Stress removal and stress addition in Spanish

JOSÉ IGNACIO HUALDE

Abstract

In Spanish function words and expressions can be classified as lexically stressed or unstressed. Unstressed function words are usually realized without word-level prominence. There is also a contrast between compounds with stress on all their components and compound with a single stress, on the last member. Both in the case of function words and in the case of compounds, the facts are idiosyncratic in some respects. In this paper, these facts are presented in some detail and an analysis along the lines of Liberman & Sproat's (1992) proposal for English is made. In this analysis, unstressed elements join in a single prosodic word with following elements. Interestingly, Spanish differs from English in being right-dominant in both word- and phrase-level prosodic domains. Within each prosodic word only the stress of the last element is realized. I also discuss the nature of secondary stress in Spanish. It is tentatively proposed that two different secondary stress phenomena should be distinguished.

0. Introduction

In Spanish, "content" words (nouns, verbs, adjectives and adverbs) are always stressed on one of their last three syllables. On the other hand, "function" words and expressions may belong to either a stressed or an unstressed class, in a way that does not seem to be fully predictable from semantic, morphological or syntactic considerations. In addition, there are function items that may be stressed or unstressed depending on the syntactic context. This can result in semantic contrasts. Although the stressed/unstressed distinction among function words has been described in some detail (for standard Peninsular Spanish)[1] in the Spanish grammatical tradition, the facts

[1] Standard Peninsular Spanish is defined here as the variety described by Navarro Tomás [1918] (1977), Quilis (1993) and the Real Academia Española (1973). Although in this paper I go beyond the description in those sources in some respects, I have not found any instances where my own intuitions and observations

are not very well known outside of this tradition. Theoretical work on Spanish within Metrical Stress Theory has, for the most part, ignored the existence of lexical stresslessness.

Before continuing, a terminological note may be in order regarding "stress" and "accent", since these two terms are not always used in exactly the same way in the literature on this topic. Following Metrical Theory (Liberman, 1975; Liberman & Prince, 1977; Hayes, 1995), I define "stress" as metrical prominence at the word, phrasal or utterance level. Nuclear or main stress is the most prominent stress in an utterance. "Accent" is defined as "a clearly observable prominent f_0 movement, which… consistently occurs in or near the stressed syllables of the key words" (Xu & Xu, 2005:181; see also Bolinger, 1958; Pierrehumbert, 1980; Ladd, 1996; Gussenhoven, 2004). "Accent" and "pitch-accent" are thus synonyms in our terminology. Typically, in languages with contrastive word-level stress, syllables carrying a certain degree of stress (which may not be the same degree in two different languages) will be associated with a prominence-lending pitch movement, i.e. will be accented (Selkirk, 1995). (Pitch-)accent is thus a correlate of a certain degree of prosodic prominence or stress (again, not necessarily the same degree of prominence in different languages). From this point of view, which I adopt, studies that set out to investigate the phonetic correlates of "stress" and "accent" (as in Sluijter & van Heuven, 1996; Ortega-Llebaria & Prieto, 2006) can be characterized as investigations of the phonetic cues of different degrees of stress (cf. Beckman & Edwards, 1994).

In Autosegmental-Metrical terms (Pierrehumbert, 1980; Ladd, 1996, etc), if a syllable has a certain level of prominence on the metrical tier, we expect to find a (pitch-)accent on the autosegmental tier. Languages differ, however, in the density of pitch-accents. In English, generally it is possible to equate "accent" with phrase-level prominence. In Spanish, on the other hand, pitch-accents are used more profusely than in English (or Portuguese); that is, with a higher frequency at relatively low levels in the metrical hierarchy of the phrase. Typically, in a pragmatically neutral declarative sentence, every content word will be (pitch-)accented in Spanish.

The function words described as "unstressed" in this paper have less prominence than other words in the same phrase in pragmatically neutral contexts. I will assume that they are totally unstressed. That is, the claim is that, in a neutral context, a prepositional phrase such as *para dos* 'for two', for instance, perceptually has the same prominence contour as the single word *parador* 'inn', both with a single stress on the final syllable.

In this paper, I argue that the unstressed nature of certain function words and expressions in Spanish is to be connected with other facts of lack of stress, including destressing of nonfinal members of compounds and nonfinal-stress removal in certain pragmatic contexts. If we compare Spanish with

---

regarding stressed and unstressed words differ from the description given by those authors.

English, we find an interesting aspect of contrast between the two languages: whereas in English there is a number of processes removing stress prominence from the end of words (in compounds) and phrases, in Spanish stress tends to be removed from the beginning of domains. On the other hand, both languages present stress evidence for a distinction between two types of compounds. Here it is argued that, in Spanish, phrases containing unstressed function items are to be analytically assimilated to the class of compounds with stress deletion.

In section 1, I review the facts of lexical stresslessness in Spanish. In section 2, the stress patterns of compounds are considered. In section 3, I propose a unified analysis for the stress facts in the preceding two sections. Section 4 deals with stress removal in specific discourse contexts. In section 5, I consider the issue of "secondary stress" in Spanish; that is, cases where accents are assigned to syllables other than lexically-specified stressed syllables. This is the opposite phenomenon to destressing, since it involves adding prominence to syllables that are not lexically marked for it. The facts and analyses are briefly summarized in section 6.

1. Stressed and unstressed words in Spanish

It is a well known fact that in Spanish and other Romance languages the Nuclear Stress Rule of Chomsky & Halle 1968 (paraphrasable as "give greatest prominence to the last word") finds more general application than in English or German.[2] Thus, whereas in English, in conditions of broad focus, the last or nuclear stress falls on a nonfinal word in cases like those in (1), in Spanish (or Italian, see Ladd, 1996) there is no retraction of the nuclear stress in the same contexts (paired English and Spanish examples in (1) and (2) are equivalent in meaning).

(1) Contrasts in nuclear stress assignment under neutral focus in English vs. fixed nuclear nuclear stress on the last word in Spanish

a.	I saw a **CAT**	vi un **GA**to
	I **SAW** something	vi **AL**go
b.	I have a **BOOK** to read	tengo un libro para le**ER**
c.	I bought a ma**CHI**ne	he comprado una **MÁ**quina
	the ma**CHI**ne broke	se rompió la **MÁ**quina

[2] For more recent reformulations of the Nuclear Stress Rule and analysis of surface exceptions to this rule in English and German see Gussenhoven (1983), Cinque (1993), Truckenbrodt (2006), Féry & Herbst (2004), Féry & Samek-Lodovici (2006), among others.

Even repeated information at the end of the intonational phrase has nuclear stress in languages like Spanish and Italian:

(2) **WITH** the people and **FOR** the people
con el **PUE**blo y para el **PUE**blo

In fact, in Spanish the nuclear stress always falls on the last word of the intonational phrase, except for cases where a nonfinal word receives narrow contrastive focus, as in (3a), but even this is a relatively marked strategy in Spanish compared with the rearrangement of word-order, as in (3b), where the contrastively focused subject has been placed in sentence-final position and receives "default" nuclear stress:

(3) a. **PE**dro trajo el libro (no María)
b. el libro lo trajo **PE**dro (no María)
'PEDRO brought the book (not Maria)'

In the examples above, we have indicated only the syllable that receives nuclear stress (in boldface capital letters). In Spanish, in sentences or phrases under neutral focus (uttered in an out-of-the-blue context), all content words receive stress on a lexically-designated syllable (in bold from now on) and will normally be accompanied by a pitch excursion (i.e. will be accented, see, for instance, Sosa, 1999), the last of those stresses being perceived as most prominent, that is, as the nuclear or main stress (see, e.g., Roca, 1986). This is shown in the example in (4), which corresponds to a typical rendition of the sentence (boldface = stressed syllables, capitals and boldface = nuclear stress). I use Autosegmental-Metrical notation for stress and accent:[3]

(4) Stress structure x
x x x
Ma**rí**a es**tu**dia mate**MÁ**ticas
Accent structure L*H L*H LH*

'Maria studies mathematics'

Word-level stress and pitch-accent normally coocur in Spanish. In pragmatically neutral sentences all content words will typically be pitch-accented. In English, on the other hand, "accent" is often equated with phrase-level stress prominence since, under the same conditions, some content words will be accented and some will not be (Bolinger, 1986).

[3] The notation L*H refers to a rise with a typically late peak, after the stressed syllable, and LH* indicates a rise with the peak realized within the stressed syllable (see, e.g., Beckman et al., 2002).

In Spanish, if the sentence or phrase contains function words, in the same neutral focus context, some of these words are stressed/accented and some are not, in a lexically-specific manner, as illustrated in (5):

(5) **vi**mos el dino**sau**rio ‘we saw the dinosaur’
vimos **un** dino**sau**rio ‘we saw a dinosaur’

estos ele**fan**tes ‘these elephants’
nuestros ele**fan**tes ‘our elephants’

Since stressless function words can be combined in relatively long sequences, the appearance of the first stress in the phrase can be considerably delayed:

(6) x
para los de nuestra universi**dad** ‘for those of our university’

The observation or claim is that, in an example like that in (6), typically there will be only two levels of metrical prominence in a neutral rendition: the syllable *-dad* is stressed and all the other syllables are unstressed. It should be taken into account, however, that stress in Spanish is probabilistic. In actual discourse, examples may be found where additional prominences appear on other syllables. It is also perfectly possible to find examples where a content word appears to have been produced with equal stress on all its syllables or with greater stress on the “wrong” syllable. We will consider some of those cases in sections 3 and 4. In this section and the next, we are concerned only with the most pragmatically neutral contexts.

The stress status of particular words and word classes does not appear to be fully predictable from other considerations. Navarro Tomás (1977 [1918]:187), in fact, states that knowing which words are stressed and which are not is one of the main challenges for non-native speakers.[4] Although the facts have been discussed in the traditional descriptive literature (Navarro Tomás, 1977[1918]; Real Academia Española, 1973; Quilis, 1993:390-395; Hualde, 2005:233-235), they remain relatively unknown to non-specialists in the Spanish language, since the substantial body of research on Spanish stress within Metrical Theory produced in the last few decades has tended to ignore facts of lexical stresslessness. It is also largely unknown to what extent

[4] On the other hand, the complications in the assignment of nuclear stress in English present a considerable challenge to Spanish speakers. In both cases, the probabilistic nature of the facts is, no doubt, an important factor. Only through exposure to large amounts of language can one get an intuitive sense for the unmarked patterns of prominence.

dialectal variation is found in this respect since, by and large, descriptive work has focused on standard Peninsular Spanish only.[5]

Unstressed function words may minimally contrast with segmentally identical (stressed) lexical words. This is the case with the prepositions *para* 'for' (cf. *para* 's/he stops'), *bajo* 'under' (cf. *bajo* 'I lower', *bajó* 's/he lowered') and *sobre* 'on, over, above' (cf. *sobre* 'envelop'; 'it be too much, subjunctive'), as shown in (7):

(7)	para el ca**ba**llo	'for the horse'
	para el ca**ba**llo	's/he stops the horse' or 'the horse stops' or 'stop the horse!'
	bajo las **ca**jas	'under the boxes'
	bajo las **ca**jas	'I bring the boxes down'
	ba**jó** las **ca**jas	's/he brought the boxes down'
	sobre **to**do	'above all'
	sobre **to**do	'may everything be left over'
	sobre **ro**to	'broken envelop'

Unstressed words can be stressed if contrastively focalized, a strategy that is not common, but is not impossible either in Spanish. These words are also stressed when nominalized and when cited, in which case they are final in the phrase; e.g.: *la preposi**ción** "**pa**ra"*. Ortega-Llebaria (2006) shows, for Mexican Spanish, that the contrast between lexically stressed and unstressed monosyllables is phonetically neutralized under emphatic contrastive accent. For instance, *dé* 'give, subjunctive' differs from *de* 'of' along several phonetic parameters in neutral sentences such as *quiere que les dé la cafetera* 's/he wants him/her to give them the coffeemaker' vs. *quiere platicarles de la cafetera* 's/he wants to talk to them about the coffeemaker', but all differences disappear under contrastive focus: *quiere que les DÉ la cafeteria* 's/he want him/her to GIVE them the coffeemaker' = *quiere platicarle DE la cafetera* 's/he wants to talk to them ABOUT the coffeemaker'. Most likely these phonetic facts also obtain in Peninsular Spanish and other dialects.

Some function words are stressed or unstressed depending on their specific meaning. For instance, the word *menos* is unstressed when it means 'except', but stressed on its first syllable when it means 'less, fewer'. Similarly, *más* is unstressed when it would be translated as 'plus' (even though it bears an orthographic accent mark) and stressed meaning 'more' (the homonymous *mas* 'but' is unstressed):

[5] Beyond the fact that possessives are stressed in some northwestern Peninsular dialects.

(8) menos na**ran**jas ‘except for oranges’
menos na**ran**jas ‘fewer oranges’
más hor**mi**gas ‘plus ants’
más hor**mi**gas ‘more ants’

Grammatical expressions with very similar meaning sometimes differ in their stress properties:

(9) puesto que me lo **han** pe**di**do ‘since they have asked me for it’
dado que me lo **han** pe**di**do ‘since they have asked me for it’

aunque se lo **di**je ‘even though I told him’
aun cuando se lo **di**je ‘even though I told him’
a pe**sar** de que se lo **di**je ‘even though I told him’

Although in the examples above the contrast in stress is not orthographically represented, question words bear an accent mark only in those syntactic contexts where they are typically stressed. The contrast in stress between *que* ‘that’ and *qué* ‘what’ is also orthographically signaled:

(10) **dí**melo cuando **ven**gas ‘tell me when you come’
no sé cuándo ven**drán** ‘I don’t know when they will come’

Ma**rí**a **sa**be que **quie**re estu**diar** ‘M. knows that she wants to study’
Ma**rí**a **sa**be **qué quie**re estu**diar** ‘M. knows what she wants to study’

Although, almost by definition, clitic pronouns should be expected to be stressless, they may be optionally stressed if enclitic (but not as proclitics); e.g.: *me lo **can**tas* ‘you sing it to me’ vs. ***cán**talo* ~ ***cán**ta**lo*** ‘sing it!’, *can**tán**dolo* ~ *can**tán**do**lo*** ‘singing it’. In sequences of enclitics, if stressed, stress goes on the last one: ***cán**tame**lo*** ‘sing it to me’, *can**tán**dome**lo*** ‘sing it it to me’. This phenomenon is somewhat more prevalent in Argentinian Spanish (Moyna, 1999; Huidobro, 2005).

Finally, there is a case of optional destressing that, as far as I know, has not been previously described in sufficient detail.[6] Subject pronouns and demonstratives are normally stressed, but they can optionally be unstressed if followed by a modifying numeral. This is also true of the words *unos* ‘some’ (as noted in Navarro Tomás, 1977[1918]:193-194) and *otros* ‘other’:

[6] I thank Karlos Arregi for bringing these facts to my attention. There appears to be some variation among speakers of Peninsular Spanish in judging whether the pattern with stress deletion (e.g. *nosotros **dos***) is, in fact, the pragmatically unmarked one in this construction.

(11)	no**so**tros lo ha**re**mos	‘we will do it’
	nosotros **dos** lo ha**re**mos	‘the two of us will do it’
	ellos lo trae**rán**	‘they will bring it’
	ellos **cua**tro lo trae**rán**	‘the four of them will bring it’
	con **es**tos **cuar**tos	‘with these rooms’
	con estos **cua**tro	‘with these four’
	unos **vie**nen	‘some will come’
	unos ve**ci**nos	‘some friends’
	unos **vein**te	‘about veinte’
	otros se ir**án**	‘others will leave’
	otros a**mi**gos se i**rán**	‘other friends will leave’
	otros cua**ren**ta se i**rán**	‘other forty will leave’

A possible interpretation of the facts in (11) is that the numeral forms a compound with a preceding modifier, including pronouns, since parallel facts of (in this case, obligatory) de-stressing are found with compound numerals:

(12)	**vein**te	‘20’
	veinti**cua**tro	‘24’
	ocho	‘8’
	ocho**cien**tos	‘800’
	cinco	‘5’
	cinco **mil**	‘5000’
	cinco **mil** ocho**cien**tos veinti**cua**tro	‘5824’

As we can see, Spanish is like English in having destressing in these constructions. It, however, differs from English in the direction of the stress removal rule. In English the second stress is subordinated to the first; that is, there is final destressing: ***five*** *thousand,* ***eight*** *hundred, twenty* ***four***.

This leads us to a consideration of stress deletion in Spanish compounds.

2. Stress deletion in compounds

Besides the functional words and expressions just considered, another context where we find unstressed items in Spanish is in certain types of compound formation. Like in English, it is the case that all compounds do not have the same stress properties. Whereas, in English, it is appropriate to describe the facts in terms of the relative prominence of the stresses in a compound (i.e. which stress is subordinated to which), in Spanish, we can distinguish between compounds where only one stress is kept and compounds where each member retains its stress. The reason is that English has a lexical contrast

between full and reduced vowels and has more than two degrees of prominence among the syllables of a word, whereas Spanish lacks these features, so that there is no clear difference between syllables that undergo stress deletion in compounds and lexically unstressed syllables. For instance, the stress contour of the compound *lava**pla**tos* 'dishwasher' does not seem to differ from that of the derived word *lava**do**ra* 'washing machine' (although the topic is obviously open to experimental verification).

In English, in structures undergoing the Compound Stress Rule (Chomsky & Halle, 1968), main stress is retracted from the final member. In contrast, in Spanish, in compound structures where stress deletion applies, this process affects non-final members.

(13) Two kinds of prosodic structures in English and Spanish

```
English:        x                  x
                x   x           x   x
              pine tree vs.    gold medal

Spanish:
                x    x              x
              perro lobo  vs.  toca discos
```

Liberman & Sproat (1992) claim that left-dominant stress in English results when the constituent elements form a single word (N^0), whereas final prominence would be indicative of phrasal structure. I would like to argue that a similar analysis is applicable to Spanish. If this analysis is correct, the difference in stress subordination/deletion patterns between English and Spanish can be seen as being consistent with the fact that, in productive native derivation as well, suffixes are unstressed in English, whereas in Spanish the only stress that surfaces in derived words is that introduced by the rightmost derivational suffix:

(14) a. **stress**, **stress**less, **stress**lessness
b. a**cen**to, acentu**ar**, acentua**ción**

That is, in English the same stress rule arguably applies in N^0-level compounds like *pine tree* or *bluebird* as in *pointless* or *childhood*. For stress purposes, non-initial members of compounds appear to be treated in a parallel fashion to productive native suffixes such as *-less* and *-hood*. In Spanish, on the other hand, a word like *lava**pla**tos* 'dishwasher' undergoes the same stress rule as *lavande**rí**a* 'laundry'.

In the next subsections we consider the stress properties of different types of compounds in Spanish.

2.1. V+N compound nouns

In some compound structures, non-domain-final stresses are removed in a systematic manner in perfectly transparent and productively created formations. One class of compounds where non-final members are systematically destressed are V+N exocentric compounds. Orthographically these compounds are always represented as a single word. Here a hyphen between compound members is introduced for clarity:

(15) V+N exocentric compound nouns
lava-**pla**tos 'dishwasher'
toca-**dis**cos 'record player'
recoge-pe**lo**tas 'ball catcher'
mata-**rra**tas 'rat poison' (kill-rats)
salva-**vi**das 'life saver'
salva-man**te**les 'tablecloth protector'
vende-o**bre**ros 'traitor to workers' (sell+workers)
chupa-**tin**tas 'office worker' (lick+inks)
cuenta-ki**ló**metros 'odometer' (count+km)
para-**bri**sas 'windshield' (stop+breezes)
canta-ma**ña**nas 'irresponsible' (sing+mornings)
saca-**pun**tas 'pencil sharpener' (take out+tips)
saca-**cor**chos 'cork screw' (take out+corks)
saca-**mue**las 'dentist (pejorative)' (take out+molars)
abre-bo**te**llas 'bottle opener'
abre-**car**tas 'letter opener'
limpia-para-**bri**sas 'windshield wiper' (clean+stop+breezes)

In these V(+V)+N nominal compounds, the internal noun always corresponds to the direct object of the verb. The verb appears in a form that is identical to the third person singular of the present indicative and the noun is most of the time plural. Although not nearly as productive as agentive English compounds of the *dishwasher* type, the pattern has some productivity. Destressing of the verbal member is obligatory in these compounds. This is in clear contrast with similar formations in English, which are left-dominant, both in the productive pattern where the argument precedes the deverbal noun, as in *dishwasher*, and in the small group of V+N compound nouns in this language, like *cut-throat* and *pick-pocket*.

These compounds contrast in stress pattern with segmentally identical verb phrases:[7]

[7] Of course, the contrast can be neutralized either by removing prominence from the verb or by adding prominence to the first syllable of the compound. The unmarked patterns are, however, those given in the text.

(16) V+N compounds vs phrases
*lava-**pla**tos* ‘dishwasher’ vs. ***la**va **pla**tos* ‘s/he washes dishes’

Examples like *limpia-para-**bri**sas* ‘windshield wiper’ or *porta-cuenta--ki**ló**metros* ‘odometer carrier’ show that the destressing rule eliminates all stresses but the last one, not just the initial stress.

2.2. N+N compounds

Unlike in V+N compounds, in N+N compound nouns each member usually retains its stressed syllable, (17a). Notice that in English compounds of similar meaning there is stress retraction. There are, however, a few compounds with this structure where only the second member keeps its stress, (17b):

(17) N+N sub-compounds

a. without stress deletion
hombre **lo**bo ‘wherewolf’
hombre **ra**na ‘frogman’
perro **lo**bo ‘wolfdog’
mu**jer** a**ra**ña ‘spiderwoman’
ca**mión** cis**ter**na ‘tanker truck’
buque es**cue**la ‘school ship’
car**tón pie**dra ‘papier mâché’ (‘carton’+ ‘stone’)
mesa ca**mi**lla ‘covered table’ (‘table’ + ‘cot’)
casa jar**dín** ‘garden house’
pez es**pa**da ‘swordfish’

b. with stress deletion
boca**ca**lle ‘street entrance’ (‘mouth’ + ‘street’)
tela**ra**ña ‘spider’s web’ (tela ‘cloth’ + araña ‘spider’)
agua**nie**ve ‘sleet’ (‘water’ + ‘snow’)
agua**miel** ‘mead’
zarza**mo**ra ‘blackberry bush’
puerco es**pín** ‘porcupine’

Notice that in the general pattern illustrated by the examples in (17a) the stress of the first member is preserved even under stress clash, as in *car**tón pie**dra*. As can be seen from the translation, the order of the elements is the opposite from that in similar English compounds. In these Spanish compounds, the first member is indeed the head of the compound. This can be concluded both from semantic considerations (e.g. *cartón piedra* is a type of carton, not a type or stone) and from agreement facts (e.g. *el cartón$_m$ piedra$_f$*, with masculine agreement).

A few N+N compounds have been calqued directly from English, without altering the order of the elements, with the result that the order is the opposite of the general Spanish pattern:

(18) Compounds calqued from English, mismatch between agreement and semantics
ciencia-fic**ción** 'science fiction'
coche **bom**ba 'car bomb'

It is likely that many speakers interpret these compounds according to the general Spanish pattern; e.g. *coche bomba* 'a car that is like a bomb'.

N+N composition is much less common in Spanish than in English. Generally nominal complements of nouns are preceded by the preposition *de*; e.g.: *combat zone = zona de combate, drug abuse = abuso de drogas, feast day = día de fiesta*. Many of the examples in (17) can indeed be paraphrased with insertion of a preposition: *camión cisterna = camión de cisterna, buque escuela = buque de escuela, cartón piedra = cartón de piedra, mesa camilla = mesa de camilla* (although some examples like *hombre lobo* seem more difficult to paraphrase in this manner). The argument could thus be made that these compounds are to be analyzed as containing an "empty preposition". The fact that these compounds have two stresses would then follow from their phrasal nature:

(19) [**zo**na [de [com**ba**te]]]
[ca**mión** [0[cis**ter**na]]]

The examples in (17b) with stress deletion, such as *boca**ca**lle* ('mouth'+ 'street') 'street entrance' would have a simpler structure. They have been reanalyzed as simple words. Although *bocacalle, telaraña, zarzamora*, etc., can be paraphrased as *boca de calle* 'mouth of street', *tela de araña* 'web of spider', *zarza de mora* 'bush of blackberry', etc., most of these examples do not have the meaning 'an N1 that is like an N2' unlike most of the examples in (17a) above. Besides the difference in stress pattern, pluralization also provides evidence for a phrase vs. word structure. In transparent N+N co-compounds, the first member (the head) takes plural agreement: *ca**mio**nes-cis**ter**na, **bu**ques-es**cue**la, **pe**rros-lobo* (or both members may be pluralized: *camiones-cisternas*). In the examples in (17b), on the other hand, the plural suffix is only attached at the end of the word: *boca**ca**lles* 'street entrances', *tela**ra**ñas* 'spider webs', *zarza**mo**ras* 'blackberry bushes' not **bocas calle, *telas araña, *zarzas mora*. This is consistent with the postulated contrast between two morphological structures, reflected in their stress patterns: "Phrasal compounds" (with an empty or implied preposition) have stress on each member and take plural inflection on the head noun. "Word-level"

compounds take a single stress and add the plural suffix at the end of the compound.

Exocentric compounds like *cara-**hue**vo* 'oval-face' (face+egg) (derogatory, cf. Eng. ***egg**head*), also with stress deletion, are of a different type, and can be assimilated to the N+Adj exocentric compound pattern discussed in (34) below.

An apparent problem for the proposal in (19) is that the second member of the compound normally cannot take other modifiers, unlike complements with *de*. Following adjectives modify the whole compound and agree in gender with the head:

(20) [[perro lobo] italiano]] 'Italian wolfdog'
[[cartón piedra] durísimo] 'very hard papier mâché'

There are, however, examples like those in (21) where the second of two juxtaposed nouns takes a modifier, either adjectival, as in (a) or nominal, as in (b):

(21) a. [**si**lla [es**ti**lo holan**dés**]] 'Dutch-style chair'
b. [**ho**ja [ta**ma**ño **fo**lio]] 'folio (size) sheet'

These examples are again paraphrasable with the addition of *de* before all nouns: *silla de estilo holandés, hoja de tamaño de folio*.[8]

Color compounds can be added to the N+N class, since in these structures the color name is arguably a noun and not an adjective. In these, each element preserves its lexical stress as well:

(22) Other N+N compounds without stress deletion: color names

ama**ri**llo li**món**	'lemon yellow'
verde o**li**va	'olive green'
rojo car**mín**	'scarlet'
a**zul** ma**ri**no	'navy blue'

That in these examples the color word is a noun and not an adjective can be concluded from agreement facts. The color word in these expressions does not agree with the preceding noun:

[8] I assume that without the second modifier, a structure such as *?hoja tamaño* is anomalous for the same semantic reasons that make *hoja de tamaño* anomalous. Compare the attested *hoja patrón* 'model form'.

(23) dos camisas azules ‘two blue shirts’
dos camisas azul marino ‘two navy blue shirts’ (**azules marino, *azules marinas*).
muchas corbatas verdes ‘many green neckties’
muchas corbatas verde oliva ‘many olive green necktie’ (**verdes oliva, *verdes olivas*)

Indicating again an “empty preposition” with “0”, we would have the following structure:

(24) [corbatas [0 [verde [0 [oliva]]]]]

Other modifiers of the head noun, showing gender and number agreement with it, can be added to the right:

(25) ***dos*** *ca**mi**sas a**zul** ma**ri**no **nue**vas* ‘two new navy blue shirts’
fp ms ms fp

dos [camisas[0[azul [0 [marino]]]] nuevas]

Notice the following contrasts:

(26) una silla estilo holandés antigua ‘an old [Dutch-style] chair’
una silla estilo holandés arcaico ‘an [archaic-Dutch-style] chair’

Compound names undergo nonfinal stress deletion, which is consistent with their lack of internal structure:

(27) Compound names
José An**to**nio
María **Ro**sa
Mari Cas**ta**ña
Victoria Eu**ge**nia

It is interesting to note that the lexical contrast between hiatus and diphthongs is jeopardized by stress-deletion. Thus the hiatus of *Ma**rí**-a* does not appear to be preserved in the compound *María **Ro**sa*: *Ma-ria-**Ro**-sa* (= *Ma-ria-**ni**-ta*).

Among courtesy titles, there are some that are also proper nouns, (28). When used as titles, they take the definite article, except in vocatives. In their vocative function they are unstressed, otherwise they keep their stress (Navarro Tomás, 1977:187-188; RAE, 1973:73; Quilis, 1993:395):

(28) type A courtesy titles
el se**ñor** Fer**nán**dez 'Mr F.' vs. **pa**se, señor Fer**ná**ndez 'come, in Mr F' (vocative)
la se**ño**ra Gar**cí**a vs. señora Gar**cí**a, por fa**vor** 'please, Ms. G'
el **pa**dre E**mi**lio 'Father E' vs. **sí**, padre E**mi**lio 'yes Father E'

A second set of courtesy titles do not have any other function and are always used without any articles. These items are stressless. They are probably best analyzed as a type of prefix:

(29) type B courtesy titles
don An**to**nio, doña Ma**rí**a, doña María **Lui**sa

2.3. N+Adj and Adj+N compound nouns

Fully lexicalized N+Adj and Adj+N endocentric compound nouns constitute small sets. These compounds generally have a single stress. Notice that the stress that is preserved is that of the second member of the compound, regardless of whether this is the N or the Adj.

(30) N+Adj and Adj+N compound nouns with stress deletion

yerba**bue**na	'mint' (herb+good)
noche**bue**na	'Christmas Eve' (night+good)
noche**vie**ja	'New Year's Eve' (night+old)
campo**san**to	'cemetery' (field+holy)
media**no**che	'midnight', 'type of bread roll' (half+night)
aguar**die**nte	'eau de vie' (water+burning)
agua**fuer**te	'etching' (water+strong)
gentil**hom**bre	'gentleman'
medio**dí**a	'noon' (half+day)

There are, however, some examples of compound nouns with this structure where the stress of the first member is preserved:

(31) N+Adj compound nouns without stress deletion

caja **fuer**te	'safe' ('strong box')
marcha triun**fal**	'triumphal march'
guardia ci**vil**	'civil guard' (~ guardia ci**vil**)

Preservation of both stresses, as in the examples in (31), can be taken as indicating more incomplete lexicalization (i.e. "phrasal structure"). This seems clear in the last example. Two stresses are generally heard when the expression refers to the police institution, *la **Guar**dia Ci**vil*** 'the Civil Guard'. However, when referring to an individual policeman, it is more common to

destress the first member, *el guardia ci**vil***, obligatorily when pluralization goes only at the end of the compound (which is a clear sign of lexicalization as a single word), *los guardiaci**vi**les*.

Geographical or place names with an N+Adj or Adj+N structure usually have a single stress, as in (32a) (RAE, 1973:80). There are, however, a few with more than one stress, (32b). There is no destressing in place names that are normally used with the article, as in (32c):

(32) N+A and A+N Geographical Names

a. Torre**vie**ja (tower+old) (vs. **to**rre **vie**ja 'old tower')
Nueva Ze**lan**da 'New Zealand'
Castillo **Nue**vo (castle+new)
Costa **Ri**ca (coast+rich)
Puerto **Ri**co (harbor+rich)
Ciudad Re**al** (city+royal)
Uncas**ti**llo (one+castle) (vs. **un** cas**ti**llo 'a castle')
Cuatro Ca**mi**nos (four+roads) (vs. **cua**tro ca**mi**nos 'four roads')
Casa **Pe**pe
Sierra Ne**va**da

b. Colme**nar Vie**jo (beehive+old)
Costa de Mar**fíl** 'Ivory Coast'

c. la **Cos**ta **Br**ava
la **Cos**ta del **Sol**
los **mon**tes Piri**ne**os
el **rí**o **E**bro
la **Pla**za Ma**yor**
la **Ca**lle **An**cha

Many geographical names take *de* before the proper name. In these constructions there is no stress deletion, which is consistent with their phrasal structure:

(33) Geographical names with a prepositional element

la la**gu**na de Peña**la**ra
la **ca**lle de Alca**lá**
la glo**rie**ta de Cuatro Ca**mi**nos
la **sie**rra de **Gre**dos
el **ca**bo de **Ga**ta
el **gol**fo de Viz**ca**ya
los **mon**tes de **Ú**beda

2.4. N+Adj compound adjectives

Besides compound nouns with an N+Adj structure like those in (30) above, we also find words with this structure that function primarily as adjectives. One pattern, generally referring to physical properties of animates, involves a first member in /-i/. In these compounds the stress of the first member is always deleted. These are clearly "word-level" compounds:

(34) N+Adj (first member generally ends in *–i*)
mani**rro**to 'prodigal' (hand+broken)
pati**lar**go 'long-legged'
ceji**jun**to 'single-browed'
cabiz**ba**jo 'depressed' (head+low) (expected *cabeci**ba**jo* is less common)
cari**lar**go 'sad' (face+long)
barbi**ne**gro 'black-bearded'

Notice the stress contrast between, for instance, ***u**na **me**sa pati**co**ja* 'an uneven table' and *ju**ga**ban a la **pa**ta **co**ja* 'they played jumping on one foot'.

2.5 Adj+Adj compound adjectives

Co-compounds of the type *mar**xis**ta-leni**nis**ta* have stress on each member. However, those containing combining forms in invariable /-o/ show stress deletion. In some cases, like the examples in (35a), destressing is the normal pattern. In other cases, like those in (35b), both stress patterns are frequent:

(35) Co-compound adjectives with combining forms in /-o/

a. with stress deletion

im**pe**rio austro-**hún**garo	'Austro-Hungarian Empire'
civiliza**ción** greco-la**ti**na	'Graeco-Latin civilization'
litera**tu**ra italo-ameri**ca**na	'Italian-American literature'
coproduc**ción** franco-ita**lia**na	'Franco-Italian coproduction'
cul**tu**ra anglo-sa**jo**na	'Anglo-Saxon culture'
tra**ta**do franco-luso-argen**ti**no	'Franco-Luso-Argentinian treaty'

b. both patterns

fron**te**ra paraguayo-boli**via**na (or para**gua**yo-boli**via**na)	'Argentinian-Bolivian border'
la can**tan**te uruguayo-ita**lia**na (or uru**gua**yo-ita**lia**na)	'the Uruguayan-Italian singer'
opera**cio**nes político-mili**ta**res (or po**lí**tico-mili**ta**res)	'politico-military operations'

The compounds in (35a), with a single stress, contain combining forms (*austro-*, *greco-*, *italo-*, etc.) that are not normally found as free forms (cf. the

/-i/ forms in (34)). These elements can thus be considered prefixes. As such, their lack of stress would follow from general principles, since in Spanish prefixes do not have their own stress. Fluctuation in stress pattern, as in (35b), may be due to the fact that in many examples such as *tra**ta**do argentino-boli**via**no* ~ *argen**ti**no-boli**via**no* 'Argentinian-Bolivian treaty' (with masculine singular agreement) the structure is morphologically ambiguous. The form *argentino* – may be interpreted either as a regular nationality adjective like *italiano* and *francés* or, alternatively, as a compositional form in /-o/ like *italo-* and *franco-*.

2.6 Adverbs

Adverbs in *-mente*, which historically derive from compounds, have two stresses (Navarro Tomás, 1977:186, fn 1; RAE, 1973:80-81; Quilis, 1993:391).

(36) Adverbs in *-mente*
natu**ralmen**te 'naturally'
tran**qui**la**men**te 'calmly'
rápida**men**te 'rapidly'

In N+Adv adverbs, on the other hand, we find destressing:

(37) N+Adv adverbs
boca-a**rri**ba 'face up'
cuesta-a**ba**jo 'downhill'
BUT: a la **pa**ta **co**ja 'limping (name of a game)'

3. Prosodic word and phrase domains

As already advanced, one way to understand the contrast between compounds with and without stress deletion is by postulating two different types of domain, as Liberman & Sproat (1992) propose for English. In word-level structures or domains, only one stress, the rightmost one, is kept in Spanish. In phrase-level structures, on the other hand, each word may maintain its own stress. It seems that this analysis can be straightforwardly extended to the distinction between stressed and unstressed function words. I will assume that the prosodic word is a domain characterized by the presence of one and only one word-stress. Unstressed function words are then included in the prosodic word domain of a following word. That is, both regarding compounds and function words, the essential contrast is one between structures containing one prosodic word (and a single word-level stress) and structures containing more than one prosodic word domain.

(38) Prosodic word domains

a.	(para los **ni**ños)	'for the children'
	(menos di**ne**ro)	'except for money'
	(espanta**pá**jaros)	'scarecrow'
	(María Eu**ge**nia)	
b.	(**es**tos) (**ni**ños)	'these children'
	(**me**nos) (di**ne**ro)	'less money'
	(**ver**de)(o**li**va)	'olive green'
	(tran**qui**la)(**men**te)	'calmly'

4. Syntactic-pragmatic destressing

Above we mentioned that words like *señor*, when used before a name in vocatives are unstressed*: **oi**ga, señor **Pé**rez* 'Listen, Mr P', but *el se**ñor Pé**rez lle**gó a**yer*** 'Mr P. arrived yesterday'. The "vocative destressing" phenomenon has in fact a wider application. Navarro Tomás (1977:188) notes that in vocatives and similar expressions initial nouns and adjectives are unstressed, as in *¡Dios **mío!*** 'my God!', *¡cara de **ro**sa!* 'rose face' (see also RAE 1973:73). Consider also the following examples:

(39) Vocative destressing

Soy En**ri**que Gar**cí**a Ma**de**ro 'I am E.G.M.' vs.
¡**Va**mos, Enrique García Ma**de**ro! 'let's go, E.G.M.'
eres un **ni**ño **ma**lo 'you are a bad boy' vs.
¡**Cá**llate, niño **ma**lo! 'shut up, bad boy!'

Destressing in compound first names like *José Ig**na**cio*, both in vocative and in non-vocative contexts, may have resulted from the frequent use of first names in vocatives.

Liberman & Sproat (1992) notice that in English [Adj N] sequences acquire compound stress if used as epithets, and suggest that "epithet--formation involves turning a phrase into a word". This analysis appears to be applicable to Spanish as well. Compare the following examples:

(40) Epithets

Hey, **big** mouth! cf.	¡Eh, boca **gran**de! (vs. **tie**ne la **bo**ca **gran**de 's/he has a big mouth)
	¡dientes **lar**gos! 'long teeth'
Mr **Nice** guy!	cf. ¡sol de la **ca**sa! (vs. el **sol** de la **ca**sa 'the sun of the house')

Destressing can also be found in a number of pragmatically marked contexts. For instance, there are certain exclamative and interrogative

sentences that typically involve reduction in prominence (and perhaps complete destressing) of utterance-medial words:

(41) Exclamative/interrogative deaccentuation
  a. ¡¿Que **no** tienes di**ne**ro?! 'you don't have money!'
     ¡¿Que **no** tienes dinero para el **ci**ne?! 'you don't have money for the movies!'
  b. ¿**Cuán**do llegaron tus a**mi**gos? (no he oído bien) 'when did your friends arrive? (I didn't hear)
     ¿Que **cuán**do canto/cantó La Tra**via**ta? '(you are asking) when I sing/she sang La Traviata?'

Pragmatically more neutral pronominal questions are also often produced with a single pitch-accent on the last word (see Kimura 1996) and perhaps with complete destressing, possibly producing perceptual neutralization of lexical contrasts in nonfinal position (e.g. *canto*/*cantó*).

As Ortega-Llebaria & Prieto (2006) notice, parentheticals are also produced with lower degrees of stress than the main clause to which they are attached, often without any pitch-accents. Their findings appear to show that some level of stress on lexically stressed syllables is nevertheless preserved in this context. It is likely, however, that, in some instances, stress reduction can be also complete in this context.

As we pointed out above in the case of destressing in compounds, contrasts in syllable structure also become much harder to perceive when the word is not accompanied by a pitch-accent. Thus, to give an example, the word *serías* 'you would be' may become hardly distinguishable at all from the word *serias* 'serious, fem. pl.' if uttered in phrase-medial position with the exclamative/interrogative contour exemplified in (41) (e.g.: ¡¿***no*** *serías* ***tú****?!* 'it wouldn't be you, right?!), even though in citation form these two words differ both in stress pattern and in syllable count: *se-**rí**-as* vs. ***se**-rias*.

Observation of spontaneous speech shows that stress reduction may take place in other contexts as well (see, for instance, Face, 2003). Much more research is needed to determine the syntactic and pragmatic conditions under which destressing is likely to operate in Spanish. This work must involve both speaker-intuition-based and corpus-based studies.

5. Secondary postlexical stress in Spanish

Whether Spanish has or does not have secondary stress has been a controversial topic. Several phonologists have described the presence of alternating, rhythmic stresses every other syllable and/or word-initial secondary stress (Stockwell, Bowen & Silva-Fuenzalida, 1956; Bolinger, 1962; Harris, 1983; Roca, 1986, among others). For instance, for the word

gramaticalidad 'grammaticality', different authors have described one or more of the stress contours in (42):

(42) Hypothetical secondary stress patterns
gramàticàlidád gràmaticalidád gràmatìcalidád

Unlike primary stress, secondary stress is not contrastive in Spanish and speakers do not have clear and consistent intuitions on this matter, which accounts for the disagreements in the descriptive proposals. Experimental work has generally failed to confirm the existence of rhythmic secondary stress in Spanish; that is, no clear phonetic correlates distinguishing secondarily-stressed from unstressed syllables have been identified (Prieto & van Santen, 1996; Díaz-Campos, 2000).[9]

As I have argued elsewhere (Hualde to appear), the failure of experimental work to find evidence for secondary stress in Spanish may be due in part to the experimental materials that are typically used, together with the lack of explicitness of phonologists regarding the relative abstract character of the stress patterns that they have described. Secondary stress is a real phenomenon in Spanish, but it is not a lexical one. It is an optional discourse-level phenomenon related to special emphasis or "didactic" style. We will use the term "postlexical secondary stress" to mean prominence on a syllable other than the one that is lexically specified to carry (primary) word-level stress. Secondary stresses are not common in most conversational speech (and typically won't be found in read experimental materials), but can reach a high frequency in certain styles (emphatic or "didactic"). By and large, these secondary prominences, when realized, are located on those syllables that the phonological literature has identified as bearing secondary stress. That is, the proper way to understand the secondary stress patterns postulated by several authors is as identifying those lexically unstressed syllables within the phrase that may be assigned prominence in discourse. When this prominence is assigned, it shows the usual correlates of stress in Spanish, including pitch excursions on those syllables (Ortega-Llebaria, 2006).

This postlexical secondary stress phenomenon in Spanish is very different from the lexical secondary stress of English. In English, where reduction of unstressed vowels is a pervasive phenomenon, secondary stress is related to the presence of full vowels in syllables other than the one with primary word-level stress (see Beckman & Edwards, 1994). For instance, the word *bandanna* has full vowels on the first and second syllables. It has primary stress on the second syllable (this is the syllable that is typically associated with a pitch accent when the word is focalized or in citation form) and

[9] Prieto & van Santen (1996) find some evidence for word-initial secondary stress. However, as they note, their experimental results, especially the "f0 downward slope" that they find on word-initial syllables, have to be interpreted within the prosodic contour of the carrier phrase that they used.

secondary stress on the initial syllable. The word *banana*, on the other hand, has a single full vowel. This word also has primary stress on the second syllable, but does not have any secondary stresses. Spanish does not have any lexical contrasts of this type. In Spanish, instead, secondary stress is a purely postlexical or phrase-level phenomenon.

We may, in principle, distinguish two different types of postlexical secondary stress in Spanish. One such phenomenon consists of placing stress typically two syllables before the syllable with lexical or primary stress (with an exception to be mentioned below). This type of rhythmic secondary stress is very frequent in news broadcasts. It is also found in other types of public discourse, such as lectures and speeches. It conveys a certain "didactic" tone. The meaning of this pattern would be "this is important information and I am not finished". We will call this phenomenon "rhythmic stress". Some examples are given in (43), where all stressed syllables are in boldface and syllables with lexical stress are underlined in addition:

(43) Rhythmic (tv-style) secondary stress

a. Examples from news broadcast:

ha**bí**an mo**vi**li**za**do, la **po**bla**ción**, **gra**du**al**, **men**su**al**, tra**di**cio**na**l, en **el** e**x**ilio, proce**den**tes de **Ru**ma**ni**a, los **de**te**ni**dos, les **to**ma a**llí** de**cla**ra**ció**n, in**tro**du**cir**, **gru**pos o**pe**ra**ti**vos, como po**de**mos i**ma**gi**nar**, com**pa**gi**nar** el tra**ba**jo, por su en**ver**ga**du**ra, el presi**den**te **ma**dri**dis**ta, ven**ció** sin di**fi**cul**tad** al ru**ma**no, sus ex**pec**ta**ti**vas, los **jue**gos me**di**te**rrá**neos.

b. Examples from lectures:

inves**ti**ga**ción**, inves**ti**ga**do**res, **com**pli**ca**da, **cul**tu**ra**l, cons**ti**tu**i**do, in**tro**du**cir**, insti**tu**cio**nal**, en de**fi**ni**ti**va, i**ne**lu**di**ble, en**ca**mi**na**da, pre**po**si**cio**nes, se**lec**cio**nar**, **con**flu**ye**ran, **dia**lec**tal**, **re**duc**ción**, sus**ti**tu**i**do, gra**ma**ti**ca**les, de**ter**mi**na**do, **die**ci**seis**, me**ta**lin**güís**tica, ca**pa**ci**dad**, frag**men**tos **de** dis**cur**so, o**ri**gi**na**rio, **pe**du**ra**do, ac**tua**li**dad**, me**di**ci**na**l, e**vo**lu**ció**n.

Half an hour of a Spanish television or radio news-related show is likely to provide plenty of examples of this pattern, whether the speech is read or spontaneous, as would many lectures.

Kimura (2006) notices that this pattern tends to occur before a syntactic boundary, but is excluded from turn-final position. One analysis that Kimura (2006) proposes to analyze this phenomenon is the insertion of a HLH* melody, where the last H tone aligns with the lexically stressed syllable and is preceded by an earlier peak (he also mentions an alternative analysis with assignment of a H* accent to certain unstressed syllables):

(44) Example from Kimura (2006): tritonal HLH* analysis
"Camper para atender a su fuerte y dinámica expansión comercial desea contratar dependientes y **de**pen**dien**tas para in**cor**po**rar**los a su red de establecimientos en Madrid"

depen**die**ntas	in**cor**po**rar**los
| | |	| | |
H L H*	H L H*

The pitch contour that Kimura identifies does indeed seem to be the essential element in this pattern of secondary stress; that is, there must be a tonal peak (typically) associated with the countertonic. F0 contours illustrating this phenomenon are given in Fig. 1 and 2. Fig. 1 is a rendition (by the author, imitating the original contour) of the example *ha**bí**an mo**vi**li**za**do*. Fig. 2 is an example extracted from a radio broadcast. Consistently with the meaning that appears to be assigned to this two-peak contour, frequently there will also be a continuation rise at the end of the word, as in Figs. 1 and 2.

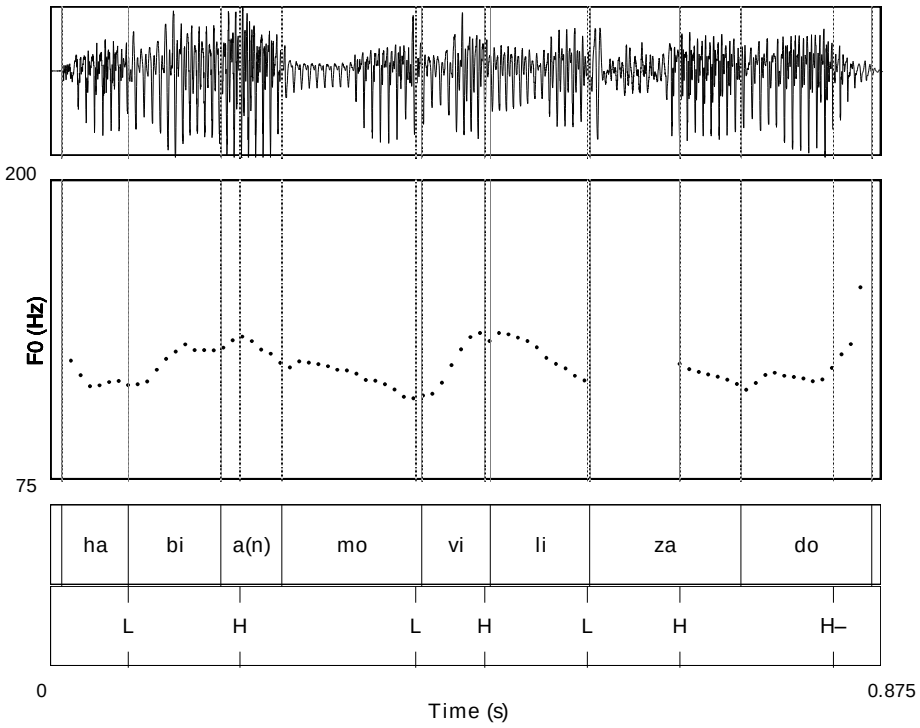

Figure 1. *ha**bí**an mo**vi**li**za**do H-*. Rhythmic (tv-style) secondary stress.

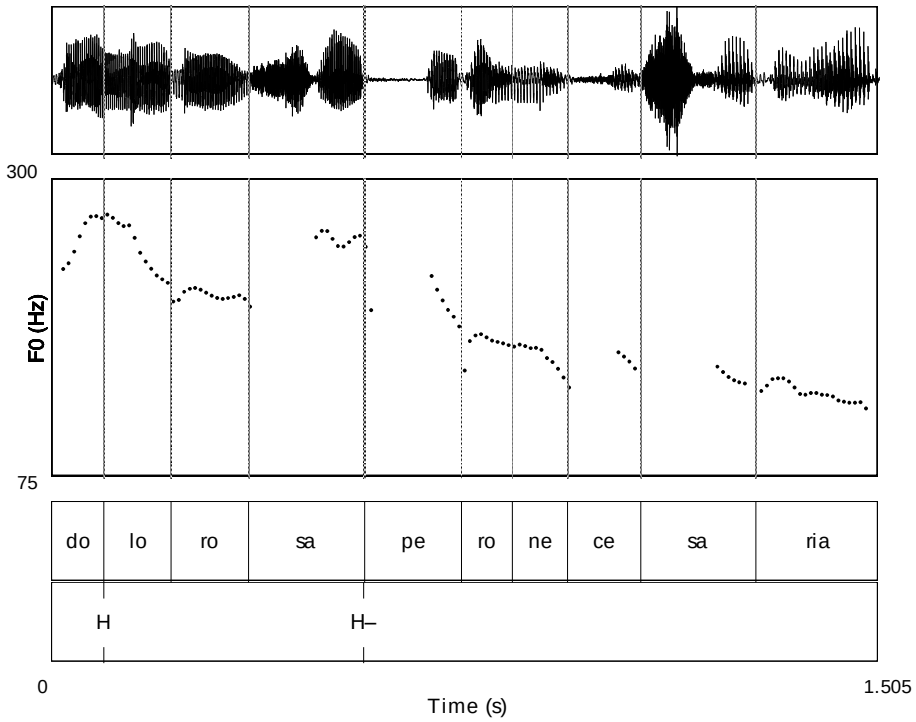

Figure 2. ***do**lo**ro**sa H- pero necesaria* 'painful but necessary' (From radio broadcast)

A primarily tonal analysis of the phenomenon, as in Kimura's HLH* proposal, appears to be correct. It would explain the fact that this rhythmic stress can occasionally appear on the immediately pretonic syllable, as in the example ***laicismo*** (from a broadcast) where /lai-/ would normally constitute a single syllable:

(44)

lai **ci**s mo
| \ |
H L H*

Nevertheless, this is a "prominence-lending" contour. The syllables associated with a H tone are perceived as prominent. An example like that in (44) thus implies the presence of stress on adjacent syllables. The fact that in *laicismo* there are two vocoids in the first syllable makes it easier for the HLH* contour to be associated with this word, resulting is a hiatus realization of the sequence. More rarely, however, the first H in HLH* may link to a light syllable adjacent to the lexically stressed one in words where the lexical stress

is on the second syllable from the beginning (e.g. ***ciclis****mo*). Rhythmic secondary stress in an example like ***ci<u>cli</u>****smo* is clearly less optimal than in *mo**vi**li**<u>za</u>**do* and is not frequent, but is not totally excluded. The possibility of these examples indicates that the rule cannot be to assign stress to the countertonic and then to associate separate pitch accents to each of the stressed syllables ("associate tone to stress"). Rather, the procedure must be to associate H(L)H* to the lexically stressed syllable, which results on stresses not only on the lexically specified syllable but also on the syllable that carries the other H tone, whether this is the countertonic or, when there is no other available docking site, the immediately pretonic:

(45)	movili<u>za</u>do	ci<u>clis</u>mo
	x	x
1. Tone to lexical stress:	mo vi li **<u>za</u>** do	ci **<u>clis</u>** mo
	H LH*	HLH*
	x x	x x
2. Stress to tone:	mo **vi** li **<u>za</u>** do	**ci <u>clis</u>** mo
	H* L H*	H*(L)H*

Arguably, a different phenomenon is the placement of prominence on the initial syllable of the word, as in (46a). This contour has an emphatic function and is used on intonational-phrase-final words. It is characterized by a tonal peak on the initial syllable and a rapid fall up to the end. The lexically stressed syllable in words with this contour oftentimes does not have tonal prominence but it may show considerable lengthening. Occasionally this emphatic stress appears on the second syllable, as in the example in (46b):

(46) Emphatic word-initial stress

a. es **fun**dame<u>ntal</u>.
   que se **<u>pue</u>**da **in**vesti<u>gar</u>
   la comi**sión** de **hu**mani<u>da</u>des
   al**gu**nas **pre**cipita<u>cio</u>nes
b. es**pec**tacu<u>lar</u> (N.B. different from espec**ta**cu**lar**)

The distinction between two types of postlexical secondary stress patterns, one rhythmic, characterized by the pattern HLH* (H-) and associated with the meaning "keep listening because this is all important information" (fun**da**men**<u>tal</u>** H-) and another one, emphatic, with a fall from a peak on the initial syllable, used to pragmatically focalize a specific item (**fun**damen**<u>tal</u>** (L-)), is, in principle, clear. Figs. 3 and 4, are examples produced by the author intended to illustrate the two secondary stress phenomena which I am tentatively distinguishing here.

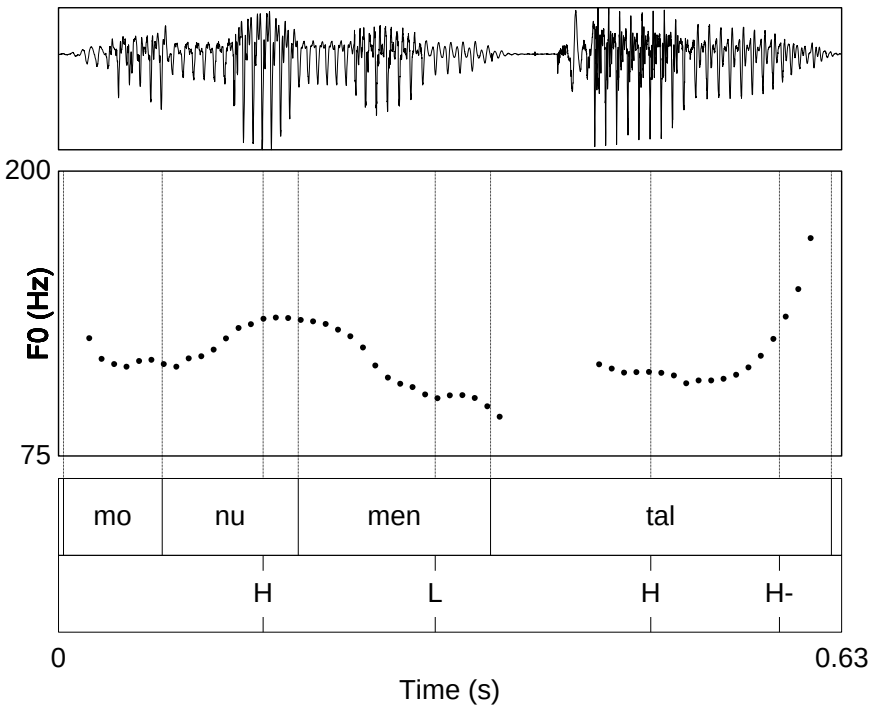

Figure 3. mo**nu**men**tal**. Rhythmic (tv-style) secondary stress.

Actual, real-life productions, however, may be ambiguous between the two patterns of secondary stress that we are distinguishing in theory. In the common case where there are only two syllables preceding the lexically stressed one, both rules would place secondary stress on the same syllable (i.e. the word-initial syllable). Fig. 2 contains an example from an actual radio broadcast: ***do****lo****ro****sa (pero necesaria)* 'painful but necessary'. Here there is a high tone on the initial syllable, which is perceived as stressed, and a final rise H-. We have interpreted it as an example of the rhythmic stress pattern where the H* that we would expect to be associated with the lexically stressed syllable in this contour has been greatly downstepped. Alternatively, however, this example may be interpreted as conveying focalization on the word *dolorosa* with a following continuation rise. That is, in principle, one could have a focus-related secondary stress in a turn-internal position, before a continuation rise, producing ambiguity with the rhythmic stress pattern.

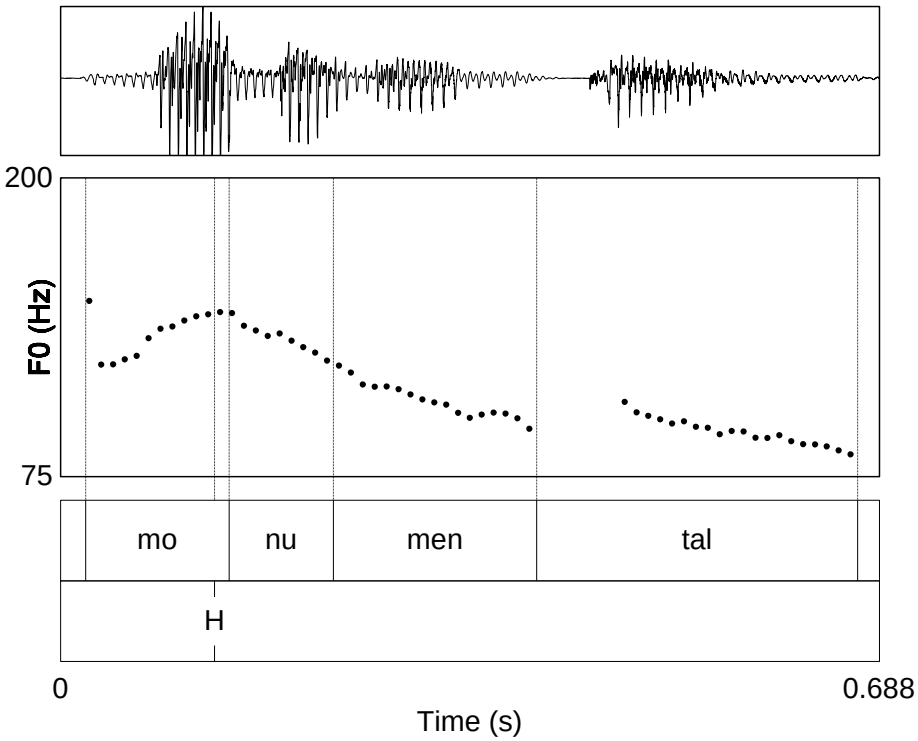

Figure 4. **mo**numen**tal**. Emphatic word-initial stress.

Consider also the example in Fig. 5 ***í**bamos a **vues**tra **ca**sa, además del **a**r**enal*** H- 'we were going to your house, in addition to the sandy place'. This example is taken from a natural conversation (not from the radio), where the speaker is adopting a "didactic tone". In this example there are two unexpected stresses (associated with accents): on ***vues**tra* and on the initial syllable of ***a**r**enal***. Since the word *vuestra* would normally be unstressed as a prenominal modifier, it could be that in this example its accent is due to contrastive stress on this word (i.e. 'YOUR house, not somebody else's'). However, the pitch excursion on *vuestra* may also be part of a rhythmic accent HLH* on the prosodic word domain [***vues**tra **ca**sa*], without implying in any way that *vuestra* is focalized. The initial postlexical stress on *arenal*, where there is a final rise H- before a pause, can only have this second interpretation and provides some evidence for the conclusion that the stress on *vuestra* is also rhythmic and not emphatic. Without access to the conversational context it is difficult to know which interpretation the speaker had in mind. The reason for distinguishing between "rhythmic" and

"emphatic" postlexical secondary stresses in Spanish at the theoretical level is that the two pragmatic functions are, in principle, quite distinct and the two stress and intonational contours associated with these functions are also, in principle, different. Clearly more research is necessary to test the validity of this proposal.

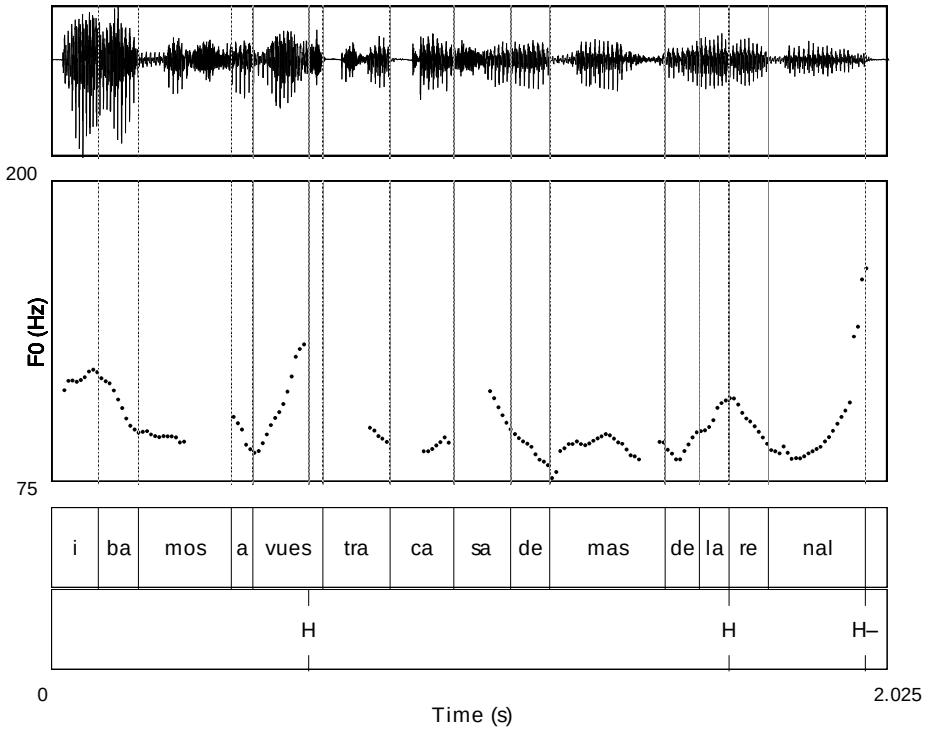

Figure 5. ***í**bamos a **vues**tra **ca**sa, ade**más** del **a**re**nal*** 'we were going to your house, in addition to the sandy spot' (From free conversation. Only tones that are relevant to the discussion are marked on the tonal tier).

Occasionally we may find alternating stress in highly emphatic speech: *de **la** li**te**ra**tu**ra*. This still seems to be pragmatically distinguishable from the pattern with word-initial secondary stress, *de la **li**tera**tu**ra*.

6. Summary

In English the Nuclear Stress Rule, which, in the unmarked case, assigns main prominence to the last word in the domain, has some well-known exceptions. First, in some compounds main stress falls on a nonfinal member (***pine** tree*). Secondly, in a number of syntactic and discourse contexts, final elements are

unaccented, causing retraction of the main stress in broad-focus utterances (*my **car** broke*). Spanish lacks these complications: main stress is consistently domain-final under broad focus. On the other hand, the occurrence of the first stress in the domain is "delayed" in a number of instances, in the sense that there can be several unstressed words before the first stress in the syntactic phrase. Some function words and expressions are stressed and others are unstressed (e.g.: ***me**nos na**ran**jas* 'fewer oranges' vs. *menos na**ran**jas* 'except for oranges). Since three, four or more unstressed words can occur in a sequence, the first stress in the phrase may occur relatively far from the beginning (e.g.: *para los de nuestra universi**dad***). In this paper, I have argued that this phenomenon is best viewed in connection with certain rules in the language that delete nonfinal stresses. In some types of compounds only the last member receives stress (e.g.: *limpiapara**bri**sas, José An**to**nio*). In addition, in vocatives, some interrogatives and some other contexts, nonfinal stresses are deleted (e.g.: ***ven**, sol de la **ca**sa!*). Interestingly, both in compounds and in vocatives/epithets in English we find stress-demotion in the opposite direction; that is, there is nonfinal prominence (e.g.: *Mr **Nice** guy!* cf. Liberman & Sproat, 1992).

The general observation, then, is that, whereas English has a number of rules of stress retraction, Spanish has processes of stress delay, again, meaning by this that there may be one or more unstressed words before the first stress in the utterance. That is, in English prominence is removed from the right, in Spanish from the left. Nevertheless, an analysis along the lines of Liberman & Sproat's proposal for English, with a distinction between two types of morphological structures, seems applicable to Spanish. The contrast between compounds with and without stress deletion in Spanish can be understood as a contrast between word-level and phrase-level structures. Under this analysis unstressed function words are proclitics. Spanish is consistently right-dominant at all levels in the prosodic structure. Prominence is final in word-level, phrase-level and utterance-level domains.

To complete the description, we have also considered stress addition phenomena in Spanish, where non-lexical "secondary" stresses are added to the left of the lexically accented syllable (*uni**ver**si**dad**, **u**niversi**dad***). I have argued that that there are two different phenomena, which I have labeled "rhythmic" and "emphatic" postlexical secondary stress. It appears that an adequate analysis of at least one of these patterns is in essentially tonal terms, as proposed by Kimura (2006), where stress is a consequence of tone rather than vice versa. That is, secondary prominence on a lexically unstressed syllable results from the assignment of the melody H(L)H* to the lexically stressed syllable.

Acknowledgments

For comments and discussion I am grateful to Karlos Arregi, Gorka Elordieta and my reviewers for this special issue. *omnia peccata sunt mea*.

References

Beckman, M. & Edwards, J. (1994) Articulatory evidence for differentiating stress categories. In *Phonological structure and phonetic form: Papers in Laboratory Phonology* 3 (P. A. Keating, editor), pp. 7-33. Cambridge: Cambridge Univ. Press.

Beckman, M., Díaz-Campos, M., Tevis McGory, J. & Morgan, T. (2002) Intonation across Spanish in the Tones and Break Indices framework, *Probus*, **14**, 9-36.

Bolinger, D. (1958) A theory of pitch accent in English, *Word*, **14**, 109-149.

Bolinger, D. (1962) "Secondary stress" in Spanish, *Romance Philology*, **15**, 273-279.

Bolinger, D. (1986) *Intonation and its parts: Melody in spoken English*. Stanford, CA: Stanford Univ. Press.

Chomsky, N. & Halle, M. (1968) *The sound patterns of English*. Cambridge, Mass.: MIT Press.

Cinque, G. (1993) A null theory of phrase and compound stress, *Linguistic Inquiry*, **24**, 239-297.

Díaz-Campos, M. (2000) The phonetic manifestation of secondary stress in Spanish. In *Papers from the 3rd Hispanic Linguistic Symposium* (H. Campos, E. Herburger, A. Morales-Front & T. J. Walsh, editors), pp. 49-65. Somerville: Cascadilla.

Face, T. (2003) Intonation in Spanish declaratives: differences between lab speech and spontaneous speech, *Catalan Journal of Linguistics*, **2**, 115-131.

Féry, C. & Herbst, L. (2004) German sentence accent revisited. In *Interdisciplinary studies on information structure* (S. Ishihara, M. Schmitz & A. Schwartz, editors), pp. 43-75. Potsdam: Univ. of Potsdam, SFB 632.

Féry, C. & Samek-Lodovici, V. (2006) Focus projection and prosodic prominence in nested foci, *Language*, **82**, 131-150.

Gussenhoven, C. (1983) Focus, mode and the nucleus, *Journal of Linguistics*, **19**, 377--417.

Gussenhoven, C. (2004) *The phonology of tone and intonation*. Cambridge: Cambridge Univ. Press.

Harris, J. (1983) *Syllable structure and stress in Spanish*. Cambridge, Mass.: MIT Press.

Hayes, B. (1995) *Metrical stress theory: Principles and case studies*. Chicago: Chicago Univ. Press.

Hualde, J. I. (2005) *The sounds of Spanish*. Cambridge: Cambridge Univ. Press.

Hualde, J. I. (to appear) Review of Eddington, D., *Spanish phonology and morphology*. *Language*.

Huidobro, S. (2005) Stressed enclitics as prosodization of verum focus in Argentinian Spanish. Presented at Going Romance 19, Utrecht, December 2005.

Kimura, T. (2006). Mismatch of stress and accent in spoken Spanish. In *Prosody and syntax: Cross-linguistic perspectives* (Yuji Kawaguchi, Ivan Fonágy & Tsunekazu Moriguchi, editors), pp. 141-155. Amsterdam: Benjamins.

Ladd, D. R. (1996) *Intonational phonology*. Cambridge: Cambridge Univ. Press.

Liberman, M. (1975) *The intonational system of English*. PhD dissertation, MIT.

Liberman, M. & Prince, A. (1977) On stress and linguistic rhythm, *Linguistic Inquiry*, **8**, 249-336.

Liberman, M. & Sproat, R. (1992) The stress and structure of modified noun phrases in English. In *Lexical matters* (I. A. Sag & A. Szabolcsi, editors), pp. 131-181. Stanford, CA: Center for the Study of Language and Information.

Moyna, M. I. (1999) Pronominal clitic stress in Rio de la Plata Spanish: An Optimality account, *The SECOL Review*, **23**, 15-44.

Navarro Tomás, T. (1977) *Manual de pronunciación española*, 19th ed. Madrid: Consejo Superior de Investigaciones Científicas (Publicaciones de la Revista de Filología Española) [1st ed., 1918].

Pierrehumbert, J. (1980) *The phonology and phonetics of English intonation*. PhD dissertation, MIT. (Published 1987, Bloomington, IN: Indiana Univ. Club.)

Ortega-Llebaria, M. (2006) The stress contrast in focus position. Presented at Laboratory Approaches to Spanish Phonology 3, Toronto, September 2006.

Ortega-Llebaria, M. & Prieto, P. (to appear) Acoustic correlates of stress and accent in Spanish. In *Segmental and prosodic issues in Romance Phonology* (P. Prieto, J. Mascaro and M.-J. Solé, editors). Amsterdam: John Benjamins.

Prieto, P. & van Santen, J. (1996) Secondary stress in Spanish: Some experimental evidence". In *Aspects of Romance linguistics* (C. Parodi, C. Quícoli, M. Saltarelli & M. L. Zubizarreta, editors), pp. 337-356. Washington, DC: Georgetown Univ. Press.

Quilis, A. (1993) *Tratado de fonología y fonética españolas*. Madrid: Gredos.

Real Academia Española (1973) *Esbozo de una nueva gramática de la lengua española*. Madrid: Espasa Calpe.

Roca, I. (1986) Secondary stress and metrical rhythm, *Phonology Yearbook*, **3**, 341--370.

Selkirk, E. (1995) Sentence prosody: Intonation, stress, and phrasing. In *The handbook of phonological theory* (J. Goldsmith, editor), pp. 550-569. Oxford: Blackwell.

Sosa, J. M. (1999) *La entonación del español*. Madrid: Cátedra.

Slujter, A. M. C. & van Heuven, V. (1966) Acoustic correlates of linguistic stress and accent in Dutch and American English. *Proceedings of ICSLP, 96*, pp. 630-633. Philadelphia: Applied Science and Engineering Laboratories, Alfred I. duPont Institute.

Stockwell, R., Bowen, J. D. & Silva-Fuenzalida, I. (1956) Spanish juncture and intonation, *Language*, **32**, 641-645.

Truckenbrodt, H. (2006) Phrasal stress. In *Elsevier Encyclopedia of Languages and Linguistics*, 2nd edition (Keith Brown, editor), vol. 9, pp. 572-579. Amsterdam: Elsevier.

Xu, Y.& Xu, C. X. (2005) Phonetic realization of focus in English declarative intonation, *Journal of Phonetics*, **33**, 159-197.

José Ignacio Hualde
University of Illinois at Urbana-Champaign
Dept of Spanish, Italian & Portuguese, 4080 FLB,
Univ. of Illinois, Urbana, IL 61801, USA
jihualde@uiuc.edu