

Tone and Stress in Basque: a Preliminary study

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1. Introduction.

The Basque speaking domain encompasses a surprising variety of accentual systems for such a small area. These systems range from some that are quite similar to the ones found in the neighboring Romance languages to others that are very different in their nature from anything found in Romance.

This situation of wide diversity gave rise to conflicting and even contradictory statements among early researchers, depending on the dialect that they were taking as a basis for their description of the Basque accentual system and depending of the definition of "accent" that was adopted¹.

Among Basque scholars, it is generally recognized that the work of Michelena contributed in a very important manner to our current understanding of the Basque accentual situation. Michelena (1972, 1977) distinguishes four accentual types in Basque, admitting a certain amount of variation within each of the four major types. His classification is the following:

Type I. In this accentual system², words may have one of two suprasegmental patterns: either a sustained accent (in Michelena's and Jacobsen's (1972) terms), which is considered the unmarked pattern, or a falling contour, which is characteristic of plural nouns and a small number of singular and indefinite nouns.

This type is found in the Western-Central area, comprising most dialects spoken in the provinces of Biscay and Guipuzcoa and some bordering dialects of Navarre.

Type II. This is the Souletin-Roncalese system, of the Easternmost Basque speaking area. Michelena establishes a comparison between this accentual type and that of Gascon. In these varieties, stress, which is phonemic (i.e. may carry grammatical information), is generally assigned on the penultimate syllable. As we will see later, and Michelena notices, there are two clear subtypes within this type, the Souletin and the Roncalese.

Type III. This type is found in some areas of Navarre. Michelena remarks that the acoustic impression that this stress type gives is not very different from

1. See Rotaetxe (1978; 142-47) for a review of early conflicting statements. Gavel (1920) already remarks the wide dialectal diversity in Basque regarding accentual facts.

2. I will use the words *accentual system* as a cover term for both stress and tone.

the way Castilian Spanish stress sounds. The predominant pattern is penultimate stress. There is a clear phonetic distinction between stressed and unstressed syllables. However, this prominent stress is not phonologically relevant at the word level. Words cannot be distinguished by suprasegmental features, unlike what is the case in the two accentual types mentioned above.

Type IV. In this accentual type, stress is assigned from the beginning of the word and falls on the second syllable, unless the stem is monosyllabic in which case the stress falls on the stem.

This is the system found in a small area along the Southern bank of the Bidasoa river, comprising small areas of Guipuzcoa and Navarre.

Txillardegi (1984) makes an attempt at simplifying this classification. He distinguishes a Western area, where accent is assigned from the left edge of the word, from an Eastern area, where accent assignment is from the right end.

An examination of the phonological rules that underlie each accentual type, however, will show that the greatest schism is between type I dialects, on the one hand, and types II-IV, on the other. In types II-IV, there is one syllable per word which receives primary stress. If there are other syllables which receive secondary stress, these will not be adjacent to the syllable carrying primary stress. This is not true of type I. In type I, it is generally impossible to single out a syllable on which primary stress falls. What we have instead is a series of high pitch syllables which may be followed by another series of syllables in a lower pitch.

Michelena's types II-IV are pure stress systems. Type I is a tonal system (in the broad definition of tonal system found in Gandour, 1978 and McCawley, 1978, for instance) which recalls in many aspects that of Japanese. The only parallel to this Basque type found in Europe is offered by some Scandinavian varieties and Serbo-Croatian. In terms of the systems of rules that generate these different distributions of suprasegmental features, type I varieties must contain rules spreading a tone (a level of pitch) over a number of syllables.

I shall, therefore, distinguish a Western or Tonal type, corresponding to Michelena's type I, from an Eastern or Stress type, which comprises Michelena's three other types. The distinction that Txillardegi establishes in terms of direction of stress assignment is of a lesser importance than the main differentiation between tonal and stress varieties.

In sections 2 and 3, I will provide an analysis of dialects that have been described in the literature and which belong to the Western and the Eastern accentual type respectively. In section 4, I shall try and trace the historical evolution that gave rise to the present diversity of accentual types in Basque. My study will be limited to the accentual patterns of noun and adjectives.

2. Tone in Western Basque.

There are two published descriptions of dialectal varieties of the tonal type that I have been able to consult. Rotaetxe (1977) offers a detailed description of the dialect spoken in the town of Ondarroa, on the Biscayan coast, in which particular attention is paid to suprasegmental facts. This is in contrast with the common practice of disregarding accentual facts that is found in other descrip-

tions of linguistic varieties of the tonal area³. The other description of linguistic varieties of the tonal type is offered in Basterrechea (1974, 1975). Basterrechea offers information on the dialect of Gernika, in the interior of the province of Biscay. An additional secondary source is Jacobsen (1972), which offers some limited but carefully described data from several tonal varieties. Azkue (1923/25) and Michelena (1977) provide some general information on the realization of tonal patterns in Western Basque, but offering few examples and paying more attention to statements that would be valid for all dialects of the area than to the description of particular subtypes. Other possible sources such as published dialectal vocabulary lists, etc, have the defect of normally not marking suprasegmentals. In the exceptional cases when such marking is found, tonal patterns are erroneously understood in terms of culminative stress. This is also the case of the recent comparative study found in Txillardegui (1984).

I will thus base my analysis primarily on Rotaetxe (1979) and Basterrechea (1974, 1975), offering separate studies of the Ondarroa and the Gernika varieties, as described by those authors.

2.1. The Ondarroa dialect.

I will study in separate subsections the tonal patterns of nouns and adjectives in the absolutive (unmarked) Case, and the patterns produced when nouns and adjectives bear Case suffixes.

2.1.1. Absolutive.

Nouns and adjectives may carry one of two tonal patterns. One of them, a sustained High tone, characterizes the vast majority of indefinite (uninflected in the absolutive) and singular forms (bearing the determiner /-a/). Plural items have a drop in tone in the final syllable. Tonal pattern is only unpredictable for a small number of lexical items, mostly borrowings, as we will see below.

I will assume that only two phonemic tones, H and L, are pertinent in this dialect. Furthermore, the Low tone can be considered as a default tone that will be inserted on syllables that have not been assigned a tone by rule. Examples of words with different numbers of syllables are given in (1) in the absolutive indefinite/uninflected form, in the absolutive singular and in the absolutive/ergative plural³:

(1) indef	singular	plural	
ár	árrá	árrak	'worm'
etxé	etxí	étxik	'house'
gixón	gixóná	gixónak	'man'
elíxá	elíxí	elíxak	'church'
orkátíl	orkátíllé	orkátíllak	'ankle'
aittítá	aittíté	aittítak	'grand-father'
erréméntái	erréméntáixé	erréméntáixak	'smith'

3. Another book-length study of a dialect of the same area, Rollo (1925), which describes the dialect of Markina, a few kilometers away from Ondarroa, does not offer any accentual information.

Indefinite and singular forms are thus high throughout, with the exception of the initial syllable which has a Low tone unless the stem is monosyllabic. Plural forms have a Low tone on the last syllable⁴.

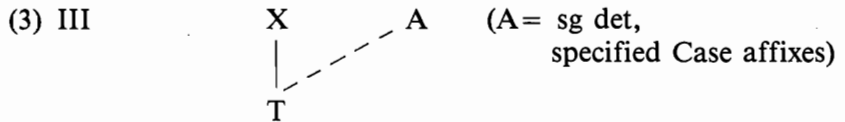
In the analysis of this and other Basque suprasegmental systems, I will make use of extratonicity. A syllable can be marked as extratonic only if it is at the boundary of some relevant domain. Extratonic syllables will be ignored in the application of rules inserting or spreading tones. Syllables which remain without a tone throughout the derivation will be assigned a default tone; a Low in the Ondarroa dialect.

A constraint on extratonicity is that an entire domain (e.i. word) cannot be made extratonic.

With this in mind, to produce the patterns in (1), we can give the following rules:

- (2) I. Make the leftmost syllable extratonic
 II. Assign H to all tonal syllables.

These tone-assignment rules apply to the bare stems. Determiners (singular /-a/, plural /-ag/) and case affixes, are added at later stages. The singular determiner (as well as a few Case markers) receive a tone by spreading from the last stem syllable:



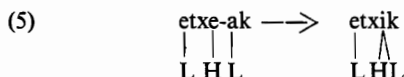
Evidence for applying the stress-assignment rules at the stem level is given by the contrast between 'worm' and 'house'. The word *arra* has a H on the first syllable. This is because it has a monosyllabic stem and thus the extratonicity rule cannot apply here without violating the universal constraint on extratonicity that does not allow for entire domains to be made extratonic:

(4)	UR	/arr/	/etxe/	/orkatil/
	I	---	(e)txe	(or)katil
	II	arr	(e)txe	(or)katil
		H	H	H
	morphology	arr-a	(e)txe-a	(or)katil-a
	and III			
		H	H	H

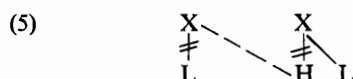
The application of the default rule will then give a Low tone to extratonic syllables (presumably in the Phonetic Component).

4. Rotaetxe states that in plural words of four syllables such as /kuntzurrun-ak/ or /lengusin-ak/, the last syllable is clearly unaccented (has a low tone), but that it is difficult to determine the status of the penultimate: "lo que aparece claramente es que la última sílaba no tiene acento, pero es difícil aclarar el status de la penúltima" (p. 256). I will assume that only the last syllable is phonologically lowered in the plural for words of any number of syllables. Evidence for this position is provided by the only example that Rotaetxe gives of a plural word of more than four syllables: *errémentáixak* (p. 256).

As the examples in (1) show, the plural affix does not get a High tone by spreading from the stem and surfaces as Low. Special attention is required by the plurals of bisyllabic stems ending a vowel, such as *etxik/etxe-ak/*. In these words there is always reduction of a vowel sequence. Assuming that tonal rules, including insertion of default L tones, take place before these vowel rules, contour tones are created in these instances:

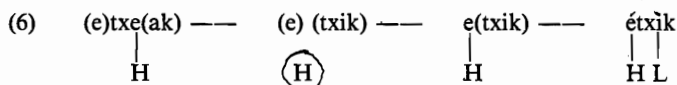


Since contour tones are not allowed in Basque, a tone rule must apply:



The result of the application of this rule is final forms such as *étxik*, *ámik* / *ama-ag/* 'mothers', *bésuk* / *beso-ag/* 'arms', etc.

An alternative analysis would require the non-tonality of the plural determiner to extend to the whole syllable of which it is part. Under this view, words like *etxik* would be made extratonal in their entirety (the initial syllable is made extratonal by rule I). Since this result is universally disallowed, one of the two syllables must regain tonality. The fact that it is the first syllable the one that receives the High tone can be explained by both language internal reasons (i.e. a final drop in Tone is a mark of the plural) and universal theoretical considerations (i.e. affixes are heads of words and their properties must prevail in case of conflict with stem properties):



1.1.3.

A small number of nouns, mostly but not exclusively loanwords, have a different accentual pattern: the initial syllable is High and after it the tone drops to Low, in all three numbers. These exceptional nouns constitute the only instance of marking of tonal syllables in the lexicon. There are even a few minimal pairs formed by words which only differ in the suprasegmental in the indefinite and singular. In (7a) examples of marked nouns are given in all three absolutive numbers. Examples of minimally contrasting unmarked nouns are given in (7b):

(7)a.	báso	básu	básuk	'glass'
	txístu	txístu	txístuk	'flute'
b.	basó	basú	básuk	'forest'
	txistú	txistú	txístuk	'saliva'

A way to capture the exceptionality of these items is by listing them in the lexicon as having an extratonal second syllable, e.g. ba(so).

1.2. Other morphological Cases.

A group of Case markers is attached to determinate forms (stem + determiner), another group directly to the stem. Case markers in this second group surface with Low tones. This group includes all locative affixes, the partitive, and the prolicative. Locative markers have different allomorphs for the three numbers.

The underlying form of these affixes is given in (8)⁵:

(8)	indef.	singular	plural
inesive	/-tan/	/-Can/	/-etan/
adlative	/-tara/	/-ra/	/-etara/
ablative	/-tatik/	/-tik/	/-etatik/
genitive	/-tako/	/-ko/	/-etako/

(C is an empty consonant)

These affixes do not trigger the application of T-spread (rule III) and are assigned the default L tone⁶. Examples are given in (9) with *mendi* 'mountain':

(9)	indef	singular	plural
inesive (in)	mendítan	mendíxan	mendíxetan
adlative (to)	mendíta	mendíre	mendíxeta
ablative (from)	mendítatik	mendítik	mendíxetatik
genitive	mendítako	mendíko	mendíxetako

Partitive and prolicative have only one underlying form /-rik/ and /-tzat/ respectively. As mentioned, they do not trigger tonal spreading either:

(10)	mendírik	'mountain (part)'
	lagúnik	'friend (part)'
	lagúntzat	'as a friend (prol)'

Endings that demonstrably include the singular determiner, receive a High tone by rule III. This is the case of the genitive dative and ergative singular:

(11)	stem	gloss	gen. sing	dat. sing.	erg. sing.
	/gixon/	'man'	gixónán	gixónáj	gixónák
	/lagun/	'friend'	lagúnán	lagúnáj	lagúnák
	/mendi/	'mountain'	mendíxán	mendíxáj	mendíxák

5. The underlying forms given are those argued for in Hualde (ms); somewhat different representations are given by Rotaetxe (1978).

6. The only exception is constituted by inesive singular forms, which are given another alternative accentuation besides that in the text, with a H on the last syllable. This irregularity could be due to confusion (or analogy) with segmentally identical genitive singular forms, which necessarily have a high toned final syllable. E.g.: gen sg *mendíxán* /mendi-a-n/; ines sg *mendíxan*, *mendíxán* /mendi-Can/.

In contrast, plural suffixes are low-toned:

(12)	gen plural	dat. plural	erg. plural
	gixonen	gixonaj̃	gixonak
	lagunen	lagunaj̃	lagunak
	mendixen	mendixaj̃	mendixak

As it was the case with the absolutive forms, vowel-final bisyllabic stems are of particular interest. In these words the Case suffix fuses with the last syllable of the stem and causes a retraction of the High tone with respect to singular and indefinite forms. This is with the exception of stems ending in a high front vowel (e.g. *mendi*), where an epenthetical voiceless palatal sibilant (orth. *x*) is inserted between the stem and vowel initial affixes.

Examples of plural forms showing H-retraction are given in (13). Singular and indefinite forms are also given for comparison:

(13)a. Ergative

stem	indefinite	singular	plural	gloss
/andra/	andrak̃	andrik̃	andrak	'woman'
/ama/	amak̃	amak̃	amak	'mother'
/etxe/	etxek̃	etxik̃	etxik	'house'
/beso/	besok̃	besuk̃	besuk	'arm'
/leku/	lekuk̃	lekuk̃	lekuk	'place'

But:

/mendi/	mendik̃	mendixak̃	mendixak	'mountain'
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b. Genitive

stem	indefinite	singular	plural	gloss
/andra/	andrán	andrín	ándren	'woman'
/ama/	amán	amán	áman	'mother'
/etxe/	etxén	etxín	étxin	'house'
/beso/	besón	besún	bésun	'arm'
/leku/	lekún	lekún	lékun	'place'

But:

/mendi/	mendíren	mendixán	mendixen	'mountain'
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Either of the two analyses suggested above for the absolutive plural of these stems (e.i. contour simplification or extratonicity conflict resolution) will also account for H-retraction in these other Cases. The ergative marker is simply /-k/, which is added to determinate forms in the singular and plural. Absolutive and ergative plural forms are identical since the underlying plural ergative sequence (-ag-k) is simplified. Genitive plural endings can be analysed as /e-n/, where the /e/ is an allomorph of the plural marker, which also occurs in the

locative Cases (see above). This plural marker, which surfaces in the examples in (12), merges with the final vowel in the examples in (13) causing the retraction of the H-tone.

The dative plural can be analysed as consisting only of a suffix /-ai/ which links directly to the stem. It only fuses with /-a/ final stems. In all other instances it constitutes its own syllable and does not cause the H-tone to retract to the initial syllable:

(14)	/andra/	ándra _i	'to the women'
	/etxe/	etxía _i	'to the houses'
	/beso/	besúa _i	'to the arms'
	/leku/	lekúa _i	'to the places'

Non-low vowel final stems contrast only tonally in the singular and the plural of the dative Case. The singular dative of the words in (14) is given in (15):

(15)	andría _i	'to the woman'
	etxía _i	'to the house'
	besúa _i	'to the arm'
	lekúa _i	'to the place'

As mentioned above, and shown in (15), the last syllable has a High tone in the dative singular. This is because singular dative forms contain the H-spread triggering singular determiner; i.e. the underlying dative singular ending is /a-ai/. The presence of the singular determiner in the dative singular is also shown segmentally in words with consonant final stems (cf (12) above) or stems ending in a low vowel. A surface form *andriai* requires an underlying /andra-a-ai/, where the first suffix /a/ is the singular determiner (see Hualde ms).

The prolativ suffix /-tzat/ is added to genitive forms to form the benefactive. The tonal pattern in the genitive is kept. Plural forms are offered in (15):

(15)	lagúntzat	'for the friends'
	gixóntzat	'for the men'
	ándrentzat	'for the women'

The application of tonal rules precedes as in (16) (in the contour simplification analysis):

(16)	/lagun-e-n-tzat/	/andra-e-ntzat/
I, II, default	lagun LH	andra L H
morphology:	lagune L H L	andrac L H L
default	L H L	L H L

ae → e

andre
 | |
 L H L

contour simplification:

andre
 | |
 H L

morphology &

lagúnentzat

ándrentzat

default:

| | |
 L H L

| |
 H L

Unexpectedly, the suffix /-tzat/ can optionally receive a High tone in the benefactive singular:

(17)	indef	singular	plural
benefactive	gixónentzat	gixónántzat gixónántzát	gixónentzat
	andrántzat	andríntzat andríntzát	ándrentzat

H-spread (rule III) should affect only the penultimate syllable in the singular examples in (17), which contains the singular determiner, but not the last syllable. This optional spreading to the last syllable in the singular benefactive shows a tendency to keep a level tone throughout in singular forms.

Besides the singular determiner, two other suffixes trigger H-spreading: the instrumental /-Caz/ (C is an empty consonant) and the indefinite dative /-ei/. The instrumental/comitative suffix /-Caz/ is used only in the indefinite and singular; a totally different suffix /-in/ is used in the plural. Examples are shown in (18):

(18)	indef	sing	
	orrazíaz	orrazíxáz	'comb'
	ultzéaz	ultzíaz	'nail'

Indefinite datives such as *gixonei*, which contrast tonally with indefinite ergative and genitive forms *gixonek*, *gixonen*, show that this dative suffix also requires the application of H-spreading.

2.2. Gernika

2.2.1.

Basterrechea (1974, 1975) provides a description of the tonal system of another Biscayan dialect, that of his native Gernika. In this variety, as in the Ondarroa dialect, there are only two basic tonal patterns. The vast majority of nouns and adjectives in the singular (-a ending) or in the uninflected/indefinite form

are high pitched throughout with the exception of the first syllable, which is pronounced in a lower pitch in words of more than one syllable. This tonal pattern is illustrated in (19)⁷:

(19) úr	'water-indf'
giltzá	'key-indf'
ezkúrrá	'acorn-sg'
txistúláría	'floutist-sg'
mendígójzáléá	'mountaineer-sg'

The second tonal pattern, which is born by plural nouns and adjectives, presents a lowering of the two last syllables of the word and will be discussed later.

In the examples in (19), the initial syllable receives a Mid tone and all following syllables are assigned a High tone. Monosyllabic word in isolation receive a High tone. Why we are making use of a Mid/High opposition, instead of Low/High will become clear later when we examine the plural tone pattern in connection with certain lowering processes affecting non-plural forms. We will see that, unlike what is the case in the dialect of Ondarroa, in Gernika three tonal levels are phonologically required.

We obtain the distribution of suprasegmentals in (19) applying the rules in (20):

- (20) I. Make leftmost syllable extratonal

e.g.: (txis)tularia

- II Assign High tone to all tonal syllables in the word.

e.g.: (txis)tularia

H

- III. Default tone: Mid

e.g.: txistúláría

M H

Monosyllabic words will not be affected by rule I, since the application of the rule would involve making the entire domain extratonal, which, as said above, is barred by a universal constraint.

Even though the vast majority of nouns and adjectives in the singular and the indefinite number follow the pattern in (19), there is a short list of items that do not conform to that accentual pattern. These exceptional items, a sample of

7. Basterrechea employs standard Basque orthography in this examples, which does not show the changes that vowel sequences undergo in the Gernika dialect. The attachment of the singular determiner /-a/ to vowel final stems produces the following sequences in Gernika: (a+a/ [ie] /e+a/ [ie] /i+a [ize] /o+a/ [oa] /u+a/ [ue].

which is given in (21), receive a high tone on the first syllable. There is a drop in pitch between the first and the second syllable in these words. The examples are given in their indefinite/uninflected and in their absolutive singular forms (I show surface vowel quality in these examples):

(21) átze	átzie	'hind part'
déi	déjže	'call'
léku	lékue	'place'
tálde	táldie	'group'
káfe	káfie	'coffee' (but Sp. café)
mállu	mállue	'hammer'
jénte	jéntie	'people' (Sp. gente)

Most of these exceptional items, but by no means all, are borrowings from Spanish. These items never have more than two syllables in their uninflected form (three in the singular).

The exceptionality of these items can be captured by postulating that their second syllable is extratonal. The tone assignment rules in (20) would apply to these items as follows:

(22) UR	a(tze)
2-I	---
2-II	a(tze) H
2-III	atze H M

Basterrechea mentions the existence of two phonological processes affecting tone in the Gernika dialect which will cause us to reexamine the tone assignment rules in (20), even though these are both optional processes and operate at the phrase level.

The first process is the rising of Mid tones between High tones. This process applies in rapid speech. The sequences to the left of the arrow in (23) become those to the right in rapid speech:

(23) guré etxéa	—>	guré étxéa	'our house'
Muxikékó txistúláriá	—>	Muxikékó txistúláriá	'the floutist from Muxika'
zazpí libúrú	—>	zazpí libúrú	'seven books (indef)'

Given these facts, one must wonder whether our assumption that the initial syllable of nouns and adjectives is assigned a Mid tone at the word level, as assumed in (20), is indeed correct. An alternative analysis would be that all syllable

bles in the word are assigned a High tone and there is a postlexical rule which lowers the first high tone of a phrase. If we assume this second analysis, an apparent problem is that the High tone of the exceptional items illustrated in (21) never lowers. I said that this is an apparent problem because it can be easily overcome, assuming that the correct formulation of the postlexical rule is as follows:

$$(24) H \longrightarrow M / \% \text{ ----- } H (\% = \text{phrase boundary})$$

That is, a phrase initial H is lowered only when followed by another H.

I will continue assuming the existence of the lexical rule (20)-I instead of the postlexical rule (6), conceding that I have not offered any evidence in favor of this analysis over the other. Evidence was offered for the Ondarroa dialect by tonal contrasts such as *árrá* /arr-a/ 'worm' vs *etxi* /etxe-a/ 'house', but Basterrechea does not provide any examples bearing on this issue for the Gernika dialect.

A second optional process is a lowering of final Highs before pause. This is by no means a purely phonetic effect. According to Basterrechea, the High tone of the two final syllables is lowered when the word is in the singular, but only the last syllable is lowered, if the word is indefinite. Examples of singular phrase final optional lowering are given in (25). Examples with indefinite nouns are given in (26). One of the few instances when an indefinite noun without case affixes can appear phrase-finally is when preceded by a numeral:

- (25) *gaztelúá* \longrightarrow *gaztelúa*⁸ 'the castle'
libúruá \longrightarrow *libúrua* 'the book'
- (26) *hirú painélo* \longrightarrow *hirú painélo* 'three handkerchiefs'
zazpí libúru \longrightarrow *zazpí libúru* 'seven books'

Since singular and indefinite nouns are affected in different ways, it is clear that this optional lowering rule is sensitive to morphological constituency (or grammatical features)⁹.

There is a very interesting restriction on the application of this phrase-final lowering rule: it cannot affect items (nouns and adjectives) which are trisyllabic when bearing the article, such as the following:

- (27) *gizóná*, * *gizona*, * *gizóna* 'the man'
etxéá, * *etxea*, * *etxéa* 'the house'

We cannot account for these facts without complicating the rules in (20). To begin with, the difference between indefinite and singular nouns with respect to lowering suggest a cyclical application of tone rules. Tones must be assigned to the stem before the definite article *-a* is attached, as in Ondarroa. Secondly,

8. In signalling the lowering of final highs in items with the singular article, there is some inconsistency in Basterrechea's notation. In some instances, he marks the two last syllables as mid, and in other examples there is a mid-low sequence. E.g.: *gaztelúá*, when affected by the optional lowering process is represented as either *gaztelúa* (that is *gaztelúa* in our notation) or as *gaztelua* (*gaztelúa*). As shown later in the text, the penultimate is crucially mid, and not low, since *erg sg gazteluak* and *abs/erg pl gazteluak* constitute a minimal pair. I will assume that the two last syllables of singular items receive (optionally) a default mid tone. The realization ML can be attributed to phonetic reasons.

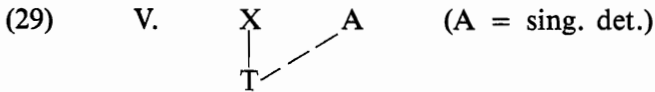
The same double notation is given to exceptional High initial items in determinate form. Eg: *barkua*, *barkua* 'the ship (abs sg)'.

9. A complication is introduced by the fact that geographical and personal names behave as singular nouns in that their last two syllables can be lowered, even though they do not carry any determiners. E.g.: *ibárrangelu*, *agápito*.

a distinction must be made between a rule that inserts a High tone and another rule that spreads it. Only in this way can we explain the facts in (27). Our revised tone assignment rules are formulated as in (28):

- (28) I. Make leftmost syllable extratonal
 II. Assign H to leftmost tonal syllable
 (IIa. Optional: Make rightmost syllable extratonal if not bearing a tone at this stage)
 III. Spread H to all tonal syllables
 IV. Default: M

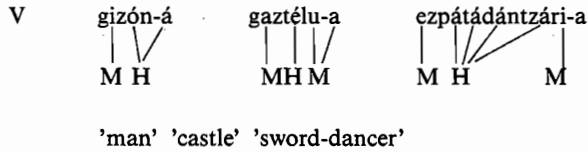
These rules apply to the bare (uninflected) noun or adjective. The article and Case affixes are inserted at a later stage and receive their tone by spreading from the last syllable of the stem (except if they have a lexical tone or are lexically marked as extratonal):



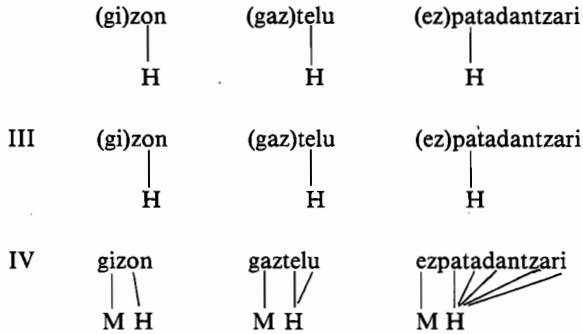
The operation of these rules is illustrated with examples in (30) and (31). In (30), the optional rule (28)-IIa applies, in (31) it does not:

(30) UR	gizon	gaztelu	ezpatadantzari
I	(gi)zon	(gaz)telu	(ez)patadantzari
II	(gi)zon H	(gaz)telu H	(ez)patadantzari H
IIa	-----	(gaz)te(lu) H	(ez)patadantza(ri) H
III	-----	-----	(ez)patadantza(ri) H
IV	gizón M H	gaztélú M H M	ezpátádántzári M H M

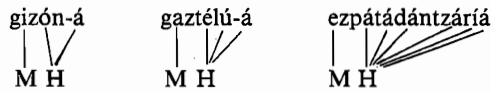
These are final indefinite forms. Singular forms are obtained attaching the article *-a* and applying rule V:



(31) Output of rules I & II:



morphology & V:

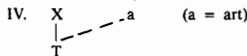


The lowering rule Ia cannot apply to *gizona* in (30) both because the entire domain would be extratonal, which, as said above, is universally prohibited, and because there are no toneless tonal syllables at the stage IIa applies¹⁰.

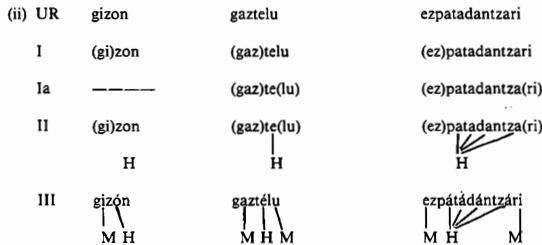
10. There is a possible alternative analysis that does not require a distinction between a rule inserting a H and another rule spreading it:

- (i) I. Make leftmost syllable extratonal
 (Ia. Optional: Make rightmost syllable extratonal)
- II. Assign H to all tonal syllables
- III. Default tone: M

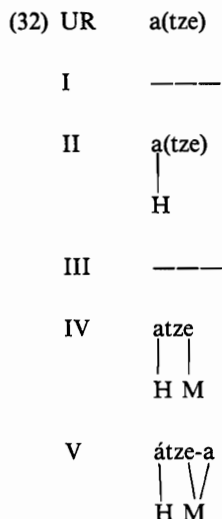
As mentioned, these rules apply to the bare (uninflected) noun or adjective. The article is added at a later stage and will receive its tone by spreading from the last stem syllable:



The operation of these rules is illustrated in (ii). In (ii), the optional rule Ia applies:



Let us now consider again the tonal derivation of the exceptional items in (21):

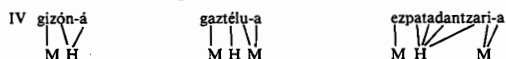


2.2.1. Plural nouns and adjectives

So far, I have made use of only two tones, that I called High and Mid. The consideration of the tonal pattern of plural forms shows the need to distinguish three tones. In the plural forms of nouns and adjectives in the Gernika dialect there is an abrupt drop in tone in the last two syllables of the word, or only the last one in the case of words which are bisyllabic in their plural form. This drop in tone is always greater than the one that optionally affects the last two syllables of singular items. Thus, with non-exceptional items, there is always a tonal contrast between the segmentally identical ergative singular and absolutive/ergative plural forms, even if lowering (e.i. rule Ia) applies in the singular. In the examples in (33), there is a preceivably greater drop in pitch from antepenult to penultimate in the plural than in the singular. This forces us to distinguish a Low tone, which characterizes plural forms, from a Mid tone, which occurs in the optional lowering of Highs in singular forms:

(33) ergative singular (lowered)	absolutive/ergative plural	
gaztél <u>u</u> ak	gaztél <u>ù</u> ak	'castle'
txistúl <u>á</u> riak	txistúl <u>à</u> riak	'floutist'

These are final indefinite forms. If the singular article is attached to the stem at this point, rule IV will apply:



The analysis of plural forms, however, clearly requires the distinction between a rule of H-insertion and another rule of H-spreading. For this reason, I have chosen the analysis in the text for singular and indefinite forms too.

Examples of plural nouns with different numbers of syllables are illustrated in (34) in the abs/erg case:

(34)	txítàk	'chickens'
	gizónàk	'men'
	gaztélùàk	'castles'
	txistuláriók	'floutists'
	ezpátádántzáríàk	'sword-dancers'

This final Low tone is not exclusive of the homophonous ergative and absolutive cases. Plural forms in all morphological cases are characterized by the same tonal pattern, as shown in the dative and genitive plural forms in (35) (examples from Jacobsen, 1972).

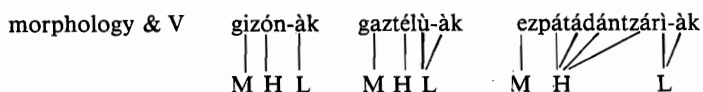
(25)	singular		plural	
	amári	'to the mother'	ámàri	'to the mothers'
	onén	'of this'	ónèn	'of these'
	orrén	'of that'	órrèn	'of those'
	arén	'of that (over there)'	àrèn	of those (over there)'

I will assume that there is a Low tone morpheme which marks a stem as plural and which is inserted before the affixation of determiners or case markers. This L tone is attached to the last syllable of the stem and spreads rightwards to the affixes. We thus have a tonal rule:

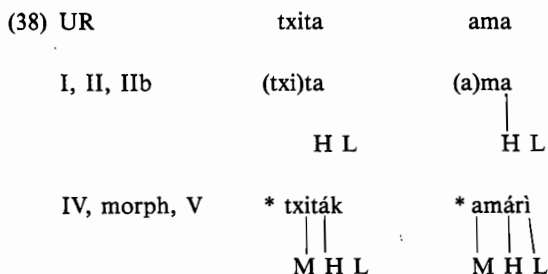
(36) Iib (plural): Assign L to rightmost syllable

This rule must be ordered before H-spreading (rule III), but after H-insertion (rule II). The derivation of some plural examples is shown in (37):

(37)	UR	gizon	gaztelu	ezpatadantzari
extratonality	I	(gi)zon	(gaz)telu	(ez)patadantzari
H-insertion	II	(gi)zon	(gaz)telu	(ez)patadantzari
		 H	 H	 H
L-insertion	Iib	(gi)zon	(gaz)telu	(ez)patadantzari
		 H (L)	 H L	 H L
H-spread	III	-----	-----	(ez)patadantzari
				 H L
default-M	IV	gizon	gaztelu	ezpátádántzárí
		 M H (L)	 M H L	 H M L



A potential problem is presented by words such as *txítàk*/txita-ak/ 'the chickens (abs/erg)' or *ámàri* /ama-ri/ 'to the mothers (dat)'. These are bisyllabic words whose stem ends in /-a/. The application of our rules gives the ungrammatical forms in (38):



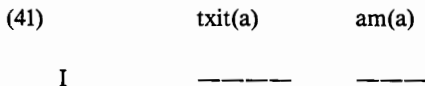
A possible solution is to invoke the application of a special rule to these cases which would have the effect of attaching the L to the last syllable and the H to the first syllable:



There is, however, a more elegant solution. The correct results are obtained if in these words the operation of rule I, making the initial syllable extratonal, is blocked. This blocking would take place naturally if these were monosyllabic stems. There is some evidence for the invisibility of a stem final /-a/ in plural nouns. Consider the following singular and plural forms in the Gernika dialect (similar facts are observed in other Biscayan varieties):

- (40) uninflected form: txita
- | | | | | | |
|------------|----------------------|---|---------|---|---------|
| abs sg. : | txitíé / txita-a | → | txitia | → | txitie/ |
| erg. sg. : | txitíék / txita-a-k/ | | | | |
| abs. pl. : | txítàk / txita-ak | → | txitak/ | | |
| erg. pl. : | txítàk / txita-ak-k/ | | | | |

The non-operation of vowel sequence rules in the plural forms (i.e. aa — ie) suggest that one of the vowels is invisible for the application of phonological rules. I will assume that the invisible vowel is the stem-final /-a/. If so, the extratonicity rule would be blocked and the correct results will be derived:



II, IIb	$\begin{array}{c} \text{txit(a)} \\ \\ \text{H L} \end{array}$	$\begin{array}{c} \text{am(a)} \\ \\ \text{H L} \end{array}$
III, IV, morph, V	$\begin{array}{c} \text{txit\grave{a}k} \\ \quad \\ \text{H L} \end{array}$	$\begin{array}{c} \text{ám\grave{a}ri} \\ \quad \\ \text{H L} \end{array}$
	'chickens' (abs/erg)	'mothers' (dat)

The plural forms in (34) are those that are in use among younger speakers. Both Jacobsen and Basterrechea mention that there is a difference between the younger and the older generations. The difference is in the tonal pattern of words which are trisyllabic in the plural. Older speakers have forms such as *gizonak* instead of *gizonak*. In words with any other number of syllables, both generations agree in tonal patterns. These facts require a reordering of the rules in (28). L-insertion (rule IIb in 36) must be ordered before H-insertion (rule II) for older speakers:

(42) I, IIb	$\begin{array}{c} \text{(gi)zon} \\ \\ \text{L} \end{array}$
II	$\begin{array}{c} \text{(gi)z\grave{o}n} \\ \\ \text{H L} \end{array}$

After extratonicity is lost the H tone will attach to the first syllable. The final form that is obtained after the application of all rules is thus:

(43)	$\begin{array}{c} \text{g i z \grave{o} n - \grave{a} k} \\ \quad \quad / \\ \text{H L} \end{array}$	'men (abs/erg)' older generation
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Younger speakers have reversed the order, making it more similar to the ordering of rules in the singular when the optional lowering rules apply.

Basterrechea does not offer examples of nouns in isolation bearing other case suffixes.

2.3. Oyarzun

Both Basterrechea (1974) and Jacobsen (1972) mention that the dialect spoken in Oyarzun (Guipuzcoa) has a tonal distribution quite different from that of the most other tonal dialects. According to Jacobsen, in this dialect, ergative/absolute plural such as *gizonak* 'the men', *txakurrak* 'the dog' have a drop in pitch on the second syllable "which rises up again to a normal level on the

following syllable” (p. 84). Singular segmentally identical ergatives “are also pronounced with stress on their second syllable, but here the pitch rises from the first to the second syllable and remains high thereafter” (p. 84). There is thus a contrast:

(44) erg sg.	$\begin{array}{c} \text{gizónák} \\ \quad \quad / \\ \text{M} \quad \text{H} \end{array}$	$\begin{array}{c} \text{txakúrrák} \\ \quad \quad / \\ \text{M} \quad \text{H} \end{array}$
abs/erg pl.	$\begin{array}{c} \text{gizònak} \\ \quad \quad \\ \text{M} \quad \text{L} \quad \text{M} \end{array}$	$\begin{array}{c} \text{txakùrrak} \\ \quad \quad \\ \text{M} \quad \text{L} \quad \text{M} \end{array}$

Bisyllabic words present certain peculiarities, as in the other dialects. In Jacobsen's terms: “a two-syllable word takes the plural accent on the first syllable: ergative singular *neskak* ‘girl’, nominative-ergative plural *neskak* ‘girls’. Both these words show a rise in pitch from the first to the second syllable, but the whole level of pitch is lower for the latter word than for the former. (p. 84)” Marking all the tones, the representations must be as in (45):

(45) erg sg :	$\begin{array}{c} \text{néskák} \\ \quad \\ \text{M} \quad \text{H} \end{array}$	erg/abs pl :	$\begin{array}{c} \text{nèskák} \\ \quad \\ \text{L} \quad \text{M} \end{array}$
---------------	--	--------------	--

Even though we lack information on words of other numbers of syllables, it seems that we can conclude from these data that the tonal rules are essentially the same as for other dialects: Make leftmost syllable extratonal and assign H to all tonal syllables. The default tone is M, as in Gernika. In the Oyarzun dialect, the need for three contrastive tones is even more clear than in Gernika, as shown in (45).

Plural forms can be accounted for by the following set of rules:

(46) I.	make rightmost syllable extratonal
	e.g. : gizo(nak) nes(kak)
II.	make leftmost syllable extratonal
	e.g. : (gi)zo(nak) ——
III.	Assign L to (rightmost) tonal syllable
	$\begin{array}{c} \text{(gi)zò(nak)} \quad \text{nès(kak)} \\ \qquad \qquad \\ \text{L} \qquad \qquad \text{L} \end{array}$

Only examples with four or more syllables such as *gazteluak* or *ezpatadan-tzariak* will tell us what additional rules we need. Very likely, these words will

at the word level, but at the stem level. This is shown in the different behavior of words with monosyllabic and polysyllabic stems. Also, as a general rule, the initial syllable of the word remains unaccented in both accentual types.

The rules that account for the patterns in (48) and (49) must count binary feet, in order to place stresses on alternating syllables and need to apply at least at two stages: at the stem level first, and then at the word level. These rules are given in (50):

(50) A. Stem cycle

I. From the left, build a right-headed binary foot over the syllables of the stem. If the stem has only one syllable make it a foot-head.

Eg: etxe-ra lan-era arrats-alde-ko

B. Word cycle:

II. Build additional right-headed binary feet over all syllables of the word (optional).

lan-era arrats-alde-ko

Syllables which are feet-heads receive stress.

Rule (50)-I can also be expressed using the notion of extra accentuality, as in the tonal varieties: Make the leftmost syllable of the stem extra-accentual and assign a stress to the leftmost accentual syllable.

As in the other dialects, there is a relatively small number of polysyllabic stems which are exceptionally stressed on their first syllable and thus need to be so marked in the lexicon.

E.g.: *nóbiyo* 'boyfriend', *pútz* 'well', *párroko* 'vicar'.

3.2. Souletin-Roncalese (Michelena's type II)

In this accentual type, stress, which is distinctive, is assigned from the right end of the accentual unit. Two subtypes can be distinguished within this general type: the Souletin and the Roncalese. The main difference between the two dialects is not on the form of the stress rules, but on the level at which stress rules apply. As I will show, in Roncalese stress is assigned at the stem cycle. In Souletin, on the other hand, stress rules apply for the first time after the determiners are attached (but before Case suffixes are added). Apart from this difference in the ordering of stress rules in the grammar, the stress rules are remarkably similar for both subtypes. My data are from Txillardegi (1984).

3.2.1. Souletin

In this dialect, the penultimate syllable in the accentual unit receives stress, as a general rule:

- (51) méndi 'mountain'
 álhör 'field'
 arrólla 'creek'
 alhába 'daughter'

Exceptions to this general pattern are mainly loanwords which are stressed on the last syllable; e.g.: *jurnál* 'newspaper', *kafé* 'coffee', *espús* 'spouse', *krudél* 'cruel'.

Another important group, that Txillardegi (1984) regards as also lexically marked as stress-final, is constituted by words ending in rising diphthongs, such as those in (52):

- (52) bedóy 'billhook'
 erróy 'raven'
 igatéy 'scythe'
 izéy 'fir'
 nasáy 'large'
 odéy 'cloud'

These words, however, do not need to be marked in the lexicon as exceptional, if we assume that there are no lexical glides and these are formed after stress has been assigned:

- (53) bedoi —> bedói —> bedóy

As mentioned above, the domain that is relevant for penultimate stress assignment is the stem plus determiner; in other words, stress assignment takes place in the determiner cycle. This produces the absolutive paradigms in (54):

(54)	indefinite	singular	plural	
	méndi	mendía	mendiák	'mountain'
	álhör	alhörra	alhörak	'field'
	étxe	etxía	etxiák	'house'

Case markers are attached after stress assignment and do not have any effect on stress placement, as we see in (55) with the word /zübü/ 'bridge' (ü —> i/ — V is a regular change in the dialect):

(55)	indefinite	singular
abs	zübü	zübí-a
erg	zübü-k	zübí-a-k
dat	zübü-ri	zübí-a-ri
instr	zübü-z	zübí-a-z
gen	zũ-ren	zübí-a-ren
com	zübü-reki	zübí-a-reki
part	zübü-rik	

All plural Cases with the exception of the absolutive are characterized by /e/ marker which always receives the stress. This plural marker is thus specified in the lexicon as stress-bearing¹¹. Our example /zubu/ is declined in the plural as shown in (56):

(56)		
abs		zübí-ak
erg		zübi-é-k
dat		zübi-é-r
instr		zübi-é-z
gen		zübi-é-n
com		zübi-é-ki

Locative endings present several peculiarities. The different locative forms for /zubu/ are shown in (57):

(57)	indefinite	singular	plural
of	zübü-tàko	zübü-ko	zübí-e-tàko
from	zübü-tàrik	zübü-rik	zübí-e-tàrik
in/at	zübü-tan	zübí-a-n	zübí-e-tan
to	zübü-tàra	zübí-a-la	zübí-e-tàra

A first point to remark is that all plural forms present an /e/ marker, this vowel does not attract the stress. We must thus consider this as a different morpheme from the /é/ of nonlocative plurals. This locative /e/ must be attached in the determiner cycle as well, to give the correct stress pattern.

A second peculiarity is that all singular forms are stressed on the second syllable of the stem (from the left), even though in 'of the bridge' and 'from the bridge' there is no intervening /a/. I conclude that the suffixes /-ko/ and /-rik/, only suffixes that are added directly to the stem in the singular, are attached in the determiner cycle, before the first application of the stress rules.

A third point to remark is that some of the locative forms contain a secondary stress on the suffix. This fact requires a second application of the stress rule, after the locative affixes are attached.

I summarize the stress system of Souletin in (58):

(58) A. determiner cycle.

I. Over the syllables of the accentual domain build a left-headed binary foot from the right end, unless stress is lexically marked. Assign primary stress to the syllable marked as a head.

/jurnál/ /gizun-é-k/ /zübü-reki/ /zübü-e-tara/ /mendi-a/

jurnál gizuné zübü zübíe mendíja

| | √ √ √
 ↓ ↓ ↓ ↓ ↓

11. An alternative is to postulate underlying representations in which plural Case suffixes are not attached directly to the stem, as they seem to be in the surface, but to the article. Stress would then be regularly assigned to the penultimate syllable before article and Case marking contract in one syllable. This would be in accordance with historical facts. Michelena (1977: 394) states: "La oxitonia supone siempre contracción: alhaba+ a, gizunék * gizon-a(g)-ek, gizunén * gizon-a(g)-en, etc.'".

B. Locative cycle

II. Over the syllables of the suffix, build a left-headed binary foot if the suffix has more than one syllable. Assign a secondary stress to the head.



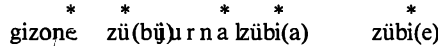
The data can be handled equally well making use of rules similar to the ones seen for tonal varieties:

- I. Make rightmost syllable of the accentual unit extracentual (unless lexically marked as accentual)
- II. Assign an asterisk to rightmost accentual syllable. Domain of rules I, II: Determiner Cycle, Locative Cycle
- III. Assign a second asterisk to leftmost syllable bearing an asterisk. Domain of rule III: Word Cycle

(59) Derivations:

/jurnal/ /gizon-e-k/ /zübü-reki/ /zübü-a-reki/ /zübü-e-tara/

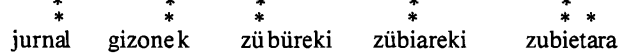
Det. cycle



Loc. Cycle



Word Cycle



An additional rule is needed in compounding. As in other stress dialects, in souletin, the second member of a compound bears the accent. In Compounds such as *aize-béltz* 'West wind (lit. black wind)', *bürdün-hür* 'mineral water (iron-water)', *mezasa(r)i* 'mass fee', our rules, as formulated will erroneously produce: *aíze-béltz*, *bürdün-hür*, *méza-sái*, with a primary stress on the first member of the compound and a secondary stress on the second. Some derivational suffixes such as *-(d)oy* 'great number of', *-gey* 'intention, would-be', *-(t)ár* 'native of', *-ni* 'diminutive' and some others also attract the stress of the word. We thus need a rule that eliminates the left asterisk in compounding and derivation:

- (60) * → ∅ / ---- *
- (61) /bürdün-hür/ →_{*} bür(dün)- hür ^{*} _{r 60} → bürdünhür^{*}
- bürdünhür
- /xiberu-tar/ →_{*} xibe(ru)-tar ^{*} _{r 60} → xiberutar → xiberutar^{*}

Stems ending in a low vowel present a stress contrast between the uninflected form and the absolutive singular that has been regarded as irregular or marked in some sense. Examples of this contrast can be observed in *alhába* (uninfl) / *alhabá* (abs sg) 'daughter', *arrólla* (uninfl) / *arrollá* (abs sg) 'creek'. Again, nothing special needs to be said regarding the stress if the stress rule applies before the rule that reduces the sequence of two low vowels in the absolutive forms: *alhabaa* —> *alhabáa* —> *alhabá*. This case is parallel to the one involving final diphthongs seen above.

3.2.2. Roncalese

In the Roncalese dialect, as in Souletin, the general rule is penultimate stress. However, unlike in Souletin, the first domain that is considered for stress assignment is the bare stem, and not the stem plus determiner. Thus, against Souletin *étxe*, *etxia*, *etsiak* 'house', the corresponding Roncalese absolutive forms are *étse*, *étsia*, *etsiak*. Additional Roncalese examples are given in (62):

- (62) *zikin*, *zikina*, *zikinak* 'dirty'
úrte, *úrtea*, *úrteak* 'year'
egúzki, *egúzkiak*, *egúzkiak* 'sun'
utúrri, *utúrria*, *utúrriak* 'fountain'
gizon, *gizona*, *gizonak* 'man'

Case affixes do not affect the stress on the penultimate of the stem:

- (63) *étsi-a-ren* 'of the house'
gizon-a-ren 'of the man'
étsi-a-reki 'with the house'
mánda-a-reki 'with the mule'

As in Souletin, the plural marker /e/, present in all Cases with the exception of the absolutive, attracts the stress in all non-locative Cases. Thus we have ergative plural *gizonék*, dative plural *gizonér*, etc. This fact, which has a ready explanation in Souletin, where stress assignment only takes place after determiners (number markers) have been attached to the stem, requires the application of an additional rule in Roncalese. As in Souletin, this plural /é/ must be marked in the lexicon. Consider the following partial accentual derivations of the Souletin and Roncalese absolutive and ergative plural forms of 'man':

	Souletin		Roncalese	
	abs	erg	abs	erg
	/gizun-ak/	/gizun-e-k/	/gizon-ak/	/gizon-e-k/
Stem Cycle	————	————	gi(zon)	gi(zon)
Det Cycle	gizu(nak)	gizune	gizonak	gizone

At this point of the derivation, the Roncalese forms require the application of a rule removing the first asterisk:

$$(65) * \longrightarrow \emptyset / \text{-----} *$$

This is a rule that we have seen before, since it applies in Souletin Compounding and Derivation. In Roncalese, it is also needed in these instances. The following derivational affixes, among others, attract the stress, thus requiring the application of rule (65):

- (66) -ár 'native of'; eg: erronkariár 'Roncalese'
 -dóy 'abundant in' eg: ezpeldóy 'box mountain'
 -kór 'predisposed to' eg: kilikór 'tickly'
 -ñó 'diminutive; eg: alabañó 'little daughter'

Examples of compounds are:

- (67) aita-jéin 'father-sir'
 laur-ogéy 'eighty (four-twenty)'
 begi-tartí-a 'the face (between-eyes)'

Also as in Souletin stems ending in a low vowel give rise to words stressed on the last syllable when the determiners singular /-a/, plural /-ak/ are added. This can be seen in the following examples in the three absolutive forms:

(68)	indefinite	singular	plural	
	áinzpa	ainzpá	ainzpák	'woman's sister'
	atorra	atorrá	atorrák	'shirt'
	alába	alabá	alabák	'daughter'
	áma	amá	amák	'mother'

Again, these facts are directly accountable for in Souletin, where stress is placed on the penultimate in /alhabá-a/ before the group of two long vowels is reduced. In Roncalese, where stress applies at the stem level, this must be a borrowed phenomenon and requires the application of a specific rule for these cases¹².

3.3. Baztan (Michelena's type III)

Salaburu (1984) offers a description of the dialect of Baztan in Navarre, which exemplifies Michelena's type III. In this dialect stress is devoid of any distinctive function. Nevertheless, speakers can identify the syllable that they feel as stressed with full confidence. Stress normally falls on the penultimate: *étxe* 'house', *gizona* 'the man', *Elizondo* 'place name' Most words ending in a consonant

12. Michelena (1977) reaches the same conclusion: "Parece, no obstante, que el nom. sing. roncalés *alabá* 'la hija' o el act. pl. *gizonék* '(por) los hombres', por ejemplo, se explican mejor si postulamos una acentuación de tipo suletino, **alabá-a*, **gizona(g)-ek*, uniformemente paroxitona, que si partimos de **alába-a*, **gizona(g)-ek* o *gizona(g)-ek*." (p. 403).

however are oxytone: *egún* 'day', *elúr* 'snow', *gizón* 'man' *eskualdún* 'Basque speaker'. The domain that is relevant for stress assignment is either the stem + determiner or the entire word with all Case affixes, or both domains can receive penultimate stress if they do not fall on contiguous syllables. From Salaburu's data, it seems that we can conclude that in rapid speech, in which rising and gliding of non-low vowels in vowel sequences take place, the accentual domain is the word with all affixes or even larger (phrasal) groups (stress is placed after glide formation):

- (69) *gizón*-a 'the man (abs)'
gizon-á-ri 'to the man'
gizon-a-ren-dáko 'for the man'
gizon-a-réki 'with the man'
gizón-a-r-én-a 'the one of the man'
ándry-a /*andre*-a/ 'the woman'
andry-á-y-ne /*andre*-a-ren-a/ 'the one of the woman'
andry-a-yn-déko 'for the woman'
Elizondó-kw-a /*elizondo*-ko-a/ 'from Elizondo'
ate *béltz*-a 'black door'

In more careful speech, (where underlying vocalic qualities are more frequently maintained in vowel sequences), a stress is placed on the penultimate of the stem + determiner group, and other secondary stresses are placed in relation to this first stress.

4. Some historical considerations

Given the wide diversity of suprasegmental systems in Basque, one should try to determine how this present situation may have developed. I will maintain the hypothesis that the proto-system from which all present varieties originated was of the tonal type. The reason for this is that this system is very much unlike anything present in neighboring languages. If influence from other languages can be taken as a factor in the evolution of Basque dialects, and it is clear that it must, given the prolonged situation of widespread bilingualism in the Basque region, then this influence would have helped Basque varieties to transform a sustained-tone system into a culminative stress system, rather than the other way round.

Assuming thus that the original suprasegmental system was fundamentally similar to one of the tonal systems presently found in the Western dialects, the change from this type to a stress type such as that of Bortzerrieta (type IV) is not hard to envision. As noted above in the presentation of the Bortzerrieta system, this system shares two important characteristics with tonal types. Firstly, in both types the initial syllable is generally excluded and the second syllable receives suprasegmental relief. The difference is that in tonal varieties this suprasegmental relief is extended over a number of syllables, whereas in Bortzerrieta there is an immediate drop after the second syllable. Thus instead of a suprasegmental configuration as in *karákólá* in a tonal dialect, in Bortzerrieta we find *kará-*

kola 'snail' (example from Michelena, 1972). In terms of accentual rules, the original system must have contained something like the two following rules:

- I. Make leftmost syllable extra-accentual
- II. Assign a H to the leftmost accentual syllable

In addition, tonal systems must have a third rule spreading the H tone. This rule was lost in Bortzerrieta and dialects of surrounding areas, and a default rule assigns a lower tone to syllables after the second.

The second interesting similarity between the type IV system and the tonal varieties is that in both dialect types, suprasegmental rules have a first application at the stem level. Tonal contrast such as *úré* /ur-a/ 'the water (abs) vs *umí* /ume-a/ 'the child (abs)' in the tonal dialect of Ondarroa, have a direct parallel in the stress contrast between *úra* 'the water (abs)' and *atéa* 'the door (abs)' in Bortzerrieta. In both types the word for 'water' has a marked accentuation deriving from the fact that its stem is monosyllabic and thus exempt from extra-accentuality. A further similarity noted by Michelena (1977; 588) is that words which often present an exceptional accentuation in tonal dialects (e.g. *béste* 'other') are also exceptional in type IV dialects.

A second step away from the original type has been taken in the varieties that take the right end of the accentual unit as reference point for stress rules. The reasons for changing from a stress type that makes reference to the left end to one that considers the right end can be found not only in the influence of neighboring and coexisting Romance varieties but also in facts present in the Bortzerrieta-type IV dialect, which would represent an earlier state of things.

Firstly, as mentioned above, Holmers points out that in this dialect secondary stresses can appear in alternating syllables from the second and that these secondary stresses can have the same phonetic realization as the first stress. Secondly, in this dialect, as seems to be the case in all other stress varieties, the second member of compounds and derived words determines the stress. This rule extends to a considerable number of quite productive suffixes, giving rise to accentuation such as *aipagárrri* 'mentionable', *agin-tári* 'ruler', *arran-tzále* 'fisherman', *irabaz-tùn* 'winner' (I separate the stem from the derivational affix with a hyphen). Given the fact that the vast majority of words with more than three syllable (without Case affixes) are either compounds or contain derivational affixes, the change from a system counting from the left to a system counting from the right is well motivated internally already in a type IV dialect. In fact, according to the data offered by Txillardegui (1984), the dialect of Hondarribi (Fuenterrabia in Spanish) which is usually considered of type IV (stress on second from the left) seems to be moving towards a system that assigns stress from the right end. This change is particularly clear in the adaptation of borrowings. Thus whereas in other more clearly type IV varieties the Spanish words *Aquillíno* 'proper name', *caracól* 'snail', *primavéra* 'spring', are stressed on the second syllable from the left: *Akíkinok* (erg sg), *Karákola* (abs sg), *primábera* (examples from Michelena 1972; 115) thus modifying the original accentuation, in Hondarribi, penultimate accentuation is left unchanged in borrowings: *adelántuak* (Sp. *adelánto*) 'advance (abs pl)', *aparátua* (Sp. *aparato*) 'device (abs sg)', *amistáde* (Sp. *amistád*) 'friendship (uninfl)' (examples from Txillardegui, 1984; 349).

The dialects from Baztan (type III) and Soule (type II), but not that of Roncal (also type II), not only changed the direction of stress assignment, but also took a different unit as basic for the application of stress rules. In Soule this unit is the stem + determiner, in Baztan either this or the whole word.

Michelena (1977) also concludes that in dialects such as Souletin, where stress is nowadays assigned from the right end of the word, stress must have been assigned from the left end at an earlier stage. This is interesting since Michelena's argumentation is quite independent from the facts that we have considered and therefore lend further support for our hypothesis.

Michelena hypothesizes that aspiration in Souletin has the presence of stress as conditioning factor. This is quite plausible when we consider the distribution of aspirated consonants in Latin borrowings (examples from Michelena, 1977; 409):

(70)	jókü	'game'	jokhátü	'played'
	mánü	'order'	manhátü	'ordered'
	máñü	'bath'	mañhátü	'bathed'
	mérke	'cheap'	merkhátü	'market'

In the examples the presence versus absence of aspirated consonants has nothing to do with etymology, since the pairs of words given derive from the same Latin root. We can account for the distribution of aspirated consonants by considering stress facts: aspiration appears in the inset of the syllable bearing stress.

The examples with aspirated consonants in (70), being trisyllabic, cannot give us any clues about the direction of stress assignment. The correct results are obtained whether we assign stress to the second syllable from the left or to the second syllable from the right.

In contemporary Souletin stress is assigned from the right, to the penultimate as a general rule, and we find cases of mismatch between stress and aspiration: *ákher* 'billy-goat', *álor* 'field'. These items suggest that an earlier stage stress was assigned to the second syllable from the left (where the aspiration appears); then the direction of stress assignment changed and the cooccurrence of stress and aspiration was lost.

Michelena's dialect internal considerations thus lead to the same conclusions as we had postulated based on cross-dialectical observations. At an earlier stage accentual rules must have operated in a left-to-right fashion in all dialects.

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