca, in a met metaphony processes of these tv feature percolation to all units in head of the foot (that is, the metaphony in Lena Bable is forr

(27) Raising metaphony in Len

operation: spreading

mode: metrical

argument: [+high]

domain: stress foot

target: head

trigger: ##

Derivations are given in (28). (that is, the stressed vowel):

(28)

Stress assignm /silikoti(k)
silikóti(k)

Metaphony	silikútiku	pěšaru	gétu
	∨	∨	∨
	[+ high]	[+ high]	[+ high]
	[silikútiku]	[pěšaru]	[gétu]
	'affected by silicosis'	'bird'	'cat'

To sum up, metaphony in Lena Bable is a stressed-vowel raising rule that consists in the metrical spreading of the feature [+ high] of the final vowel to the head of the prosodic foot.²⁰

I have assumed that the quality of the stressed vowel in the underlying representation of the morphemes is that which surfaces in forms other than the masculine singular and that the high-vowel-final masculine singular forms show the operation of a rule of vowel raising. It is clearly preferable to take as underlying vowels those which appear in forms other than the masculine singular and having a rule of vowel raising to obtain the forms in the leftmost column in (18)–(22), rather than taking the masculine singular forms as basic, with a rule of vowel lowering in the other forms. Not only are the masculine singular forms divergent in their vocalism from all forms bearing any other nominal inflectional markers; the evidence from derivational morphology also shows that the underlying quality of the stressed vowel is that which appears in the feminine, masculine plural, or mass forms, and not that of the masculine singular when this is different:

(29)	masc sg./fem sg.		derived form
	fündu/fönda	'deep'	fondíru 'lower'
	pěšaru/pášara	'bird'	pašarín 'little bird'
	tsübu/tsóba	'wolf'	tsobá 'wolf pack'
	gétu/gáta	'cat'	gatiár 'to crawl'

Another clear reason for taking non-masculine-singular forms as more basic is that from, say, the feminine singular or the masculine plural, we can always derive the masculine singular, but not vice versa. Consider, for instance, the minimal opposition, neutralized in the masculine singular, between *fiu/fia* 'son/daughter' and *fiu/féa* 'ugly' m/f. If we take the form of the stem that appears in the feminine as basic, we can regularly derive *fiu* 'ugly' from /fe-u/ by raising, whereas the underlying form of *fiu* 'son' is already /fi-u/. If, on the other hand, we were to take the masculine form as basic, we would have a stem /fi-/ in both cases and we would not be able to obtain the two different forms for 'daughter' and 'ugly' without lexical marking.

3. Vowel-harmony processes in P

The Pasiogo dialect possesses three centralization of vowels under the Tudanca Montañés, but with intephy); (b) raising of the stressed vowel when the stressed syllable c high vowel, also as in the Tudanca now examine each of these three p

3.1. Centralizing metaphony in P

Unstressed final high back vowels and trigger the centralization of ot dialect of Tudanca presents a sin between these two Montañés d centralization affects only vowels u domain of centralization is the prepositions, and other clitics. Tl (30a) with the Tudanca examples

- (30) a. *Pasiogo*
 AtrIstOnÁU 'sad'
 IskAIOfrrjÁU 'shivering'
 rIfrrjÁtIkU 'sensitive to'
 kUn Il mAyÍstrU 'with'
- b. *Tudanca*
 ahambrÁU 'hungry'
 esanimÁU 'discourage'
 antigwÍslmU 'very old'
 aká el mÉdIkU 'to the'

Another difference with Tuda surface with /-e/, and realized a centralization, although it causes final /-e/), as we will see below centralization in Pasiogo.

In Pasiogo, thus, centralization difference between the two dialect centralizing feature takes place without making use of metrica

šaru	gétu
/	/
high]	[+ high]
šaru]	[gétu]
rd'	'cat'

is a stressed-vowel raising rule
the feature [+ high] of the final
o

stressed vowel in the underlying
t which surfaces in forms other
the high-vowel-final masculine
ule of vowel raising. It is clearly
ose which appear in forms other
a rule of vowel raising to obtain
8)–(22), rather than taking the
a rule of vowel lowering in the
singular forms divergent in their
er nominal inflectional markers;
ogy also shows that the underly-
-which appears in the feminine,
t that of the masculine singular

form
'lower'
'little bird'
'wolf pack'
'to crawl'

masculine-singular forms as more
ular or the masculine plural, we
but not vice versa. Consider, for
lized in the masculine singular,
z 'ugly' m/f. If we take the form
as basic, we can regularly derive
the underlying form of *fíu* 'son' is
ere to take the masculine form as
cases and we would not be able
ghter' and 'ugly' without lexical

3. Vowel-harmony processes in Pasiego Montañés

The Pasiego dialect possesses three processes of vowel assimilation: (a) centralization of vowels under the influence of a final high vowel, as in Tudanca Montañés, but with interesting differences (centralizing metaphony); (b) raising of the stressed vowel when the final vowel is high, as in Lena Asturian (raising metaphony); and, (c) raising of a mid pretonic vowel when the stressed syllable contains a prevocalic (high) glide or a high vowel, also as in the Tudanca dialect (unstressed vowel raising). I will now examine each of these three processes separately.

3.1. Centralizing metaphony in Pasiego Montañés

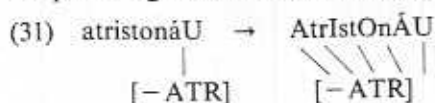
Unstressed final high back vowels in Pasiego are necessarily centralized and trigger the centralization of other vowels to their left. We saw that the dialect of Tudanca presents a similar process. An important difference between these two Montañés dialects is that, whereas in Tudanca centralization affects only vowels up to the stressed syllable, in Pasiego the domain of centralization is the phonological word, including articles, prepositions, and other clitics. Thus, compare the Pasiego examples in (30a) with the Tudanca examples in (30b):

- (30) a. *Pasiego*
AtrIstOnÁU 'sad'
IskAlOfrjÁU 'shivering'
rIfrijÁtIkU 'sensitive to cold'
kUn Il mAyÍstrU 'with the teacher'
- b. *Tudanca*
ahambrÁU 'hungry'
esanimÁU 'discouraged'
antigwÍsmU 'very old'
aká el mÉdIkU 'to the doctor's'

Another difference with Tudanca is that final /-i/ (neutralized in the surface with /-e/, and realized as a schwa-type vowel) does not trigger centralization, although it causes the raising of the stressed vowel (unlike final /-e/), as we will see below. Only final /-u/ is thus the trigger of centralization in Pasiego.

In Pasiego, thus, centralization is not a stress-conditioned process. The difference between the two dialects is that in Pasiego the spreading of the centralizing feature takes place in a purely autosegmental manner, without making use of metrical prosodic structure. The centralizing

feature, which is assigned to a final unstressed high back vowel by a rule identical to (6), given for Tudanca above, is then assigned to all vowels in the phonological word by autosegmental spreading:



The rule can be formulated as in (32):

- (32) Centralizing metaphony in Pasiego Montañés
 operation: spread
 argument: [-ATR]
 mode: autosegmental
 target condition: V

This rule is fed by the redundant assignment of the feature [-ATR] to final, unstressed, high back vowels.

In Pasiego there is stronger phonetic motivation than in Tudanca to assume that the feature that spreads in these cases is the feature [-ATR]. Penny (1969a) describes the vowels that occur in these contexts as being both centralized and *engoladas*, a term which seems to refer to the retraction of the root of the tongue. As in Tudanca, centralized *A* is close in point of articulation to an open [ɛ]. *E*, which in Tudanca is much closer to its noncentralized counterpart than any of the other centralized vowels, is in Pasiego phonetically indistinguishable from noncentralized *e*.²¹

McCarthy (1984) and Vago (1988a) take the centralization feature to be the mark of the masculine singular count morphology. This point of view cannot be correct since there is no count morphology. The agreement behavior of items with count and mass forms clearly shows that it is mass morphology and not count morphology which is marked by means of extra morphological features (see Hualde 1989; Neira 1982: 163-186). Nouns with a mass interpretation trigger mass agreement only with items to their right in the NP or outside of the NP. Targets of agreement to the left of mass nouns in the NP agree with the noun in gender (masculine or feminine) and not in the mass feature. The following examples are in the Lena dialect (adapted from Neira 1982):

- (33) a. ésta maera estába séko
 [fem]←[fem] [mass]
 [mass] ——— ↑
 'This wood (mass) was dry.'
- b. isti maiθ estába espigáo
 [masc]←[masc] [mass]
 [mass] ——— ↑
 'This corn(field) was ripe.'

On the other hand, count (masculine or feminine) with all

- (34) a. ésta maera estaba
 [fem]←[fem]→
 'This piece of wood was d
 b. isti maiθ estába es
 [masc]←[masc]→[mas
 'This corn (individual

This shows that mass nouns ca feature and a mass feature. Cou gender morphology. There is morphology (for more details Hualde 1989).

An additional argument agai tralization is that not all masc centralization. Masculine singu other than /u/ or in a consona present centralization, as the Pa

- (35) pikaθón 'itching'
 orexón 'with long ears'
 onbrál 'shoulder'
 aprindiθ 'apprentice'

We can thus take the central metaphony processes that we ha motivated. In Pasiego, centraliza back vowel (which redundantly the case that all items with this

There is, however, a fact tha the process in Pasiego. /o/ in : phonetic realizations that rang includes the plural masculine, w as masculine nouns taken to ex few exceptional masculine sin dialects in the area. In these metaphony. I represent final /-

- (36) a. singular (-u/) plu
 AbIkÁnU abí
 sOldÁU solc
 kAstÁñU kas
 sImpÁtIkU sim

On the other hand, count nouns trigger only gender agreement (masculine or feminine) with all targets of agreement:

- (34) a. *ésta maëra estaba sèka*
 [fem]←[fem]→ [fem]
 'This piece of wood was dry.'
 b. *isti maíθ estába espigéu*
 [masc]←[masc]→[masc]
 'This corn (individual plant) was ripe.'

This shows that mass nouns carry two morphological features, a gender feature and a mass feature. Count nouns, on the other hand, carry only gender morphology. There is thus mass morphology, but not count morphology (for more details and also examples from Pasiego, see Hualde 1989).

An additional argument against the morphological treatment of centralization is that not all masculine singular countable nouns present centralization. Masculine singular countable nouns may end in vowels other than /u/ or in a consonant or glide, in which case they will not present centralization, as the Pasiego examples in (35) show:

- (35) *pikaθón* 'itching'
orexón 'with long ears'
onbrál 'shoulder'
apriendíθ 'apprentice'

We can thus take the centralization process in Pasiego and the other metaphony processes that we have considered to be purely phonologically motivated. In Pasiego, centralization is triggered by a final unstressed high back vowel (which redundantly carries the feature [-ATR]). It is simply the case that all items with this ending are masculine singular countable.

There is, however, a fact that obscures the phonological character of the process in Pasiego. /o/ in a final unstressed syllable in Pasiego has phonetic realizations that range from an open [u] to a closed [o]. This includes the plural masculine, which ends in [-os] in other dialects, as well as masculine nouns taken to express uncountable or mass entities and a few exceptional masculine singular countable nouns, as in the other dialects in the area. In these words with underlying /-o/ there is no metaphony. I represent final /-o/ as o:

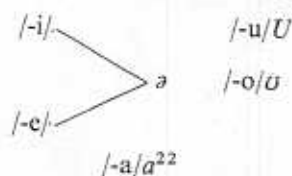
- (36) a. singular (/u/) plural (/os/)
AbIÁnU *abiánus* 'hazelnut tree'
sOldÁU *soldáus* 'soldier'
kAstÁñU *kastáñus* 'chestnut tree'
sÍmpÁtIkU *simpátikus* 'nice'

- b. Exceptional masculine singular /-o/
- | | |
|----------|---|
| beránu | 'summer' |
| márθu | 'March' |
| santjágu | 'July' |
| lánu | 'plain' |
| dwélu | 'sorrow' |
| swéñu | 'sleep' |
| tjémpu | 'time' |
| ibjérnu | 'winter' |
| apúru | 'fear' |
| déu | 'finger' |
| karétu | 'horse with white hair on its forehead' |
| tóru | 'bull' |

Whereas /u/ in a final unstressed syllable is realized as *U*, /o/ in the same context is realized as *o* (that is, open [u] or closed [ɔ]).

The five phonological vowels of Pasiego give a four-way phonetic contrast in unstressed word-final position, since the distinction between /-e/ and /-i/ is neutralized. The situation is summarized in (37) (see Penny 1969a: 51 for a precise phonetic characterization of each of the four surface vowels in word-final position):

- (37) Vowels in unstressed word-final position



To sum up, the metaphony process of centralization in Pasiego involves the autosegmental spreading of the feature [-ATR], which is assigned by rule to final /-u/, to all vowels within the domain of the phonological word.

3.2 Unstressed vowel raising in Pasiego Montañés

As in the Tudanca dialect, in Pasiego mid vowels to the left of a stressed syllable containing a high vowel or prevocalic glide are raised to high, although lexical exceptions are found. The operation of this process can be observed in verbal paradigms. In the forms in the left column the stressed vowel is mid or low. In the related forms listed on the right, the stressed syllable has a high vowel or a prevocalic glide and the pretonic (underlyingly mid) vowels are also high:²³

- (38) koxeré 'I will take'
koxerás 'you will take'
koxámos 'we take (su

This process has a formal [+high] feature of the stressed vowels in the domain:

- (39) koxeria → kuxiria
| \ \
[+high] [+high]

A difference with Tudanca articles and prepositions and Pasiego, although they are no

- (40) pUl kAmínU
compare po la káŕe
mi lu djó
compare me lo kompró

As we can see in the example but allow the further spreading of vowels are not raised is not sufficient for a low vowel not to take this situation is that found in Lena give [-high, -low].

I will assume that the feature to the left of the stressed high vowel feature combination would be

- (41) pOl kAmínU → pUl kA
| \ \
[+high] [+high]

3.2. Raising metaphony in P

As in Lena Asturian, in Pasiego when the word-final vowel is singular countable forms in the /-o/-final mass forms, (a), or column:

- (38) koxeré 'I will take' kuxiria 'I would take'
 koxerás 'you will take' kuxiriamos 'we would take'
 koxámus 'we take (subj)' kuxjéra 'I took (subjunctive)'

This process has a formulation identical to that in Tudanca: the [+high] feature of the stressed vowel is spread autosegmentally to other vowels in the domain:

- (39) koxería → kuxiria
 | \ \
 [+high] [+high]

A difference with Tudanca, nevertheless, is that noun clitics such as articles and prepositions and verbal proclitics are affected by raising in Pasiego, although they are not in Tudanca:

- (40) pUl kAmÍnU 'by the road'
 compare po la kálc 'by the street'
 mī lu djó 'he gave it to me'
 compare me lo kompró 'he bought it for me'

As we can see in the example *pUl kAmÍnU*, low vowels are not raised but allow the further spreading of the feature [+high]. The fact that low vowels are not raised is not surprising. It is probably the unmarked case for a low vowel not to take the feature [+high]. The more surprising situation is that found in Lena, where [+high] combines with [+low] to give [-high, -low].

I will assume that the feature [+high] spreads initially to all vowels to the left of the stressed high vowel and is then delinked when an impossible feature combination would be created.²⁴

- (41) pOl kAmÍnU → pUl kAmÍnU → pUl kamÍnU
 | \ \ \ \ \ \
 [+high] [+high] [+high]

3.2. Raising metaphony in Pasiego Montañés

As in Lena Asturian, in Pasiego stressed mid vowels are raised to high when the word-final vowel is high. Compare the /-u/-final masculine singular countable forms in the left column of (42) with the corresponding /-o/-final mass forms, (a), or plural /-os/-final forms, (b), in the right column:

τ /-o/

air on its forehead'

able is realized as U, /o/ in the en [u] or closed [ø].

iego give a four-way phonetic n, since the distinction between s summarized in (37) (see Penny 1987: 100). The raising of each of the four

osition

centralization in Pasiego involves re [-ATR], which is assigned by domain of the phonological word.

Montañés

d vowels to the left of a stressed vocalic glide are raised to high, the operation of this process can be seen in the left column of (42). The corresponding forms listed on the right, the pre-vocalic glide and the pretonic

(42) a.	masc. sing. count	mass	
	kísU	késu	'cheese'
	pÍU	pélo	'hair'
	gwínU	gwénu	'good'
	nwÍstrU	nwéstru	'our'
	fúxU	flóxu	'limp'
	gúrdU	górdu	'thick'
	fAbjúsU	fábjosu	'bitter'
b.	masc. sing. count.	masc. plural	
	prImÍrU	priméros	'first'
	bAbÍrU	babérus	'bib'
	bÍθjúsU	biθjósus	'vicious'
	fApúsU	fapósos	'fox'
	nUbúsU	nubósus	'cloudy'

If the stressed vowel is underlyingly high, there is no change:

(43) a.	masc. sg. count.	mass	
	lÍmpjU	límpju	'clean'
	frÍU	friu	'cold'
	sÚθjU	súθju	'dirty'
	kÚrtU	kúrto	'short'
b.	masc. sg. count.	masc. plural	
	trAnkÍU	trankilus	'calm'
	lUbÚkU	lubúkus	'wolf'

Unlike the situation we observed for the Lena Asturian dialect, in Pasiego the raising to high of mid vowels is not paralleled by the raising to mid of low vowels. Compare the Lena and Pasiego examples in (44). The underlying forms present the vowel qualities found in plurals, feminines, and other related forms:

(44)	Lena	Pasiego	
a.	/negru/	nígru	nÍgrU 'black'
	/korderu/	kordíru	kUrdÍrU 'lamb'
	/gordu/	gúrdu	gÚrdU 'fat, thick'
b.	/blanku/	blénku	blÁnkU 'white'
	/gatu/	gétu	gÁtU 'cat'
	/paXaru/ ²⁵	péšaru	pÁxArU 'bird'

As in Lena, the stressed vowel is also affected in proparoxytones, where the triggering final vowel and the target stressed vowel are not adjacent as in *gwÍrfAnU* 'orphan'; compare Castilian *huérfano*.

McCarthy treats the raising of stressed mid vowels in an ad hoc

manner. He orders this process that stressed lax (that is, ce changed to high by the rule in

(45) Raising:	[high] → [+hi
	[+stress]
	[-tense]

For example, /késu/ first by stipulation, in (45) that disallo [kísU]. This treatment misses and does not offer an explanation is patently that the final assimilation in height. As such feature [+high] from the final be only whether this spreading character.

Further, there are data which analysis. There is nothing special prevents them from surfacing are also raised under the same underlyingly high. This is the mentioned, does not cause the raising of a stressed vowel. Final as schwa-like vowels; but, when vowel, /-e/ does not. As Peninsular final words that causes raising other areas, where final [-i] is are the masculine singular definite the second conjugation:

(46)	/estí/ istə 'this' (masc. sg.)	compare fem. sg. ésti
	/esi/ isə 'that' (masc. sg.)	compare fem. sg. ésa
	/bebi/ bíbə 'drink!'; cor	
	/komi/ kúmə 'eat!'; con	

Raising is thus independent

It is not possible to decide the postonic vowel in proparoxytones extremely rare in this position

'cheese'
'hair'
'good'
'our'
'limp'
'thick'
'bitter'

'first'
'bib'
'vicious'
'fox'
'cloudy'

1, there is no change:

'clean'
'cold'
'dirty'
'short'

'calm'
'wolf'

he Lena Asturian dialect, in not paralleled by the raising to Pasiego examples in (44). The *s* found in plurals, feminines,

'black'
U 'lamb'
'fat, thick'
J 'white'
'cat'
U 'bird'

cted in proparoxytones, where stressed vowel are not adjacent as *iuérfano*.
d mid vowels in an ad hoc

manner. He orders this process after centralization. Then he postulates that stressed lax (that is, centralized) mid vowels are forbidden and changed to high by the rule in (45):

(45) Raising: [high] → [+high]
 |
 [+stress]
 |
 [-tense]

For example, /késu/ first becomes /kÉsU/. Then the rule, or rather the stipulation, in (45) that disallows stressed lax mid vowels changes this into [kÉsU]. This treatment misses the point that this is an assimilatory process and does not offer an explanation for the raising of these vowels. The reason is patently that the final high vowel triggers the raising. This is an assimilation in height. As such it must be treated as spreading of the feature [+high] from the final vowel to the stressed vowel. The issue will be only whether this spreading process is autosegmental or metrical in character.

Further, there are data which cannot be accounted for in McCarthy's analysis. There is nothing special about stressed centralized vowels that prevents them from surfacing as mid. Noncentralized stressed mid vowels are also raised under the same circumstances, when the final vowel is underlyingly high. This is the case when the word ends in /-i/, which, as we mentioned, does not cause centralization but, as in Lena, causes the raising of a stressed vowel. Final /-e/ and /-i/ are neutralized and realized as schwa-like vowels; but, whereas /-i/ causes the raising of the stressed vowel, /-e/ does not. As Penny (1969a: 65) points out, the group of [ə]-final words that causes raising is the same group that have final [-i] in other areas, where final [-i] is distinguished from final [-e]. Among them are the masculine singular demonstratives and the imperative of verbs of the second conjugation:

(46) /esti/ ístə 'this' (masc. sg.);
 compare fem. sg. ésta, masc. pl. éstos
 /esí/ ísə 'that' (masc. sg.);
 compare fem. sg. ésa, masc. pl. ésos
 /bebí/ bíbə 'drink!'; compare bebér 'to drink'
 /komí/ kúmə 'eat!'; compare komér 'to eat'

Raising is thus independent from centralization.

It is not possible to decide whether stressed vowel raising also affects the postonic vowel in proparoxytones, given the fact that /e/ and /o/ are extremely rare in this position. In Lena, we had clear evidence that only

the stressed vowel was affected in examples such as *pěšaru* (pl. *pášaros*), since low vowels are possible targets of raising metaphony in that dialect. In any case it is possible to understand the process as being essentially metrical spreading of the high feature of the final vowels to the head of the metrical foot.

Stressed vowel raising is ordered before and triggers the rule of high harmony. This is apparent in the example /*korderu*/ *kUrdŕU* 'lamb' given in (44). Compare this with the Lena form *kordiru*, which shows stressed vowel raising but not high harmony. Other examples are given in (47):

- (47) /*kontentu*/ *kUntŕntU* 'happy' (compare pl. *konténtus*)
 /*ředondu*/ *řidŕndU* 'round' (compare pl. *ředóndus*)
 /*golosu*/ *gUIŪsU* 'sweet-toothed' (compare pl. *golósus*)

Notice that it is not possible to collapse unstressed vowel raising and high harmony into a single rule, something like 'spread [+high] to the left', without any reference to the stressed/unstressed distinction. The reason is that unstressed nonfinal high vowels and glides do not trigger the raising of other vowels. This is shown by examples such as *okálitu* 'eucalyptus' (not **ukálitu*), *okalitál* (not **ukalitál*), *kOmřEsOnÁrjU* 'confessional' (not **kUmřIsUnÁrjU*).

To wind up, consider the derivation of *Il kUrdŕU* 'the lamb', which involves the three processes of centralization, stressed vowel raising, and high harmony:

- (48) Underlying: /*el korderu*/
 Stress assignment: *el Kordéru*
 Linking of [-ATR]:
 Centralizing metaphony:
 (autosegmental spreading)
 Raising metaphony:
 (metrical spreading to head of foot)
 Unstressed-vowel raising:
 (autosegmental spreading)
- [stress]
 [-ATR]
el kordérU
 [-ATR]
 | \ /
El kOrdÉrU
El kOrdŕrU
 //
 [+high]
Il kUrdŕrU
 \ /
 [+high]

Of these processes, stress assignment, raising metaphony, and raising metaphony follow the assignment of stress (as assigned this feature) but need no rules (contra McCarthy 1984).

I should like to remark, before abstract and complex properties turn out not to be essential at a (laxing, in his terminology), must be before the raising processes. The is, never surfacing) stressed lax *r* his raising rule (reproduced in [4: vowel, this treatment is particular at an intermediate derivational level which will never surface as such position. If stressed, it will be raised later rule delinking its [-tense]

In this paper, I have shown raising need not be ordered in crucial need for intermediate abstracting nor found in the surface, a targets for other rules. I have centralizing metaphony affects of phonetic implementation will quality as noncentralized *e* in P; from *e* in Tudanca; see note 21). since specific rules of phonetic other centralized vowels (and for position; see [37] above). This quality close to [ø], that *A* has etc. (see Penny 1969a: 50-51, vowel undergoes the linking of the analysis. We could have *r* vowel is transparent for the central allowing the propagation of crucially ordered after centralizing vowel *E* is not required simplicity can lead us to prefer

To conclude, Pasiego has generated by final vowels): a central autosegmental spreading of *r*

Notes

- Parts of this paper were presented at a seminar at the University of Illinois, at the December 1988 Meeting of the LSA, and at BLS 15. I want to thank the members of the audience at these presentations, especially Chuck Kisseberth, Diana Archangeli and Larry Hyman. I am also grateful to Jim Harris, Dieter Wanner, Doug Pulleyblank, Debbie Schlindwein, and three reviewers for *Linguistics* for helpful comments. All errors are mine. Correspondence address: Department of Spanish, Italian, and Portuguese, University of Illinois, 707 S. Mathews Avenue, Urbana, IL 61801, USA.
- 1. The speakers of Montañés dialects simply refer to their variety as *estilu pueblu*; that is, 'village style' (see Holmsquist 1982). Cantabria was known as the Province of Santander before the administrative restructuring of Spain into autonomous regions.
- 2. Penny (1978) uses a different notation, with diacritics above and under the vowels. He reserves the use of capitals to represent the neutralization of oppositions in phonological representations.
- 3. Compare also infinitive/imperative pairs bearing the masculine clitic *lo* such as *tráilo* 'to throw him/it' (masc.) versus *tráilo* 'throw it!' (masc.). These examples show that centralization spreads up to the stressed vowel in each case. Both examples contrast with corresponding forms bearing the mass clitic *lo*, which does not cause any centralization (Penny 1978: 81).
- 4. I assume that only final unstressed vowels undergo this process of centralization, since the stressed pronoun *tú* 'you-sg.' does not have a centralized vowel (see discussion above in the main text). This also applies to the Pasiego dialect, to be discussed in section 3.
- 5. Given the lack of phonetic parallelism between different pairs of centralized/noncentralized vowels, it is difficult to know what the most appropriate phonological feature to characterize centralized vowels would be. The phonetics of the low centralized vowel would indicate that perhaps the appropriate feature is [-tense]; but other details of articulation pointed out by Penny (1969a) in the description of the Pasiego dialect seem to show that perhaps [-ATR] is more adequate (see section 3.1). The choice of feature does not affect the analysis in any manner, however.
- 6. My distinction between metrical and autosegmental spreading differs from the terminological usage in van der Hulst and Smith (1982). These authors employ the term 'autosegmental' in connection with their analysis of nasalization in Guarani, for instance, even though they claim that the domain of application of this spreading process must be defined in metrical terms. In the terminology used in this paper, that would be a metrical process.
- 7. A similar treatment is proposed by Zubizarreta (1979) for stress-conditioned lax harmony in Andalusian dialects of Spanish.
- 8. The analysis that I present resembles more that of Harris (1983) than that of Roca (1988), although there are some differences in the assumptions.
- 9. Penny proposes /kukiyiegu/ as underlying form for this word, with the same suffix /-ieg-/ that appears in other words such as *hembriega* 'cow that gives birth to females'. I ignore the deletion of the suffix-initial /i/, since it is irrelevant for the process that we are considering.
- 10. A somewhat similar influence of labials on neighboring vowels is also found in Galician dialects, to the west of the area with which we are concerned (see Porto Dapena 1968). The phonetic motivation for centralization in this environment would seem to be that front vowels tend to acquire labialization in contact with labial consonants, and back vowels tend to acquire a more fronted articulation also to approximate the articulation

University of Illinois

of the labial consonant. Doug Pulleyblank (personal communication) reports that the Nigerian language Ekparabong also has a process of centralization of vowels under the influence of neighboring labial consonants.

11. A reviewer remarks that a reason for excluding the final vowel from the domain of the rule could be that it constitutes an inflectional marker. To postulate a domain for the application of this rule that excludes inflectional endings, however, would be paradoxical in a dialect such as Pasiego where articles and other proclitics are in fact affected by raising (see [38]). The domain of the rule must then clearly be at least the phonological word, which may be larger than the morphological word, and not some subword domain.
12. The feminine plural ending is [-as] in the Upper Lena Valley, but [-es] in Lower Lena. The alternation, feminine singular [-a], feminine plural [-es] is characteristic of the Bable of the central region of Asturias.
13. In the case of inanimates with both masculine and feminine forms, the masculine frequently indicates a smaller object than the feminine; for example, a *benténu* is a smaller window than a *bentána*.
14. It is not the case that all masculine singular adjectives or nouns end in [-u], although this is the most common ending; see section 3.1.
15. For details on the use of 'mass' adjectives see Hualde (1989).
16. I have been unable to find any examples of words with stress on the antepenultimate syllable and a mid vowel in the penult. As mentioned above in 1.2, words with these characteristics are rare in Spanish, especially outside of the learned or scientific vocabulary, which is generally not included in dialectological studies.
17. A third possibility would be the blocking of the spreading operation (see, for instance, Vago 1988b). How a language chooses among these options is an open question. An approach that has been taken to determining the option chosen in particular cases involves the use of radically underspecified phonological representations (see Archangeli and Pulleyblank i.p.; Sluyters 1988; Vago 1988a, 1988b; among others). My main objection to such treatments is that the proposed underspecified representations often either are incompatible with other facts of the language which are independent of the harmony process in question or require radically different underlying representations for the sound systems of closely related dialects. As a case in point, Vago (1988a, 1988b) postulates that in Pasiego /a/ is the maximally underspecified vowel, to account for the fact that this vowel behaves as transparent for the spreading of the feature [+high]. This is hard to reconcile with the independent fact that in Spanish the vowel that systematically behaves as a neutral vowel is /e/ and not /a/ (for example, in a number of processes of vowel epenthesis; see Harris 1980, 1983, 1985), and Pasiego does not seem to differ from Standard Spanish in this respect.
18. Another example of a process where high vowels trigger the raising to mid of the low vowel is given in Poser (1982) from Woleaian. In this language /a/ is raised to [e] between two high vowels.
19. Zubizarreta (1982) establishes a distinction between nonpolarized feet, in which the same feature value percolates to all positions, and polarized feet, where weak and strong positions receive different specifications. Such a distinction seems to characterize appropriately the different effects of the metaphony rules in Tudanca and Lena.
20. A question that arises is why only final vowels trigger metaphony. Why does not the prefinal high vowel in the plural form *silkótkos* trigger the raising of the stressed vowel? Adapting the solution that Sluyters (1988) proposes to explain comparable facts in a southern Italian dialect, we could claim that metaphony obeys the strict cycle condition (Mascaró 1976; Kiparsky 1982, 1985; see also Hualde i.p.). Metaphony,

being thus restricted to derived underived domain of the stem

Another possibility would be element is the penultimate syllable assumed. In that case, a high metaphony if it did not lose its applied. On the theoretical issue and Kagen (1986) and Roca (1

In any event, it seems that, hi was able to affect the stressed v /ágila/ 'eagle', we find *égila* in

21. The centralizing metaphony p domain will belong to the centr centralized subset, in phonetic t will be the work of rules of pl some centralized vowels are h some others are lower. Degrees take centralized E to be a pho noncentralized e, even though Tudanca) or identical (in Pasieg transparent vowel in Pasiego, spreading of the centralizing fea unlike the case in McCarthy's
22. Final /-a/ is phonetically differ ignore this phonetic difference.
23. McCarthy (1984) claims that tl stressed vowel is mid; but, as V lowering process.
24. Based on the example *puI prÁl* unstressed vowels can take plac be the only example. Stressed k for example, *por ágwa* (Penny l 'meadow' is actually monosyl symbols). What seems to be ha causing raising in the preceding this raising.
25. /X/ is the consonant that is re Tudanca.

References

- Alonso, Dámaso (1962). *La fragm*.
Hispanica, Suplemento. Madrid: t
Archangeli, Diana (1987). *Implicati*
manuscript, University of Arizona
—, and Pulleyblank, Douglas (i.p.).
tions. Cambridge, Mass.: MIT Pr
Blaylock, Curtis (1965). *Hispanic m*

ersonal communication) reports that the
cess of centralization of vowels under the

g the final vowel from the domain of the
l marker. To postulate a domain for the
al endings, however, would be paradoxi-
nd other proclitics are in fact affected by
then clearly be at least the phonological
ological word, and not some subword

er Lena Valley, but [-es] in Lower Lena,
nine plural [-es] is characteristic of the

ine and feminine forms, the masculine
e feminine; for example, a *benitenu* is a

jectives or nouns end in [-u], although
3.1.

Hualde (1989).

ords with stress on the antepenultimate
entioned above in 1.2, words with these
ly outside of the learned or scientific
1 dialectological studies.

ie spreading operation (see, for instance,
g these options is an open question. An
g the option chosen in particular cases
ionological representations (see Archangeli
1988a, 1988b; among others). My main
sed underspecified representations often
: language which are independent of the
ally different underlying representations
ects. As a case in point, Vago (1988a,
ximally underspecified vowel, to account
parent for the spreading of the feature
pendent fact that in Spanish the vowel
el is /e/ and not /a/ (for example, in a
Harris 1980, 1983, 1985), and Pasiego
h in this respect.

vels trigger the raising to mid of the low
in. In this language /a/ is raised to [e]

etween nonpolarized feet, in which the
s, and polarized feet, where weak and
. Such a distinction seems to characterize
phony rules in Tudanca and Lena.

is trigger metaphony. Why does not the
tikos trigger the raising of the stressed
88) proposes to explain comparable facts
that metaphony obeys the strict cycle
85; see also Hualde i.p.). Metaphony,

being thus restricted to derived environments, would be blocked from applying in the
underived domain of the stem /silikotik-/.

Another possibility would be to postulate that, in proparoxytones, the extrametrical
element is the penultimate syllable (see Harris 1983) and not the last syllable, as we have
assumed. In that case, a high vowel in the penultimate syllable would not trigger
metaphony if it did not lose its extrametricality until after the rule of metaphony had
applied. On the theoretical issues that such a view on extrametricality raises, see Den Os
and Kagen (1986) and Roca (1988).

In any event, it seems that, historically, a penultimate high vowel in a proparoxytone
was able to affect the stressed vowel, at least sporadically. Thus, for Castilian Spanish
/áigila/ 'eagle', we find *égila* in Lena.

21. The centralizing metaphony process gives the result that all vowels in the relevant
domain will belong to the centralized subset of vowels. What it means to belong to the
centralized subset, in phonetic terms, is then separately determined for each vowel. This
will be the work of rules of phonetic implementation. As we saw also for Tudanca,
some centralized vowels are higher than their noncentralized counterpart, whereas
some others are lower. Degrees of centralization also vary on a vowel-specific basis. I
take centralized *E* to be a phonological entity which is phonologically different from
noncentralized *e*, even though both vowels may be phonetically very similar (in
Tudanca) or identical (in Pasiego). It would also be possible, however, to consider /e/ a
transparent vowel in Pasiego, which is not affected by centralization but allows the
spreading of the centralizing feature through it. Nothing crucial would hinge upon this,
unlike the case in McCarthy's (1984) analysis, as we will discuss.
22. Final /-a/ is phonetically different from /a/ in other positions; but in my transcriptions I
ignore this phonetic difference, which is phonologically irrelevant.
23. McCarthy (1984) claims that there is also lowering of stressless high vowels when the
stressed vowel is mid; but, as Vago (1988a) points out, there is no clear evidence for a
lowering process.
24. Based on the example *pUl prÁU* 'by the meadow', Vago (1988a) claims that raising of
unstressed vowels can take place in cases where the stressed vowel is low. This seems to
be the only example. Stressed low vowels do not trigger raising in any other examples;
for example, *por ágwa* (Penny 1969a: 145) 'for water', not **pur ágwa*. The word *prÁU*
'meadow' is actually monosyllabic: *prÁW* (adapting Penny's transcription to our
symbols). What seems to be happening here is that the glide in the stressed syllable is
causing raising in the preceding clitic, and not that the low vowel is somehow triggering
this raising.
25. /X/ is the consonant that is realized as [š] in Lena, as [x] in Pasiego, and as [h] in
Tudanca.

References

- Alonso, Dámaso (1962). *La fragmentación fonética peninsular*. Enciclopedia Lingüística
Hispánica, Suplemento. Madrid: Consejo Superior de Investigación Científica.
- Archangeli, Diana (1987). Implications of the maximal/minimal parameter. Unpublished
manuscript, University of Arizona.
- , and Pulleyblank, Douglas (i.p.). *The Content and Structure of Phonological Representa-
tions*. Cambridge, Mass.: MIT Press.
- Blaylock, Curtis (1965). Hispanic metaphony. *Romance Philology* 18.

- Calabrese, Andrea (1987). The interaction of phonological rules and filters in Salentino. In *Proceedings of NELS 17*, J. McDonough and B. Plunkett (eds.), 79-98. Amherst, Mass.: GLSA, University of Massachusetts.
- Catalán, Diego (1953). Inflexión de las vocales junto al Cabo de Peñas. *Revista de Dialectología y Tradiciones Populares* 9.
- Clements, George N. (1980). *Vowel Harmony in Nonlinear Generative Phonology: An Autosegmental Model*. Bloomington: Indiana University Linguistics Club.
- (1981). Akan vowel harmony: a nonlinear analysis. *Harvard Studies in Phonology* 2.
- (1985). The geometry of phonological features. *Phonology Yearbook* 2, 225-252.
- Den Os, E., and Kagen, R. (1986). Extrametricality and stress in Spanish and Italian. *Lingua* 69, 23-48.
- Díaz Castañón, Carmen (1966). *El habla del Cabo Peñas*. Oviedo: Diputación de Oviedo.
- Fernández González, José R. (1981). *El habla de Ancares (León)*. Oviedo: Universidad de Oviedo.
- Galmés de Fuentes, Alvaro (1960). Más datos sobre la inflexión metafonética en el centro-sur de Asturias. In *Trabajos sobre el dominio románico leonés II*, Alvaro Galmés de Fuentes (ed.), 11-26. Madrid: Gredos.
- Goldsmith, John (1987). Vowel systems. *Chicago Linguistic Society* 23 (2), 116-133.
- Hall, Robert (1968). 'Neuters', mass-nouns, and the ablative in Romance. *Language* 44, 480-486.
- Halle, Morris, and Vergnaud, Jean-Roger (1981). Harmony processes. In *Crossing the Boundaries in Linguistics*, W. Klein and W. Levelt (eds.), 1-22. Dordrecht: Foris.
- Harris, James W. (1980). Nonconcatenative morphology and Spanish plurals. *Journal of Linguistic Research* 1, 14-31.
- (1983). *Syllable Structure and Stress in Spanish: A Nonlinear Analysis*. Cambridge, Mass.: MIT Press.
- (1985). Spanish diphthongization and stress: a paradox resolved. *Phonology Yearbook* 2, 31-45.
- Holmsquist, Jonathan (1982). Language loyalty and linguistic variation in Spanish Cantabria. Unpublished Ph.D. dissertation, Princeton University. (Revised version to appear, Dordrecht: Foris.)
- Hualde, José I. (1988). A lexical phonology of Basque. Unpublished Ph.D. dissertation, University of Southern California.
- (1989). Metaphony and count mass morphology in the dialects of Asturias and Cantabria: a synchronic analysis. Unpublished manuscript, University of Illinois.
- (i.p.). The strict cycle condition and noncyclic rules. *Linguistic Inquiry*.
- Kiparsky, Paul (1982). Lexical morphology and phonology. In *Linguistics in the Morning Calm*, Linguistic Society of Korea (ed.). Seoul: Hanshin.
- (1985). Some consequences of lexical phonology. *Phonology Yearbook* 2, 85-138.
- Mascaró, Joan (1976). Catalan phonology and the phonological cycle. Unpublished Ph.D. dissertation, MIT. (Bloomington: Indiana University Linguistics Club.)
- McCarthy, John (1984). Theoretical consequences of Montañés vowel harmony. *Linguistic Inquiry* 15, 291-318.
- Menéndez Pidal, Ramón (1966 [1899]). Notas acerca del bable de Lena, Asturias. In *El dialecto leonés*, by Ramón Menéndez Pidal. Oviedo: Diputación de Oviedo.
- (1966 [1906]). *El dialecto leonés*. Oviedo: Diputación de Oviedo.
- Neira Martínez, Jesús (1955). *El habla de Lena*. Oviedo: Diputación de Oviedo.
- (1982). *Bables y castellano en Asturias*. Madrid: Silverio Cañadas.
- Penny, Ralph (1969a). *El habla pasiega: ensayo de dialectología montañesa*. London: Tamesis.
- (1969b). Vowel harmony in the speech 148-166.
- (1970). Mass nouns and metaphony in *Linguisticum* 1, 21-30.
- (1978). *Estudio estructural del habla de T* *Philologie* 167. Tübingen: Niemeyer.
- Porto Dapena, Xosé-Alvaro (1968). As voci *Grial* 19, 30-39.
- Poser, William (1982). Phonological restructure of *Phonological Representation* 121-158. Dordrecht: Foris.
- Roca, Iggy (1988). Theoretical implications 393-423.
- Rodríguez Castellano, Lorenzo (1952). Diputación de Oviedo.
- Sagey, Elizabeth (1986). The representationality. Unpublished Ph.D. dissertation, 1
- Sluyters, Willebrord (1988). Vocaalharritaliaanse case in een autosegmenteel ka
- Spencer, Andrew (1986). Vowel harmony 69, 3-21.
- Steriade, Donca (1987). Redundant value
- Vago, Robert (1988a). Underspecification *Phonology* 5 (2), 343-362.
- (1988b). Underspecification theory as presented at the 63rd Annual Meeting
- van der Hulst, Harry, and Norval Smith autosegmental theory. In *The Structure*
- van der Hulst and Norval Smith (eds Wilson, Tom (1988). Blocking and re *Papers in Linguistics* 9, 141-171.
- Zubizarreta, Maria L. (1979). Vowel 1 *Papers in Linguistics* 1, K. Safir (ed.)
- (1982). The formal interaction of ha *The Structure of Phonological Representation* Smith (eds.), 159-212. Dordrecht: Foris

- il rules and filters in Salentino. In *et al.* (eds.), 79-98. Amherst, Mass.:
- al Cabo de Peñas. *Revista de lineal Generative Phonology: An ty Linguistics Club, arvard Studies in Phonology 2. logy Yearbook 2*, 225-252.
- ress in Spanish and Italian. *Lingua*
- s. Oviedo: Diputación de Oviedo, s (*León*). Oviedo: Universidad de
- nflexión metafonética en el centro- nico leonés II. Alvaro Galmés de
- istic Society 23 (2), 116-133.
- blative in Romance. *Language* 44,
- rmony processes. In *Crossing the ls.*, 1-22. Dordrecht: Foris.
- gy and Spanish plurals. *Journal of nlinear Analysis*. Cambridge, Mass.
- ox resolved. *Phonology Yearbook 2*,
- inguistic variation in Spanish Canta- versity. (Revised version to appear,
- ic. Unpublished Ph.D. dissertation,
- e dialects of Asturias and Cantabria: versity of Illinois. *Linguistic Inquiry*.
- ology. In *Linguistics in the Morning shin*.
- Phonology Yearbook 2*, 85-138.
- onological cycle. Unpublished Ph.D. y Linguistics Club.)
- Montañés vowel harmony. *Linguistic*
- del bable de Lena, Asturias. In *El : Diputación de Oviedo.*
- n de Oviedo.
- lo: Diputación de Oviedo.
- verio Cañadas.
- e *dialectología montañesa*. London:
- (1969b). Vowel harmony in the speech of the Montes de Pas (Santander). *Orbis* 18, 148-166.
- (1970). Mass nouns and metaphony in the dialects of north-western Spain. *Archivum Linguisticum* 1, 21-30.
- (1978). *Estudio estructural del habla de Tudanca*. Beihefte der Zeitschrift für romanische Philologie 167. Tübingen: Niemeyer.
- Porto Dapena, Xosé-Alvaro (1968). As vocaes átonas galegas E, O, A en contaito con labial. *Grial* 19, 30-39.
- Poser, William (1982). Phonological representations and action-at-a-distance. In *The Structure of Phonological Representations II*, H. van der Hulst and N. Smith (eds.), 121-158. Dordrecht: Foris.
- Roca, Iggy (1988). Theoretical implications of Spanish word stress. *Linguistic Inquiry* 19, 393-423.
- Rodríguez Castellano, Lorenzo (1952). *La variedad dialectal del Alto Aller*. Oviedo: Diputación de Oviedo.
- Sagey, Elizabeth (1986). The representation of features and relations in nonlinear phonology. Unpublished Ph.D. dissertation, MIT.
- Sluyters, Willebrord (1988). Vocaalharmonie in een onderspecificatiemodel: een Zuid-italiaanse case in een autosegmenteel kader. *Gramma, tijdschrift voor taalkunde* 12, 63-74.
- Spencer, Andrew (1986). Vowel harmony, neutral vowels and autosegmental theory. *Lingua* 69, 3-21.
- Steriade, Donca (1987). Redundant values. *Chicago Linguistic Society* 23 (2), 339-362.
- Vago, Robert (1988a). Underspecification in the dual harmony system of Pasiego (Spanish). *Phonology* 5 (2), 343-362.
- (1988b). Underspecification theory and the analysis of /a/ in height harmony. Paper presented at the 63rd Annual Meeting of the Linguistic Society of America, New Orleans.
- van der Hulst, Harry, and Norval Smith (1982). Prosodic domains and opaque segments in autosegmental theory. In *The Structure of Phonological Representations*, part II, Harry van der Hulst and Norval Smith (eds.), 311-336. Dordrecht: Foris.
- Wilson, Tom (1988). Blocking and repair in Pasiego vowel harmony. *Toronto Working Papers in Linguistics* 9, 141-171.
- Zubizarreta, Maria L. (1979). Vowel harmony in Andalusian Spanish. In *MIT Working Papers in Linguistics* 1, K. Safir (ed.), 1-11. Cambridge, Mass.: MIT Press.
- (1982). The formal interaction of harmony and accent: the tone pattern of Japanese. In *The Structure of Phonological Representations*, part II, Harry van der Hulst and Norval Smith (eds.), 159-212. Dordrecht: Foris.