Phonology **22** (2005) 345–394. © 2005 Cambridge University Press
doi:10.1017/S0952675705000655 Printed in the United Kingdom

*Saturation of parameter settings in Spanish stress**

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This paper advances a novel analysis of Spanish non-verb stress couched in the metrical model of Halle & Idsardi (1995), minimally augmented with an Edge Marking domain parameter. All relevant data are surveyed, and the patterns are classified on empirical grounds into unmarked, marked and supermarked. The unmarked pattern, assigned by default, has the stem-final syllable stressed, while the marked pattern involves a binary trochee, also on the right edge of the stem, and supermarked stress a non-final binary trochee or a word Edge Marking domain. All and only these patterns are generated, in both singulars and plurals, through permutations in the settings of three of the four Edge Marking components (domain included), checked by an avoidance constraint barring stress from the desinence. The 'three-syllable window' directly falls out from this machinery, both in the established Spanish vocabulary and in incoming borrowings, blind mimicry of the source form thus being obviated, indeed contradicted.

1 Introduction

The present paper is concerned with the word-stress patterns of Spanish non-verbs, a matter that has received more than average attention for the best part of half a century now, in a variety of theoretical frameworks. Despite this richness, a number of issues remain unresolved, some indeed unformulated. One reason for this incompleteness concerns a shortfall in data coverage. Another reason could of course be shortcomings in the available theoretical machineries. In the present paper I argue that one theory (Halle & Idsardi 1995), minimally augmented with one subparameter, permits a full and satisfactory account of Spanish non-verb stress, not only at the minimal level of observation, but also at the more demanding ones of description and explanation, in the familiar sense these terms are given in the Chomskyan paradigm (cf. Chomsky 1965).

* Earlier drafts benefited from general feedback from Harry van der Hulst, advice on specific points from Bill Idsardi and attention and interaction from members of the audience of a presentation I gave at the Universitat Autònoma de Barcelona. Discussion with Antonio Fábregas deepened my understanding of the mechanics of Distributed Morphology. Anonymous reviewers, an associate editor and the editors further contributed with criticism and questions. To all of them, my thanks. Remaining errors are of course my own.

https://doi.org/10.1017/S0952675705000655 Published online by Cambridge University Press

The paper was conceived and first developed in isolation from related work by Isabel Oltra-Massuet and Karlos Arregi, now published as Oltra-Massuet & Arregi (2005). Despite this historical autonomy, the two proposals have much in common in both aims and strategies, notably their drive for maximum data coverage and formal unification, and hence for genuine explanation. In addition, both works are couched in the metrical model of Idsardi (1992) and Halle & Idsardi (1995), and recognise the key role of the stem–desinence divide in Spanish non-verb stress. Alongside this substantial overlap, however, there are some important divergences, concerning in particular the role of syntax as such in Spanish stress, the relationship between Spanish verb and non-verb stress, the structure of the Spanish foot and the formal encoding of markedness and exceptionality in Spanish stress.

In this paper I limit the discussion to Spanish non-verb stress, and do not consider verb stress. Indeed, differences between the two have consistently been acknowledged in the literature through the years, more or less explicitly, as the following sample illustrates [my emphasis in all the quotations below]:

> I will accept the LSR [Latin Stress Rule] as a first approximation to the stress assignment rule *for categories other than verbs* (Harris 1969: 120).
>
> *Verbs and non-verbs are stressed by different rules*; therefore, we examine the two classes separately (Hooper & Terrell 1976: 66).
>
> Segmental representation and morphological characterization are (necessary but) not sufficient to determine word stress in members of lexical *categories other than verbs* (Harris 1983: 84).
>
> It seems thus an established generalization among critics that *stress behaves differently in verbs and nonverbs* (Núñez Cedeño 1985: 55).
>
> Spanish *verb stress is* analysable as *a purely accenting system*, thus contrasting with the (covert) rhythmic stress of Spanish non-verbs (Roca 1992a: 267).
>
> A significant metrical fault bifurcates the vocabulary of Spanish. *Verbs lie on one side*; nouns, adjectives, and adverbs ('substantives') on the other (Harris 1995a: 876).

The differences between verb and non-verb stress in Spanish are the product of history: while the Latin stress algorithm was neutral to morpho-syntactic category (see §3.2 below), its Spanish successor is not. In a nutshell, the Latin stressed syllable systematically remained so in Spanish non-verbs, but in the past tenses of verbs stress underwent displacement to achieve columnar constancy (cf. the imperfect indicative of 'to love': Latin *a'mabam* (1SG), *ama'bamus* (1PL) *vs.* Spanish *a'maba*, *a'mabamos* respectively). In addition, the formation of new future tenses in Romance

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brought about a novel stress pattern, which is also columnar (consider e.g. the 'conditional' in (65) below). As a result of these changes, non-columnar Latin verb stress survives in Spanish only in the present tenses.

Despite these well-known historical and synchronic facts, generative analysts have sometimes sought total formal unification of Spanish verb and non-verb stress.[1] The goal is obviously commendable, but the attempts have fallen short of success, because of the complexity and arbitrariness of the additional machinery required (see e.g. §6.4 below). Oltra-Massuet & Arregi themselves appear to recognise the impossibility of the enterprise. Thus, they ask in the concluding section of their paper (2005: 80) 'whether the two rules [for verbs and nouns respectively] projecting parentheses from the syntax can be unified'. Their answer is that 'there is an important difference between the two rules: the placement of the parenthesis with the relevant functional category is different in the two types of words (to the left of T, but to the right of nonverbal categories). A possible way of collapsing the two rules is the following: … insert a right parenthesis *to the right of the highest functional node* on line 0'. However, Oltra-Massuet & Arregi admit that 'the new rule makes the wrong predictions in forms in which T contains a vowel that projects to the grid (e.g., in some present forms). In order to maintain this modification of the analysis, we would thus need to change some of our assumptions about the structure of these forms. We leave this as a question for future research.' The outcome is thus that, notwithstanding a remarkably complex analysis, to which we will turn in §6.4, the unification of verb and non-verb stress still needs to be left for future research, i.e. it has failed to be established, in harmony with our present stance.[2]

Oltra-Massuet & Arregi's opening statement that 'stress placement in Spanish is determined by syntax' (2005: 43) meets a not dissimilar end. The actual chain of events is somewhat more convoluted. Thus, in the model of morphology they adopt, Distributed Morphology,[3] syntactic structure is assumed to permeate all the way down ('morphemes are organized into hierarchical structures determined by the principles and operation of syntax' (2005: 44)). This slogan must not be taken too literally, however, since the theory explicitly acknowledges and accepts the need to *modify* syntactic structures on their way out of the syntax, with operations such as merger, fusion, fission, impoverishment or insertion ('dissociated morphemes'). It follows from this that

[1] Cf. e.g. Harris's (1989) rhetorical title question 'How different is verb stress in Spanish?', answered bluntly 'Not at all' at the close of the paper (1989: 257).

[2] Oltra-Massuet & Arregi's clash-avoidance constraint in (23) below is only relevant to non-verbs, which are accordingly kept apart from verbs.

[3] The first major publicaton on Distributed Morphology was Halle & Marantz (1993). General information and bibliography are available (October 2005) at the dedicated website http://www.ling.upenn.edu/~rnoyer/dm/.

https://doi.org/10.1017/S0952675705000655 Published online by Cambridge University Press

there need not be a one-to-one correspondence between morphological and syntactic structure, crucially so in the context of Spanish stress, considering the key role played by theme vowels, which are not syntactic elements. Here too, Oltra-Massuet & Arregi seem to be aware that programme and fact do not go hand in hand, when they state in the conclusion (2005: 79): 'we have argued for an analysis of stress that directly relates the syntax of Spanish to the computation of stress *through morphological structure*' [my emphasis]. The bottom line is, therefore, that morphology, not syntax, determines the placement of Spanish stress. Moreover, this determination is only partial, given the obvious role of both metrical parameters and lexical marking in the matter.

Following the foregoing remarks, this paper will exclusively be concerned with Spanish non-verb stress, on account of obvious space limitations. Also, the analysis will be developed independently of syntax, a strategy we will see pays off well in terms of simplicity and integration. Systematic comparison with relevant competitors will be provided as we go along, in particular Oltra-Massuet & Arregi (2005) and Harris (1995a), both of which are also couched in the machinery of Idsardi (1992) and Halle & Idsardi (1995).

The Spanish foot is considered by Oltra-Massuet & Arregi to be an unbounded iamb, whereas we will adopt a binary trochee. Besides being supported by non-negligible independent evidence, this foot plays a key role in bringing about the cohesiveness achieved by the approach. Finally, while Oltra-Massuet & Arregi formalise markedness and plain irregularity by way of lexical brackets and ancillary rules, we will instead appeal to interplay of parameter settings. The advantages of this approach will become clear as we proceed, and again chiefly concern inclusiveness, cohesiveness and simplicity, all standard criteria closely related to the classical levels of adequacy of Chomsky (1965).

The remainder of the paper is structured as follows. §2 briefly surveys the varied stress patterns of Spanish non-verbs, the object of the analysis. §3 presents the theoretical machinery, also succinctly, and puts it to work in the stress system of Latin. §4, the core of the paper, presents a detailed analysis of all the stress patterns of Spanish non-verbs: the unmarked pattern in §4.1, the marked pattern in §4.2 and the various supermarked patterns in §4.3. In all cases, the matter is split into two subsections, dealing respectively with the analysis being proposed and with the main competitors. Additionally, §4.4 examines the stress shifts in the plural. §5 provides a principled account of gaps, both in the grammar (missing permutations of parameter settings; §5.1 and §5.3) and in the data (missing stress patterns; §5.2), the latter with special attention to the 'three-syllable window'. In §6, a number of additional issues dealt with in Oltra-Massuet & Arregi (2005) are discussed, and their proposals evaluated. Finally, §7 summarises and assesses the paper's achievements.

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	-V#	-C#
O	papá 'daddy', capó 'car bonnet', rapé 'snuff', mamá 'mummy', Paraná 'Parana (river)', Bogotá 'Bogota', Panamá 'Panama', colibrí 'humming bird', menú 'menu', dominó 'game of dominoes', …	color 'colour', atún 'tuna', mantel 'tablecloth', nariz 'nose', parchís 'ludo', marqués 'marquis', holgazán 'slob', andaluz 'Andalusian', hablador 'talkative', español 'Spanish', sutil 'subtle', candor 'candour', amén 'amen', tapiz 'tapestry', esquimal 'Eskimo', pared 'wall', mujer 'woman', azur 'azure', …
PO	loro 'parrot', sala 'hall', cruce 'crossing', mesa 'table', pistola 'hand gun', sabana 'savannah', pomada 'ointment', butaca 'armchair', borrego 'lamb', octubre 'October', periplo 'long journey', Cartago 'Carthage', albaricoque 'apricot', …	útil 'useful', cóndor 'condor', crimen 'murder', lápiz 'pencil', caníbal 'cannibal', huésped 'guest', cráter 'crater', fémur 'femur', almíbar 'syrup', alcázar '(Moorish) fortress', …
PPO	epístola 'epistle', sábana 'bed sheet', nómada 'nomad', fármaco 'medicine', lóbrego 'gloomy', lúgubre 'lugubrious', cuádruplo 'quadruple', vástago 'offspring', múltiple 'multiple', múltiplo 'multiple', síncopa 'syncope', síncope 'syncope', párrafo 'paragraph', bolígrafo 'ballpoint pen', órgano 'organ', vinícola 'wine-growing', …	régimen 'regime, diet, regimen', espécimen 'specimen', ínterin 'interim', ómicron 'omicron', Júpiter 'Jupiter', hipérbaton 'hyperbaton'

Table I
Spanish stress patterns.

2 Explanandum: Spanish non-verb stress

Spanish non-verb stress can be oxytone (O), paroxytone (PO) or proparoxytone (PPO),[4] but is never located further left, a generalisation commonly referred to as the 'three-syllable window'. This is illustrated by the data in Table I (differences in the number of examples for each pattern can be disregarded at this point).

There are markedness contrasts between the patterns in Table I. For example, PO for V-final words and O for C-final words are considered

[4] Besides compactness, the acronyms O, PO, PPO and, eventually, PPPO (preproparoxytone) offer a convenient bonus of visual iconicity with the stress locus. In Table I and thereafter, V and C stand for vowel and consonant respectively, and # signals a word boundary.

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unmarked almost unanimously in the literature, while PPO for V-final and PO for C-final are deemed marked (Otero 1986 is a dissenting voice). On the other hand, V-final Os and C-final PPOs are often played down, indeed sometimes explicitly excluded from the data set or simply ignored, mainly on account of the low numbers involved. From this preliminary perspective, the six patterns in question can be tabulated as in Table II. Note that orthographic stress is marked throughout with the usual acute accent; where useful, non-orthographic stress is also marked, with a grave accent (obviously not to be confused with secondary stress, which is outside the focus of the present paper):

	majority		minority
	unmarked	marked	
…V#	PO amìgo 'friend'	PPO álamo 'poplar'	O menú 'menu'
…C#	O amòr 'love'	PO almíbar 'syrup'	PPO régimen 'regime'

Table II
Six Spanish stress patterns.

The markedness status of the two minority patterns is assessed in §4 below. The unmarked *vs.* marked classification of their majority counterparts rests on robust evidence, which includes:

(i) spontaneous behaviour: cf. the stress assigned by speakers to acronyms (FÌFA, ÒNU, ÙSA, NÀTO, UNÈSCO, CÈCA, SÌDA, RÈNFE, CÀMPSA, REPSÒL, UNÈD, INÈF, INÈM, CEPÀL, ALFÀL, UNICÈF), trade names, many of which foreign in origin (*Colgàte*, *Palmolive*, *Profidèn*, *Paracetamòl*, *Okàl*, *Mistòl*, *Arièl*, *Persìl*, *Fagòr*, *Electrolùx*), etc.

(ii) lexical frequency: cf. the following percentages from an electronic search on a 91,000-word list, reported in Nùñez Cedeño & Morales-Front (1999: 211):

	PPO	PO	O
…V#	11·10%	88·00%	0·87%
…C#	0·05%	2·03%	97·80%

Table III
Percentages of Spanish stress patterns.

(iii) acquisition: elicited speech and imitation tests carried out on a group of 50 3–5-year-old Mexican-Americans (Hochberg 1988) yielded a correlation between rate of children's performance errors and stress markedness as defined here. In particular, 'regular stress types … were always easiest to imitate: on vowel-final words children had the least difficulty with penultimate stress, while for consonant-final words final

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stress was easiest' (1988: 696). Correspondingly, 'the more irregular the word, the more likely errors were to result in a change toward regularity'.

(iv) orthography: the Spanish official orthography (one of the best in the world, according to Harris 1975: 60) exempts from orthographic accent precisely the two patterns we are considering unmarked (disregarding words with final *-s* or *-n*, where additional morphological considerations come into play).

Before a formal analysis of these data in §4 below is proposed, it will be useful to give an outline of the theoretical machinery. This is done in §3.

3 The framework

The Halle & Idsardi metrical model, also made use of in Harris (1995a) and Oltra-Massuet & Arregi (2005), is both reasonably well known and readily accessible. In the interest of readers not conversant with the model, I will now present its basic skeleton, applying it to Latin in §3.2 and to Spanish in §4.

3.1 Theory

Halle & Idsardi (1995)'s approach is both parametric and constructional, following the lines of its predecessor, Halle & Vergnaud (1987b). Besides a slight reformulation of some of the parameters, the main difference is that Halle & Idsardi's constituents can be 'open' at one end: grid operations insert *one single* bracket (left or right, as specified), and there is no equivalent of Halle & Vergnaud's requirement that metrical brackets be paired,[5] as illustrated in (1):

(1) *Constituent delimitation*

a. Halle & Idsardi (1995)		b. Halle & Vergnaud (1987)
either	(x x (x x (x x	(x x) (x x) (x x)
or	x x) x x) x x)	

Halle & Idsardi's grid structure is still built in steps: parameters can differ in strength, which is formally expressed by means of their order of application.[6]

[5] Closed constituents are also standard elsewhere: cf. e.g. Hayes (1995) and common OT practice.

[6] Cf. the following statements from Halle & Idsardi: 'parentheses that get placed first preclude the introduction of later parentheses that would result in a disfavored configuration' (1995: 424); 'in the present theory constituent construction precedes the assignment of heads' (1995: 441); 'parentheses that are inserted by earlier parameters have priority over those inserted by later parameters' (1995: 441).

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Halle & Idsardi's parameters and their Halle & Vergnaud equivalents are as follows:

(2) *Metrical parameters*

a. Halle & Idsardi (1995)	b. Halle & Vergnaud (1987)
Syllable Boundary Projection	Accent
Edge Marking	Extrametricality
Iterative Constituent Construction	Alternator[7]
Head Location	Headedness

The Halle & Idsardi parameters are defined as in (3):

(3) a. *Syllable Boundary Projection* (SBP)
Project the left or right bracket of certain designated syllables (e.g. heavy syllables) onto grid line 0.
e.g. SBP: L (X) (L = left; X = heavy syllable)
x **(**X x x x **(**X x

b. *Edge Marking* (Edge)
Insert a left or right bracket on the left or right of the leftmost or rightmost metrical element in the string.
e.g. Edge: LLR (L_1 = left bracket; L_2 = on the left of; R_3 = rightmost element)[8]
x x x x x **(**x

c. *Iterative Constituent Construction* (ICC)
Iteratively insert one bracket (left or right) inward from one end (right or left respectively) before or after every second element (degenerate feet are not allowed).
e.g. ICC: R (R = right bracket, hence rightward construction from left edge)
x x**)** x x**)** x x**)** x

d. *Head Location* (Head)
Project the metrical element at one edge of each constituent onto the next line of the grid.
e.g. Head: L (L = left edge)
x x x
x x) x x) **x x)** x

Halle & Idsardi's Edge Marking subsumes at least two of Halle & Vergnaud's devices. First, it subsumes Halle & Vergnaud's extra-

[7] Halle & Vergnaud label 'Alternator' the procedure that iteratively constructs trochees from right to left (cf. 1987b: 100). See also Halle & Vergnaud (1987a).

[8] The order of Edge Marking component settings will be subscripted for ease of reference wherever advisable.

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metricality,[9] encoded in the settings RLR or LRL, for right and left extrametricality respectively:

(4) *Extrametricality in Halle & Idsardi (1995)*

a. *right extrametricality*	b. *left extrametricality*
Edge: RLR	Edge: LRL
… x x x) x	x (x x x …

Second, Edge Marking subsumes Prince's (1983) End Stress by means of the settings LLL and RRR (also RRL and LLR) for initial and final End Stress respectively, in conjunction with L and R for Head Location:

(5) *End stress in Halle & Idsardi (1995)*

a. *end stress initial*	b. *end stress final*
e.g. Edge: LLL; Head: L	e.g. Edge: RRR; Head: R
x	x
(x x x x …	… x x x x)

Of direct relevance to our present concerns is Halle & Idsardi's identification of 'edge' (in their practice, if not in their explicit doctrine) with the edge of the *maximal* string subject to the metrical procedures.[10] Our analysis of Spanish will show that this assumption is too restrictive, and that the identity of 'edge' needs parameterising. In particular, I will be arguing that the regular domain for 'edge' in Spanish non-verb stress is the morphological stem (introduced in §4 below), rather than the full word. Oltra-Massuet & Arregi (2005) actually go further, and allow metrical projection of *any* parenthesis present in the syntax, apparently following a suggestion from an anonymous reviewer: 'we propose to extend Idsardi's notion of Edge Marking by allowing the projection of metrical parentheses from the syntactic structure' (2005: 49). We return to this matter at the end of §6.4 below.

Some of Halle & Idsardi's parameters need specifying as to grid level: line 0, line 1, etc. Line 0 is the product of some segmental projection; syllable heads in all of Halle & Idsardi's examples, although they admit the possibility of a different choice in other languages.

In addition to the parameters, Halle & Idsardi's model importantly includes 'avoidance constraints' to block unwanted effects of parameter settings, in precisely the way stated in the constraint. We will see one such constraint at work in Latin in the next section (cf. (6.vii) below). Finally, Halle & Idsardi retain Halle & Vergnaud's 'conflation' device, by which

[9] The device 'extrametricality' goes back to Hayes (1980). Some issues deemed controversial are clarified in Roca (1992b).

[10] This indeterminacy is apparent in Halle & Idsardi's definition of the Edge Marking parameter (1995: 408): 'Place a left/right parenthesis to the left/right of the left/right-most element *in the string*' [my emphasis]. The obvious question is: *which* string?

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unwanted (secondary) feet are disposed of through deletion of designated metrical lines.

3.2 Exemplum: Latin stress

Before we tackle Spanish stress in the next section, Halle & Idsardi's machinery will now be put to work in the analysis of Classical Latin, a useful step for at least four reasons. First, Classical Latin provides a convenient illustration of the theory, as it has a reasonably simple (albeit not too simple) stress system – in any event much simpler than Spanish. Second, the facts of Classical Latin stress are widely agreed on in the literature (cf. Allen 1965: 83). Third, the Classical Latin system is reasonably familiar to metrical experts and linguists in general. Last, but by no means least, Classical Latin stress is an antecedent of present-day Spanish stress.[11] In fact, in the early days of the generative study of Spanish stress (Foley 1965, Harris 1969, 1975), the Classical Latin algorithm was assumed to apply in Modern Spanish. While literal survival is actually not defensible,[12] we shall be showing below that important elements of the Latin system apparently persist in present-day Spanish (cf. (10)).

Halle & Idsardi's formalisation of Classical Latin stress is as in (6):

(6) *Stress in Classical Latin*

a. *parameter settings*

Line 0

(i) SBP: L (X)
(ii) Edge: RLR
(iii) ICC: L
(iv) Head: L

Line 1

(v) Edge: RRR
(vi) Head: R

b. *other machinery*

(vii) avoidance constraint: *x (x#
(viii) conflation: line 1

The derivations in (7) illustrate the procedure for the pair *interior* ~ *interi*[o:]*rem* 'interior (NOM ~ ACC)':

[11] At least on the reasonable assumption that Classical Latin corresponds to a real historical stage of the language, eventually succeeded by Vulgar Latin, the immediate antecedent of Romance (cf. e.g. Grandgent 1963: 20, §3, Pulgram 1975: 128). This perspective does not of course preclude the possibility of Classical Latin and Vulgar Latin sociolinguistically running in parallel at some point in history. Indeed, this is to be expected, given the general fact that language change and sociolinguistic variation go hand in hand (see Labov 2001 for a recent statement).

[12] Harris (1969: 30–31, 120) already sees difficulties with a strong identity stand along the lines of Foley's and tones down the proposal. For Harris (1975: 63) 'something like the Latin Stress Rule has just enough right with it to be taken as a first hypothesis and just enough wrong with it to preclude uncritical acceptance'.

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(7) a.

	(6.i) cf. (6.vii)	(6.ii)	(6.iii)
x x x x	**(**x x x x	(x x x**)**x	(x **(**x x)x
interi or	interi or	interi or	interi or

(6.iv)	(6.v)	(6.vi)	(6.viii)
		x	
x x	x x**)**	x x)	x
(x (x x)x	(x (x x)x	(x (x x)x	(x (x x)x
interi or	interi or	interi or	interi or

b.

	(6.i) cf. (6.vii)	(6.ii)
x x x x x	**(**x x x**(**x x	(x x x(x**)** x
interi [o:]rem	interi [o:]rem	interi [o:]rem

(6.iii)	(6.iv)	(6.v)
	x x x	
(x **(**x x(x) x	(x (x x(x) x	(x (x x(x) x
interi [o:]rem	interi [o:]rem	interi [o:]rem

(6.vi)	(6.viii)
x	
x x x)	x
(x (x x(x) x	x x x(x) x
interi [o:]rem	interi [o:]rem

As will be noticed, the RLR setting for Edge Marking encodes Latin right extrametricality. Extrametricality had no known lexical exceptions in Classical Latin, applying across the board in polysyllables (for monosyllables, see below). In turn, the obligatory foot-head status of heavy syllables is achieved through the setting in (6.i), by which the left edge of heavy syllables is projected onto line 0.[13] The exception is the word-final syllable of polysyllables, where syllable-boundary projection is blocked by the avoidance constraint *x(x# (6.vii)). Without this constraint, a word-final monosyllabic foot would be built on *all* heavy syllables, in contravention of Latin's systematic right extrametricality:

(8)

	a. (6.vii) *violated*	b. (6.vii) *obeyed*
	(6.i)	(6.i)
x x x x	*(x x x(x	(x x x x
interi or	interi or	interi or

[13] All non-rightmost foot heads along with their corresponding feet are of course eventually deleted by line 1 conflation (6.viii).

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As just hinted, the lone syllable of monosyllables cannot be extrametrical, since Latin non-clitic monosyllables *are* stressed. This result is formally achieved through the inclusion of one x on the left of '(' in the avoidance constraint in (6.vii), as shown in (9) for *mons* 'mountain':

(9)	(6.i)	(6.ii)	(6.iii)
x	**(**x	*blocked*[14]	*n*/*a*
mons	mons		

(6.iv)	(6.v)	(6.vi)	(6.viii)
		x	
x	x**)**	x)	x
(x	(x	(x	(x
mons	mons	mons	mons

This completes the illustration of the stress machinery of Halle & Idsardi (1995). In the next section, this machinery is applied to the description of Spanish stress.

4 Stress in Spanish non-verbs

A cursory glance at Table II above makes it abundantly clear that the Classical Latin stress algorithm cannot have survived intact in Spanish. In particular, the following two contrastive aspects of the respective data are critical:

Latin	Spanish
no word-final stress (monosyllables excepted), because of compulsory right-edge extrametricality	significant number of Os (N.B. not simple exceptions): cf. Table I, and *amòr*, *menú* in Table II
light penults do not bear stress in words of more than two syllables	light penults can bear stress: cf. Table I, and *amìgo*, *almíbar* in Table II

Table IV
Two key differences between Latin and Spanish stress.

Indeed, it is difficult to see how the diversity of Spanish stress patterns displayed in Table II can possibly be derived with a single algorithm, as we have shown Latin stress to be.

[14] The resulting bracketing would in fact be ( ), which according to Halle & Idsardi (1995: 411) is an obvious candidate for universal prohibition.

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Nevertheless, the majority of the Latin stress settings can be assumed to live on in Spanish, as is displayed in (10) and will be justified in detail as we proceed:

(10) *Preservation of Classical Latin settings in Spanish*

a. *parameter settings*

Line 0

(i) SBP: ?
(ii) Edge: mostly not preserved
(iii) ICC: preserved
(iv) Head: preserved

Line 1

(v) Edge: preserved
(vi) Head: preserved

b. *other machinery*

(vii) avoidance constraint: almost preserved
(viii) conflation: preserved

In particular, on our analysis, both line 1 components (Edge Marking and Head Location), line 0 Head Location and ICC, and conflation remain exactly as in Latin, i.e. five out of the total of eight components are unchanged. Of the other three, native forms are compatible with SBP, with the bizarre exception of the place name *Frómista*,[15] and the avoidance constraint has undergone a minimal (although important) modification. It is thus Edge Marking that apparently carries the burden of both historical change from Latin and internal stress variety in Spanish. In Latin, Edge Marking settings were invariably fixed as 'RLR in the word domain'. However, in Spanish only the last such setting remains, the first two having taken on *all* the values compatible with the rest of the system and with Universal Grammar, either in a word or, more commonly, in a *stem* domain: each such permutation generates one of the attested Spanish stress patterns.

The stem–desinence dichotomy plays a central role in our analysis, and will now be briefly presented (see related discussion in Harris 1980, 1985, 1991a, 1992, 1999, Klein 1989, Roca 1989, 1990, 1997a, 1999, 2005, Morin 1999, Colina 2003, Roca & Feliu 2003 and Oltra-Massuet & Arregi 2005, among others).

In Spanish, as in other languages, the stem is the word minus the (phonologically realised or null) inflection (cf. Anderson 1992: 71), in particular the gender-related vowel inflection.[16] The stem–desinence division is illustrated in *vot-o* 'vote', *bot-a* 'boot', *bot-e* 'tin', *cut-is* 'facial

[15] The matter of quantity-sensitivity in Spanish stress is taken up in §6.1 below.

[16] In Oltra-Massuet & Arregi's Distributed Morphology interpretation, our desinence is a theme vowel adjoined to the 'n' or 'a' functional node, which in turn adjoins the root (cf. 2005: 64). As far as I can tell, this interpretation is in all respects compatible with ours, and thus with the results we will obtain.

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skin' and *vir-us* 'virus'. Historically, the Spanish desinence is usually a remnant of the Latin theme vowel + case complex ending (*vot-u-m*, *cut-i-s*, *vir-u-s*, etc.). Synchronically, it is characterised by a cluster of properties: (i) it is made up of a vowel (*vot-o*), possibly followed by *s* (*cut-is*); (ii) it is rightmost in the word, and consequently lost pre-suffixally (*cut-is* → *cut-áne-o* 'pertaining to *cutis*'); (iii) it can engage in gender-driven alternations (*el rus-o* 'the Russian (MASC)' ~ *la rus-a* 'the Russian (FEM)'); (iv) it is semantically empty, inasmuch as, for instance, *-a* need not imply femaleness, nor *-o* maleness (*person-a* 'person' (not 'woman'), *sopran-o* 'soprano', etc.);[17] (v) it is lexically determined (*vot-o*, *bot-a*, *bot-e*; *cut-is*, *cutáne-o*; *mar* 'sea'); (vi) it is systematically stressless. This last property makes the desinence directly relevant to our present concerns. Notice, however, the existence of abundant independent criteria for its existence.

We have already seen that the full array of Spanish non-verb stress patterns is formally characterised by differences in parameter settings, the former Latin unity having been lost. Anticipating the ensuing discussion, all the Edge Marking parameter settings for Spanish non-verbs are given in Table V, with some examples (']' signals the stem–desinence boundary, and '#' the word boundary).

	core		periphery		
	unmarked	marked	supermarked		
domain	stem	stem	stem	word	word
components	LLR	RRR	RLR	RLR	RRR
	… x (x] … avàr]o silicòs]is animàl] menú]	… x x)] … anónim]o anális]is almíbar]	… x) x] … ómicron] ~ omicròn]es	… x x) x# régimen] ~ regímen]es	… x x)# carácter] ~ caractèr]es

Table V
Spanish Edge Marking parameter settings.

The following subsections provide a detailed formal account of each of these patterns.[18] In each case, our proposal is presented first, and then compared with Harris (1995a) and Oltra-Massuet & Arregi (2005) (its most direct rivals) in a subsection entitled 'Alternatives'. The gaps found

[17] There are (partial) relationships between sex and gender, on the one hand, and between gender and the desinence, on the other, but not directly between sex and the desinence: the dependency chain is thus semantics → gender → desinence, rather than semantics ↔ desinence. Cf. e.g. Roca (1989, 2000, 2005), Harris (1991a), Roca & Feliu (2003).

[18] The present account supersedes Roca (1997a) and the Spanish strand of Roca (1999).

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in both the Spanish data and the Spanish grammar will be discussed and justified in §5.

4.1 The unmarked O_s pattern

In Table II above, both V-final PO_w's (*amìgo*) and C-final O_w's (*amòr*) were categorised as unmarked, and I will now propose Edge Marking settings to derive both these surface stress patterns.[19] I will also argue for the incorporation of V-final O_w's (*menú*) into the unmarked procedure. Because they are unmarked, the Edge Marking settings in question are assigned by default, in the absence of contrary lexical information.

4.1.1 *Analysis*. The Spanish unmarked Edge Marking settings are LLR(S),[20] i.e. 'insert a left bracket to the left of the rightmost metrical element in the stem'. Acting in conjunction with four of the settings fixed across the board (line 0 Head Location: L, line 1 Edge Marking: RRR and Head Location: R, and conflation; cf. (10) above), these default Edge Marking settings lead to a stressed last stem vowel, as desired. This is illustrated in (11) for *avàro* 'miser', *silicòsis* 'silicosis' and *animàl* 'animal'. To reduce clutter in this and similar diagrams, line 2 construction is omitted, with the final step including conflation:

(11) Edge: LLR(S)	ICC: L	Head: L, etc.
		x
x x**(**x x	**(**x x(x x	x x(**x** x
avar] o		av**à**r] o
silicos] is	silicos] is	silic**ò**s] is
animal]	animal]	anim**à**l]

For completeness and greater transparency, (12) shows that the Spanish unmarked pattern is underivable on the corresponding Latin Edge Marking settings RLR(W) (empirically untrue but nonetheless grammatical outputs are marked with ‡):

(12) Edge: RLR(W)	ICC: L	Head: L, etc.
		x
x x x**)** x	x **(**x x) x	x (**x** x) x
avar] o	avar] o	‡**á**var] o
silicos] is	silicos] is	‡sil**í**cos] is
animal]	animal]	‡**á**nimal]

The PPO_w output pattern obviously does not match the factual target (O_s).

[19] P, PO and PPO are henceforth subscripted with $_s$ or $_w$ where necessary to make explicit the domain (stem or word) on which the pattern is being computed.

[20] The Edge Marking stem domain is indicated with (S), and the Edge Marking word domain with (W).

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The Edge Marking settings being proposed here also account for the V-final O's that have come into Spanish through the centuries from other languages (cf. e.g. *menú* 'menu'). The markedness value left pending in Table II is thus now decided upon by the grammar itself, a conclusion which Oltra-Massuet & Arregi (2005: 65) also reach:

(13)

Edge: LLR(S)	ICC: L	Head: L, etc.
		x
x x**(**x x	**(**x x(x x	x x(**x** x
menu]		men**ú**]
avar] o		av**à**r] o
silicos] is	silicos] is	silic**ò**s] is
animal]	animal]	anim**à**l]

Decisively, Spanish V-final Os are real, and frequent enough in everyday speech. A list of 71 such forms appears in Whitley (1976: 318). A quick glance at the Spanish Academy dictionary (RAE: 1973) when writing this paper yielded *ambigú* 'cinema refreshments hall', *menú* 'menu', *sofá* 'sofa', *buró* '(small) writing desk', *tisú* 'tissue', *maná* 'manna', *corsé* 'corset', *chalé* 'plush rustic-looking dwelling house', *carné* 'ID card', *tabú* 'taboo', *cebú* 'zebu', *champú* 'shampoo', *ñandú* 'rhea', *caribú* 'caribou', *grisú* 'firedamp', *alhelí* 'wallflower', *carmesí* 'crimson', *potosí* (*valer un …*) 'to be worth a million', *organdí* 'organdy', *maravedí* 'maravedi (an old coin)', *gachí* 'bird/broad (slang)', *jabalí* 'boar', *borceguí* (a type of walking book), *colibrí* 'humming bird', *frenesí* 'frenzy'. Many of these words are in common use, and none of them is obviously unknown to the average Spanish speaker. There are more such words outside the dictionary, in colloquial speech, as well as proper nouns like *Belcebú*, *Mambrú*, *Perú*, *Alí*, *Alcalá*, *José*, etc. In addition, the gentilic suffix *-í* enables expansion *ad libitum*: *bengalí* 'Bengali', *magrebí* 'Maghribi', *marroquí* 'Moroccan', *israelí* 'Israeli', *iraní* 'Iranian', *ceutí* 'from Ceuta', *marbellí* 'from Marbella', etc. It has, however, proved extremely awkward to accommodate these forms in many existing accounts of Spanish stress, which are correspondingly flawed.[21] Crucially, our proposed stem parse

[21] These forms are deliberately left out of the discussion in Rosenthall (1994): 'the final stress in Type C words [V-final Os] is quite exceptional and is not discussed here' (1994: 144, n. 11). Dunlap affirms that 'with very few exceptions, these are proper names and/or loans, a fact that itself suggests these forms lie outside the regular grammatical domain' (1991: 87), then proposing that 'all V-final stems [sic] with final stress contain an unspecified final consonantal root node' (1991: 90). Harris (1983: 118) appeals to an equally ad hoc 'Strong Foot Rule' to provide these forms with the necessary word-final monopodal foot (for Harris 1995a see §4.1.2 below). The reason these and other approaches run into trouble is obviously their primary reliance on metrics, with fatal neglect of the morphology. Once morphology (i.e. the stem–desinence divide) is introduced in earnest, the problem disappears, as we can see. The anomaly of the forms in question thus lies in their lacking a desinence (a morphological property), not in the stress of their final vowel, which is totally regular, as this vowel is last in the stem.

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of the word-final vowel of these forms is independently justified by the survival of this vowel (stressless) in derivation, as illustrated in (14) with the (very productive) affective suffixes *-ito* (diminutive) and *-azo* (augmentative):[22]

(14) a.

base	*diminutive*	
mamá	mama-(c)ìta	'mummy'
papá	papa-(c)ìto	'daddy'
champú	champu-(c)ìto	'shampoo'
chalé	chale-cìto	'chalet'

b.

base	*augmentative*	
champú	champu-àzo	'shampoo'
zulú	zulu-àzo	'Zulu'
bisturí	bisturi-àzo	'scalpel'
café	cafe-àzo	'coffee'

It can be noticed that the full base is preserved in the derivative. This is not the case, however, when the word-final vowel embodies a desinence:

(15)

base	*derivative*	
ram]a	ram-ita	'branch'
lap]a	lap-ita	'limpet'
sap]o	sap-ito	'toad'
pein]e	pein-azo	'comb'
trib]u	trib-al	'tribe'

4.1.2 *Alternatives.* Oltra-Massuet & Arregi (2005) formalise the unmarked O_s pattern as a right-headed unbounded foot in the stem. The full structure is as in (16) (2005: 65):[23]

(16)

line 1		**x**		
line 0	x	**x**	)	x
string	pom**à**d		∅	a
	si c**ò**s		∅	is
	mu j**è**r		∅	
	me n**ú**		∅	
syntax	[	√	[***n***	Th]]

[22] The *-c-* augment in the diminutive is dialect/idiolect-bound and can be disregarded here. Derivation proper is less common with these words. Crucially, however, where it exists, it systematically respects the final vowel: cf. e.g. nonce *tabúico* or *tabual* (from *tabú*), in contrast with existing *tribal* or nonce *tríbico* (from *tribu*), without the *-u*.

[23] The generalisation embodied in (16) appears in Hooper & Terrell (1976) and Roca (1988), as Oltra-Massuet & Arregi (2005: 64) acknowledge. Roca (1988) in fact anticipates the metrical structure in (16), in a Halle & Vergnaud context.

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The algorithm responsible is as follows (cf. Oltra-Massuet & Arregi 2005: 64, 68):

(17) a. Project a line 0 mark for each syllable nucleus.
b. Insert a right parenthesis to the right of the highest non-verbal functional node on line 0.[24]
c. Project the rightmost mark of each line 0 foot one line 1.
d. Insert a right parenthesis to the right of the rightmost mark one line 1.
e. Project the rightmost mark of each line 1 foot onto line 2.

Terminology aside, the main divergence between Oltra-Massuet & Arregi's alternative and the present proposal concerns level 0 Edge Marking and Head Location settings, as follows:

(18)

	a. Oltra-Massuet & Arregi (2005)	b. this proposal
Edge	RRR(S)	LLR(S)
Head	R	L

In addition, ICC stays switched off in Oltra-Massuet & Arregi's model, but is active in ours, where it becomes crucial in the derivation of all non-unmarked patterns, as we will see below. On the other hand, line 1 settings are identical in the two models (Edge Marking: R and Head Location: R). With regard to the remainder of the machinery, Oltra-Massuet & Arregi's does not include conflation, which is presumably deemed unnecessary because of the inactivity of ICC (see note 34 below, however). In addition, their formulation of the avoidance constraint differs from ours, as will be seen below.

The main contrast therefore concerns the structure of the foot, which is left-headed binary in our approach, but right-headed unbounded in Oltra-Massuet & Arregi's. It will be shown below that a right-headed unbounded line 0 constituent does not fit in well with the other stress patterns of Spanish, which are obviously just as real, if more marked. Indeed, evidence to be brought out below suggests that the Latin binary trochee persists in Spanish, albeit with reduced lexical scope. This obviously entails that Oltra-Massuet & Arregi's unbounded iamb is not viable across the board, and consequently that our alternative is to be preferred.

Harris (1995a: 875) also generates Spanish unmarked stress by means of the Edge Marking setting RRR, although in a word domain, as in Latin. The setting RRR(W) acts in conjunction with ICC: L and Head Location: L, all followed by conflation, to derive precisely one binary trochee. The result is as follows:

[24] Generalised thus from the original: 'insert a right parenthesis to the right of the highest n or a on line 0' (2005: 64).

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(19)
```
        x
    x x(x x)
mexicano    'Mexican'
```

This analysis faces the obvious empirical problem of incorrectly predicting both C-final and V-final Os to be PO (‡*anìmal* and ‡*mènu* respectively). Harris (1995a) meets the challenge with a two-pronged strategy. First, for C-final Os, an abstract underlying -V is postulated. Such an abstract /-V/ is claimed to be justified by its emergence in the plural (*animal* → *animales* 'animal'), as well as on the basis of symmetry with (supposedly canonical) desinenced words (Harris 1995a: 882). The solution clearly works formally, since in effect it turns C-final O's into V-final PO's:

(20)
```
      x
  x x (x x)
animalV    'animal'
```

However, the double justification offered for what would otherwise be an ad hoc analysis is questionable. First, for the plural, epenthesis is favoured over deletion in Harris (1992), precisely the converse of Harris's (1995a) abstract underlying singular /-V/.[25] Second, the claim that desinenced words are canonical is correct morphologically, but not necessarily so metrically. For instance, desinenced *cántar*]*o* 'pitcher' is canonical morphologically (it contains a desinence), but not metrically (it carries marked PO_s stress). On the other hand, *menú* is marked morphologically (it has no desinence), but unmarked metrically (it carries unmarked O_s stress), at least in our analysis, appropriately justified. Third, while symmetry is without doubt an aesthetically pleasing bonus to an analysis, it clearly does not have the status of an empirical argument. Note that, even setting these problems aside, the abstractness inherent in Harris's /-V/ is simply eliminated in our approach.

With regard to V-final O's, Harris (1995a: 883) deems them 'marginal', 'in that they are few in number and are not solidly integrated into native patterns', and concludes: 'I cannot devote more space to these forms' (1995a: 884). This cursory dismissal is squarely at loggerheads with the sturdy reality of such forms, undoubtedly a minority, but by no means a rarity, as we have already seen. Nor are they excluded from the basic, everyday vocabulary (cf. *carné* 'ID card', *menú* 'menu', *dominó* 'game of dominoes', *café* 'coffee, cafe', *champú* 'shampoo', *chalé* 'rustic-style house', *gachí* 'bird, broad', *sofá* 'sofa', *aquí* 'here', etc.),

[25] Harris (1995a) glosses over the mechanics of Spanish plural formation, a separate and complex issue which is as yet unsettled. Discussion can be found in Roca (1996), Harris (1999), Moyna & Wiltshire (2000) and Colina (2003). In Harris (1999), the specifically plural *-e-* is a lexical allomorph of the singular ∅.

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indeed from the earliest (and often persistent) vocabulary (*mamá* 'mummy', *papá* 'daddy', *pipí* 'wee-wee', *bebé* 'baby', *nené* 'child', *popó* 'car', etc.).

Harris (1995a: 879) does provide an analysis for V-final O verbs, allotting them to a 'special' class ']$_R$', which is assigned a 'special' Edge Marking setting LLR. In the absence of explicit discussion of their non-verb counterparts, it seems reasonable to extrapolate a similar analysis for them. This special treatment is simply unnecessary in our approach, which accounts on a principled basis for V-final O's, using the same formal machinery as for the remainder of the forms with unmarked stress.

4.2 The marked PO$_s$ pattern

4.2.1 *Analysis*. In Table II above, the stress patterns of *anónimo* and *almíbar* were classified as marked. Their common denominator, and their distinctive trait *vis-à-vis* their unmarked counterparts *avàro* and *animàl*, is the location of stress one slot further left: PO$_s$, rather than O$_s$. We shall construe the pattern as involving a left-headed binary foot on the right edge of the stem. The corresponding Edge Marking setting is therefore RRR(S), i.e. 'insert a right boundary to the right of the rightmost element in the stem' (N.B. the domain for Edge Marking in the Spanish core). The desired binary trochee is next constructed through the operation of ICC, all as illustrated in (21):

(21)

Edge: RRR(S)	ICC: L	Head: L, etc.
		x
x x x**)** x	x **(**x x) x	x (**x** x) x
a nonim] o	a nonim] o	a n**ó**nim] o
a nalis] is	a nalis] is	a n**á**lis] is
al mibar]	al mibar]	al m**í**bar]
al mibar] es	al mibar] es	al m**í**bar] es

As can be seen, the proposed formalism accounts in one go for the classes instantiated in *anónim*]*o*, *anális*]*is*, *almíbar*] and also *almíbar*]*es*, the plural of *almíbar*, despite the presence of the extra syllable *-es*: Spanish plurals in the core set systematically keep the stress locus of their singulars. This fact is accounted for in our approach in the simplest possible way, without additional machinery.

The Latin RLR(W) setting would work in Spanish for V-final *anónimo*, but not C-final forms like *almíbar*, which would incorrectly also receive PPO stress, *viz.* ‡*álmibar*, in the style of *régimen*, a pattern discussed in §4.3.1 below:

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(22)

Edge: RLR(W)	ICC: L	Head: L, etc.
		x
x x x**)** x	x **(**x x) x	x (**x** x) x
anonimo#	anonimo#	an**ó**nimo#
almibar#	almibar#	‡**á**lmibar#
regimen#	regimen#	r**é**gimen#

Formally, our approach thus reduces the difference between the unmarked and marked Spanish stress patterns to the settings of the first two Edge Marking elements: unmarked L_1L_2 *vs.* marked R_1R_2, the latter being marked in the literal sense of being in the lexicon, to block default insertion of their unmarked counterparts. Notice that the opposition between these two sets of settings is highly natural (simply converse values) and formally minimal (a toggle-like switch). It seems reasonable to evaluate this minimality positively at the level of descriptive adequacy. In §4.3 below we will see that our analysis also scores higher than rivals at the more basic level of observational adequacy.

4.2.2 *Alternatives.* Inclusion of lexical information of some kind in the Spanish marked set is of course inevitable, given the arbitrary lexical incidence of the pattern. In Latin, the choice between PO_w and PPO_w stress was determined phonologically, on the basis of the weight of the penult. In Spanish, however, the synchronic distribution of O_s *vs.* PO_s stress is largely arbitrary, the historic loss of the vowel-length opposition having seriously weakened the effect of quantity-sensitivity, perhaps eliminating it altogether (see §6.1 below).

Oltra-Massuet & Arregi (2005: 69) mark PO_s forms with a lexical right bracket after the vowel that bears the stress in the surface, e.g. *ano*)*nimo*. This bracket activates a general clash-avoidance constraint that prevents insertion of a stem-final right bracket by their Edge Marking: RRR(S):

(23) *Avoidance constraint*
*x) x) (in non-verbal environments)
N.B. x) x] ↛ x) x**)**]

As a consequence, the vowel that precedes the lexical bracket ends up attracting the stress, given the iambic structure of Oltra-Massuet & Arregi's foot. The representation in (24) shows the outcome of the procedure (cf. Oltra-Massuet & Arregi 2005: 70):

(24)

line 1		**x**		
line 0	x	**x**) x		x
string	a	n**ó**nim	∅	o
	a	n**á**lis	∅	is
		alm**í**bar	∅	
syntax	[	√	[***n***	Th]]

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At first sight, Oltra-Massuet & Arregi's strategy seems unproblematic; indeed, it appears to be endowed with a considerable degree of economy and elegance. However, deeper probing uncovers two serious disadvantages.

The first disadvantage relates to the structure of Oltra-Massuet & Arregi's general foot: i.e. unbounded iambic.[26] There is, in fact, non-negligible evidence that the basic Spanish foot is the binary trochee, as in Latin. In particular, it is the binary trochee that emerges from truncation, hypocoristic and otherwise: cf. e.g. *Mercèdes* > *Mèrce*, *Terèsa* > *Tère*, *Remèdios* > *Rème*, *Geràrdo* > *Gèrar*, *Fernàndo* > *Fèrna*(*n*), *Isabèl* > *Ìsa*, *Jósé* > *Jòse*; *colègio* > *còle* 'school', *micrófono* > *mìcro* 'microphone', *bolígrafo* > *bòli* 'ballpoint pen'; *proletàrio* > *prolèta* 'proletarian', *anarquìsta* > *anàrco* 'anarchist', *manifestación* > *manìfa* 'demonstration', *masoquìsta* > *masòca* 'masochist', *pegatìna* > *pegàta* 'sticker' (see discussion and analyses in Prieto 1992a, Lipski 1995, Colina 1996, Piñeros 2000a, b, Felíu 2001). The binary trochee also plays a role in Spanish secondary stress (e.g. (ˌ*para*)('*ti*) 'for you'), according to Harris (1991b), and in the selection of diminutive allomorphy (e.g. *sol* 'sun' → (ˌ*sole*)('*cito*), not *so*('*lito*)), according to Crowhurst (1992) and Prieto (1992b).

The second, related, disadvantage concerns the supermarked PPO_s pattern (*es*(*péci*)*men*, (*régi*)*men*, *hi*(*pérba*)*ton*, etc.), which in §4.3 below we will see necessitates a binary trochee. As a consequence, the adequacy of the unbounded iamb for the marked pattern needs to be questioned, on the reasonable assumption that we require the model to account for the full set of data, as is indeed our goal here. Notice that the presence of the Spanish binary trochee outside the unmarked set can plausibly be related to Latin: from this perspective, the connection between the two historical states of the language has simply not been severed.

In Harris (1995a: 980), roots and suffixes that occur with the PO_s marked pattern are associated with a lexical diacritic 'L' on their right morphological boundary: '$]_L$'. This diacritic is meant to define a stem domain for Edge Marking application that overrides the default word domain. The result is as in (25) (cf. Harris 1995a: 880 (31)):

(25)
	x			**x**	
	(**x** x)	x		x(**x**	x)
	[[m**é**rit]$_L$	o]	cf.	[[per**ì**t]	o]

Technically, the approach works; indeed, the output structure matches ours. However, the stem domain it introduces contradicts the prior statement in the same work (1995a: 869) that 'the domain of Spanish word

[26] It was pointed out in note 23 above that Oltra-Massuet & Arregi share the unbounded right-headed foot built in the stem with Roca (1988). In Roca (1988), the marked pattern is derived with additional lexical right extrametricality, also stem-bound: (*anó*)*n*<*i*>*m*]*o*, etc. This analysis obviates the need for Oltra-Massuet & Arregi's avoidance constraint (which adds to their inevitable lexical ')'), and thus apparently has a slight edge.

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stress is thus the "M(orphological) *word*" (with suffixes, without clitics)' [my emphasis]. Note also that the change in domain embodied in '$]_L$' is at odds with Harris's wholesale adherence to the Halle & Idsardi machinery, where, as we saw in §3 above, no explicit allowances are made for a domain smaller than the full eligible string. We are, of course, proposing to loosen up this aspect of the model, but there is no such overt suggestion in Harris (1995a). Moreover, the evidence we will examine in the next subsection strongly suggests that the Edge Marking word domain is reserved for *supermarked* stress, the metrical core being instead consistently associated with the stem domain. If so, the difference between the marked and the unmarked pattern cannot be a function of Edge Marking domain, and this aspect of Harris's analysis will not go through either.

4.3 Supermarked patterns

Stress in a handful of forms is underivable on the Edge Marking settings which we have assigned to the marked and unmarked sets. The sample in (26) is a well-nigh exhaustive standard list:

(26) *n*-final: régimen, espécimen, ínterin, ómicron, hipérbaton, asíndeton
r-final: Júpiter
m-final: máximum, mínimum
t-final: déficit

All PPO] forms are C-final, and lack a desinence,[27] and are thus distinct from both the marked and the unmarked sets. In particular, the unmarked stress pattern for *régimen* would be O] (‡*regimén*), and the marked pattern PO] (‡*regimen*). The true pattern *régimen* (still compatible with the three-syllable window) has the stress one syllable further left, the pattern we are referring to as 'supermarked'.

4.3.1 *Analysis*. The derivation of the supermarked stress in (26) is actually straightforward, simply requiring the Edge Marking setting RLR, irrelevantly at this point whether in a stem or a word domain, because of the lack of desinence. This is illustrated in (27) with *régimen*:

(27) Edge: RLR	ICC: L	Head: L, etc.
		x
x x**)** x	**(**x x) x	(**x** x) x
regimen]#	regimen]#	r**é**gimen]#

[27] Given C ≠ *s*. C = *s* would of course normally enjoy desinential status: cf. e.g. *análi*s]*is* (singular *and* plural), which is marked, not supermarked. The reader must beware that Spanish phonetics does not always match spelling. In particular, word-final *-m* tends to be pronounced [n], and *-t* to be omitted altogether, hence *máximu*[n] and *défici*<*t*>, for instance. Generally speaking, therefore, existing supermarked words end in either [n] or [r] (*défici*<*t*>, with no [t], obviously does not qualify for membership of the set), although nothing would in principle prevent at least [l] as an additional ending: the Spanish *bona fide* word-final consonants are [n r l s θ]. This fact seems to be inconsequential for the present matter, however.

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Note that, contrary to what is sometimes assumed in the literature, *régimen* is a common, everyday word in Spanish, on account of the meaning 'diet, regimen', alongside 'regime' (itself a frequent referent in former Franco's Spain). Ordinary Spanish speakers pronounce this word and the others in (26) as PPO with no difficulty or hesitation. Moreover, while the Latinate C-final PPOs exemplified in (26) are indeed in short supply, the supermarked set is nowadays freely augmented with Germanic (mainly English) words (place and personal names in particular) in the style of *Wàshington*, increasingly present in Spanish discourse as a linguistic upshot of world globalisation. A small sample is given in (28) (the set is actually open, for obvious reasons):

(28) Washington Manchester Nuremberg (Germ. *Nürnberg*)
Heidelberg Amsterdam Dusseldorf (Germ. *Düsseldorf*)
Rotterdam Robinson Liverpool

The formal status of such forms in Spanish has been the subject of controversy. Harris, for instance, has consistently expressed the view that, because they are foreign, they need not be accounted for in Spanish grammar: Spanish speakers would pronounce them as PPOs by simple mimicry. Cf. e.g.: 'unshifted stress in loan words tells us absolutely nothing about the rules internalised by borrowers; all we learn is that mimicry of foreign stress patterns is possible' (Harris 1988: 17–18; the issue and the data are ignored in Harris 1995a). I consider this position untenable. Instead, I shall argue that such forms are subject to the Spanish speaker's stress grammar, on several counts: (i) their metrical pattern fits squarely into such a grammar, as we will see; (ii) ordinary speakers have no access to (and no specific interest in) the source languages; (iii) Spanish speakers actually shift source stresses where necessary to accommodate them into the Spanish supermarked pattern: e.g. Dutch *Amsterdàm*, *Rotterdàm* become Spanish *Àmsterdam*, *Ròtterdam*, English *Aberdèen*, *McNamàra* become Spanish *Àberdeen*, *McNàmara* (*McNàmara* is of course only marked if we consider *-a* a desinence) and so on; (iv) mimicry systematically fails when the output is incompatible with the Spanish stress grammar, as will be shown in §5.2 below.

It follows from all this that the supermarked pattern unquestionably requires inclusion in the explanandum. However, words like these are awkward to accommodate in most existing analyses, which correspondingly tend to belittle them through some strategy or other, including silence, the case in Harris (1995a), for instance.[28] By contrast, in our

[28] Dunlap (1991: 92) concedes that 'there is a handful of exceptions to the moraic analysis of Spanish stress [i.e. Dunlap's]', but hastens to add that 'all of these are part of the learned vocabulary, and thus on the periphery of the grammar'. The number of forms with this particular stress pattern in the native (or semi-native) Spanish lexicon is indeed reduced. However, the extension of the pattern to incoming Germanic forms, illustrated in (28), effectively makes the set open-ended. Obviously, the pattern creates insurmountable problems for Dunlap's model of Spanish stress, involving a quantity-sensitive moraic trochee with possible lexical extrametricality: this model maximally yields **re(gìme)n*, never *(régi)men*. The

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approach the supermarked stress pattern can be formalised unproblematically, in a manner that we will see integrates well in the overall model.

4.3.2 *Plurals*. Things get more involved when the plurals of supermarked singulars are considered.

Spanish native plural formation involves addition of *-es* to C-final singulars when C is part of the stem:

(29)	*singular*	*plural*	
	color	color]es	'colour'
	cenagal	cenagal]es	'swamp'
	orden	órden]es	'order'
	lápiz	lápic]es	'pencil'
	sociedad	sociedad]es	'society'

The outcome of simply adding *-es* to a singular with supermarked stress is obviously incompatible with the three-syllable window:

(30)		
	*régimen]es	*ómicron]es
	*espécimen]es	*hipérbaton]es
	*ínterin]es	*Júpiter]es

As shown in (30), PPPO stress results. This type of outcome is normally repaired by rightward stress shift, as illustrated in (31):

(31)		*singular*	*plural*	
	a.	régimen	regímenes	PPO
		espécimen	especímenes	PPO
	b.	ómicron	omicrònes	PPO
		hipérbaton	hiperbatònes	PO

A number of such plurals are typically listed in (at least partly) prescriptive grammars like RAE (1973). Also prescriptive – and bizarre – is the additional pair *carácter* ~ *caractères* 'character', unremarkable in the singular (marked, like *almíbar*, not supermarked), but with a prescriptive shifted plural *caractères* (unmarked O_s; cf. marked PO_s *almíbares*). In turn, and unexpectedly, supermarked *Júpiter* is not assigned a prescriptive plural at all, perhaps because the Latin etymon *Iuppiter* was suppletive throughout the rest of its declension (cf. genitive

problem is obviously compounded in 'foreign' forms like *Wàshington*, with in addition a heavy penult. An anonymous reader *de facto* suggests that in all these forms (the *régimen* and *Wàshington* sets) stress can be computed on syllables, rather than on moras. However, this simply recreates our distinction between supermarked and core stress, but without the collateral advantages of our analysis, which yields a remarkable fit of all the data (see the next section on plurals, for instance). In addition, the reader's proposal still does not account for the final stress of V-final words like *menú*.

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Iouis, etc.).[29] In particular, the Spanish stress-shifted plurals, like the supermarked singulars they correspond to, were taken directly from (written) Latin, and Spanish simply does not allow plural suppletion (in the style of English *person* ~ *people*, for instance), even though it does allow gender suppletion (cf. e.g. *yerno* 'son-in-law' *vs*. *nuera* 'daughter-in-law').

Whatever the plural output, it obviously needs to be consistent with the general restrictions built into the speakers' stress grammar (notably those responsible for the three-syllable window), which is by definition unable to generate ungrammatical outputs. In addition, it is reasonable to wish to derive the stress of each singular ~ plural pair through a single procedure, without appeal to metrical suppletion. We will now see that both these challenges are satisfactorily met in all cases.

We deal first with the pair *carácter* ~ *caractères*, with marked (not supermarked) stress in the singular and with an unexpected shift to unmarked stress in the prescriptive plural. These two outputs are derived on the marked Edge Marking settings RRR, crucially in a word domain: this is the reason for the inclusion of the item in the supermarked set. This choice of domain is unsurprising, given the fact that the prescriptive stress pattern in question was literally transferred from Latin,[30] and the domain of Latin stress was indeed the word, as we saw in §3.2 above. On the given RRR(W) settings, the derivation of both members of the Spanish pair proceeds as follows:

(32)	Edge: RRR(W)	ICC: L	Head: L, etc.
a.			**x**
	x x x**)**	x**(**x x)	x(**x** x)
	caracter]	caracter]	car**á**cter]
b.			**x**
	x x x x**)**	**(**x x **(**x x)	x x (**x** x)
	caracter]es	caracter]es	caract**è**r]es

We can see that the shift is derived without appeal to suppletion, precisely as sought. Regularised *carácter* ~ *carácteres* is of course derived like *almíbar* ~ *almíbares* in (21) above.

In the remainder of the supermarked set we find two different types of plural stress shift, both seemingly motivated by the need to achieve compatibility with the three-syllable window:

[29] The Spanish gap cannot of course be attributed to the proper noun nature of *Júpiter*, since proper nouns are readily pluralised: *Antonio*(*s*), *María*(*s*), *Juan*(*es*), *Saturno*(*s*), etc.

[30] Corominas (1961) reports that the plural *caractères* 'se ha acentuado modernamente de acuerdo con el plural latino *charactēres*' ['has been stressed in modern times in agreement with the Latin plural *charactēres*'; my translation].

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(33)

	singular	*plural*	
a.	régimen	regímenes	PPO → PPO
b.	ómicron	omicrònes	PPO → PO

We have already postulated RLR settings for *régimen*. The same settings derive the plural *regímenes*, on the simple assumption that this and similar forms carry the marked Edge Marking domain setting 'word', rather than the unmarked 'stem'. Once again, the change of domain is readily understandable historically, for the reasons adduced above for *carácter*. Our derivation of the *régimen* pair is thus as follows:[31]

(34)

	Edge: RLR(W)	ICC: L	Head: L, etc.
a.			**x**
	x x**)** x	**(**x x) x	(**x** x) x
	regimen]	regimen]	r**é**gimen]
b.			**x**
	x x x**)** x	x**(**x x) x	x(**x** x) x
	regimen]es	regimen]es	reg**í**men]es

The second type of singular ~ plural pattern is instantiated in *ómicron* ~ *omicròne*s (*omícrones* in Saltarelli 1997 is apparently an unwarranted extrapolation from *regímenes*). This pattern is unexpected, since it seemingly involves stress movement one position too many to the right: *omícrones* would comply just as well with the three-syllable window. Note that this type of shift is liable to emerge spontaneously for other forms as well: *Jupitères*, *especimènes*, *regimènes*, etc. may occur sporadically in spontaneous discourse.[32] In this context, this type of shift needs to be considered to be the default, and thus unmarked.

[31] Similar, but less familiar, cases like *espécimen* ~ *especímenes* are derived in the same way on the present account. Note that *régimen* played a central role in the dismissal of Roca (1988) in Roca (1990), but goes unmentioned in Harris (1995a) and is not satisfactorily dealt with in Oltra-Massuet & Arregi (2005), as we will see in the next subsection.

[32] Unsurprisingly, there is a measure of speaker insecurity with prescriptive forms (RAE 1973: 182–183 favours e.g. *máximos*, *mínimos* over *máximums*, *mínimums* for *máximum*, *mínimum*; *hipérbatos* over *hipérbatons* for *hipérbaton*; etc.). As expected, the tendency is towards regularisation when the route is clear. For instance, we have seen that *carácter* can colloquially pluralise *carácteres*, along the lines of *almíbar* ~ *almíbares*. Likewise, *régimen*, *espécimen* or *Júpiter* may turn up as PO (*regimènes*, *especimènes*, *Jupitères*), and so on. We are disregarding here offguard, on-the-spot pluralisations like *régimens* (with the 'wrong' plural allomorph) or *régimenes* (with conservation of the singular stress locus, leading to three-syllable window contravention) for *régimen*; *Júpiters*, *Jupíteres* (analogical with the relatively common *regímenes*), *Júpiter* (with no change), *Júpiteres* (*contra* the three-syllable window) for *Júpiter*; and so on. Such realisations are typically unstable and short-lived, with neither intra- nor inter-speaker consistency, thus suggesting on-line performance trial outputs, rather than finished I-language products. From this perspective, the request by an anonymous reader that this matter be probed here is

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The *ómicron* pair is derived with the Edge Marking supermarked settings RLR (as for *régimen*), but crucially in a stem (not a word) domain. The Edge Marking domain setting 'stem' is of course associated with core stress (both unmarked and marked), and thus is unmarked *vis-à-vis* its 'word' alternative. This is illustrated in (35):

(35)	Edge: RLR(S)	ICC: L	Head: L, etc.
a.			**x**
	x x**)** x	**(**x x) x	(**x** x) x
	omicron]	omicron]	**ó**micron]
b.			**x**
	x x**)** x x	**(**x x)**(**x x	x x (**x** x
	omicron]es	omicron]es	omicr**ò**n]es

The reason for this type of plural being the default is now apparent: the pattern falls out from the unmarked Edge Marking domain setting 'stem', its marked counterpart 'word' generating instead the *regímenes* pattern. Thus, in the singular *ómicron*, the derivation of *régimen* is simply replicated. In the plural, however, the action of ICC on the two rightmost vacant stress bearers inevitably pulls stress towards the right edge,[33] in effect to the stem-final x, the unmarked stress position.

For clarity, we round off this subsection with a full listing of the Edge Marking settings relevant to supermarked forms. Note that a form will be labelled SM when the sum of the markedness values of its two component elements (the Edge Marking domain and the Edge Marking parameters) is greater than 1, for U = 0, M = 1, SM = 2 (thus, M + M = 2; U + SM = 2; M + SM = 3):

(36) *Edge Marking settings for supermarked forms*

singular	*plural*	*domain*		*components*		*score*
carácter	caractères	word	M	RRR	M	2
régimen	regímenes	word		RLR		3
ómicron	omicrònes	stem	U	RLR	SM	2
Júpiter	?	?		RLR		2?

We can now understand why the supermarked patterns have been successfully grafted onto the system, irrespective of their possible pre-

unwarranted. Note, relevantly, that these phenomena are indeed typically overlooked in the literature.

[33] Notice that domain setting is constraint-specific: 'stem' only concerns Edge Marking, while ICC applies in the word domain throughout.

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scriptive origin. Simply, the corresponding grammars fill previously vacant cells in the factorial typology of the relevant Edge Marking parameter settings. We return to this crucial matter in §5.1 below.

4.3.3 *Alternatives.* We saw in §4.2.2 that the marked PO_s pattern of *anónimo* (and presumably *análisis*) is derived by Oltra-Massuet & Arregi (2005) through the conjunction of a strategically placed lexical bracket and an avoidance constraint *)x): this lexical bracket blocks insertion (through Edge Marking) of the stem rightmost bracket. Oltra-Massuet & Arregi (2005: 71) consider it a good result that 'ill-formed ***Áme**ric-a, ***á**nimal-∅ cannot be derived'. However, the avoidance constraint is also inoperative in *régimen* and similar supermarked forms, given the x)xx] input, and therefore ‡*regimén* will be derived:

(37)	*lexical*	*surface*
line 1		**x**
line 0	x**)**x x	x x **x)**
string	regimen ∅ ∅	‡regim**é**n ∅ ∅
syntax	[√ [***n*** Th]]	[√ [***n*** Th]]

Oltra-Massuet & Arregi (2005: 71–72, n. 43) therefore additionally subject the relevant words (our 'supermarked' set) to a rule that deletes their word-final grid mark, for which they credit Halle (1998) in connection with English. The rule indirectly activates the avoidance constraint, and the correct derivation ensues:

(38)	*lexical*	*x-deletion*	*line 1*
line 1			**x**
line 0	x**)**x x	x)x **.**	**x**) x .
string	regimen ∅ ∅	regimen ∅ ∅	r**é**gimen ∅ ∅
syntax	[√ [***n*** Th]]	[√ [***n*** Th]]	[√ [***n*** Th]]

However, this still does not account for the plural shift in *regímenes*, for which *two* lexical parentheses actually need to be postulated:

(39)	*lexical*	*x-deletion*	*line 1*
line 1			**x**
line 0	x**)**x**)** x x	x)x) x **.**	x)**x**) x .
string	regimen ∅ es	regimen ∅ es	reg**í**men ∅ es
syntax	[√ [***n*** Th]]	[√ [***n*** Th]]	[√ [***n*** Th]]

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Obviously, the additional lexical bracket interferes fatally with the derivation of the singular:[34]

(40)	*lexical*	*x-deletion*	*line 1*
line 1			**x**
line 0	x**)**x**)** x	x)x) **.**	x)**x**) .
string	regimen ∅ ∅	regimen ∅ ∅	‡regi**ı**men ∅ ∅
syntax	[√ [***n*** Th]]	[√ [***n*** Th]]	[√ [***n*** Th]]

At this point, Oltra-Massuet & Arregi (2005: 61) introduce their own rule, which they first utilise to account for the stress pattern of the present tense in verbs (we return to this in §6.4 below):

(41) x → . / x __)#

Application of this rule (despite the ')' separating the two x's in *régimen*) yields the desired output:

(42)	*lexical*	*x-deletion*
line 0	x)x) x	x)x) **.**
string	regimen ∅ ∅	regimen ∅ ∅
syntax	[√ [***n*** Th]]	[√ [***n*** Th]]

	pre-) *x-deletion*	*line 1*
line 1		**x**
line 0	x)**.**) .	**x**) . .
string	regimen ∅ ∅	r**é**gimen ∅ ∅
syntax	[√ [***n*** Th]]	[√ [***n*** Th]]

The complexity and arbitrariness of this machinery should be obvious (cf. the duplication, indeed accumulation, of x-deleting procedures, for instance). It is not clear what limits, if any, there would be to further piecemeal augmentation of the formal apparatus to match any possibly targeted metrical pattern. In direct contrast, our approach is strictly restricted by the parametric components made available by Halle & Idsardi's theory, minimally augmented with the domain parameter, in particular by the settings of Edge Marking and its domain: the actual Spanish stress patterns, including supermarked ones, are all derived from simple permutations of these settings.

As already noted, supermarked stress is not considered by Harris (1995a). Appeal to the $]_L$ diacritic of marked forms would yield a PO

[34] It also gives rise to an additional (initial) foot in the plural *re)gi)menes*, awkwardly in the absence of Conflation from Oltra-Massuet & Arregi's procedure. Oltra-Massuet & Arregi do not address the issue.

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contour also falling short of the PPO target, e.g. *re*(*gimen*)]$_L$, as illustrated in (43):

(43)

x x x)	x(x x)	**x**	
		x(**x** x)	
[regimen]$_L$ →	[regimen]$_L$ →	‡[reg**ì**men]$_L$	

The inevitable conclusion is that the supermarked class falls outside the scope of Harris's (1995a) model. However, the reality of this class in the language and, more relevantly, in the stress grammar of Spanish speakers is incontrovertible, and therefore this model must also be deemed wanting at the level of observational adequacy.

5 Gaps

We have now completed the analysis of *all* the patterns of Spanish non-verb stress. Most relevant parameters remain set as in Latin: only Edge Marking$_1$, Edge Marking$_2$ (= respectively the first and second components of Edge Marking) and Edge Marking$_d$ (= Edge Marking domain) underwent obvious changes. Three of the permutations of Edge Marking$_1$ and Edge Marking$_2$, acting in conjunction with the two domains available, give rise to all the stress patterns attested in Spanish.

Three tasks remain. First, we need to explain why the *full* factorial set of Edge Marking$_1$/Edge Marking$_2$ and Edge Marking$_d$ settings is not made use of: three of the eight permutations are missing from the grammar. Second, we need to explain how exactly the three-syllable window carries the day over mimicry. Third, we need to justify why only Edge Marking$_1$ and Edge Marking$_2$ (not Edge Marking$_3$, the third component of Edge Marking) have been reset from Latin. These three tasks will now be carried out.

5.1 Missing permutations

The following table displays the three existing gaps in the eight logical permutations of the three *relevant* Edge Marking parameters (Edge Marking$_1$, Edge Marking$_2$ and Edge Marking$_d$):

(44)

	Stem	*Word*
L_1L_2	unmarked set (*avàro*)	—
R_1R_2	marked set (*almíbar*)	*carácter* ~ *caractères*
R_1L_2	*ómicron* ~ *omicrònes*	*régimen* ~ *regímenes*
L_1R_2	—	—

We will now see that none of the three gaps is accidental.

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L_1R_2(S) settings inevitably lead to a stressed desinence, contradicting the exceptionless fact that Spanish desinences do not carry stress. Note that the situation makes sense historically: Spanish desinences correspond to the Latin word-final syllable, which was systematically extrametrical, and such extrametricality (contradicted by L_1R_2 settings on the stem) simply persisted in Spanish.[35] This is illustrated in (45):

(45) Edge: $L_1R_2R_3$(S)
x x (x
avar]o (= *avaró)

We capture the absence of L_1R_2 Edge Marking settings in Spanish with the avoidance constraint in (46):[36]

(46) *(x#, iff x corresponds to a desinence

The similarity with the Latin avoidance constraint in (6.vii) above, repeated in (47), is noteworthy:

(47) *x (x# (= (6.vii))

The Latin constraint in effect blocks accenting of word-final heavy syllables, and its Spanish counterpart blocks accenting of desinences (which are also word-final). The change has thus only affected the context, x __ in Latin *vs.* x = desinence in Spanish: the first x of Latin is not needed in Spanish, because Spanish V-final non-clitic monosyllables (*té* 'tea', *fé* 'faith', *do* 'C (musical note)', *pe* 'p', etc.) lack a desinence, and are therefore fully metrical. Compare the nonce augmentative *do-azo* 'big C', not **d-azo*, for instance, with the clitic *l-o* ~ *l-a* 'him ~ her', which the gender-induced alternation shows includes a desinence (cf. Harris 1995b).

The absence of L_1R_2(S) from the Spanish stress system is, therefore, principled. As shown next, the output of the same settings, L_1R_2 in a word domain is simply vacuous:

(48) Edge: $L_1R_2R_3$(W)
x x **x(**
régimen

[35] Significantly, word-final vowels in words of non-Latin origin do not necessarily parse as a desinence, as we have seen (cf. *menú, mamá*, etc.). Similarly in *Tào* and *Mào*: cf. *taoísmo* and *maoísmo*, respectively, with the *-o* retained in the derivatives. All this confirms that the relevant criterion for Spanish extrametricality is being a desinence, not just a word-final vowel.

[36] An anonymous reader points out that this constraint is ad hoc. This is indeed so, as it stems from the very nature of avoidance constraints, set up precisely to stop unwanted output. This is therefore not a criticism of the present analysis, but rather of the Halle & Idsardi theory. This theory, however, is well supported, as we are seeing here and is further attested in the relevant literature.

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The sterility of the operation obviously makes the settings redundant, and the permutation is accordingly missing from the grammar.

This third and final gap concerns L_1L_2 settings in a word domain. These settings also lead to violations of the avoidance constraint in (46). For instance, on these settings *avàro* will come out as **avaró*, in defiance of (46), and the true pair *animàl* ~ *animàles* as *animàl* ~ **animalés*, the plural pattern also contravening the constraint, as illustrated in (49):

(49) Edge: $L_1R_2R_3$(W)

*		*	
x	**x**		**x**
x x **(x**	x x **(x**	x x x **(x**	
avar]**ó**	anim**à**l	animal]**é**s	

This third gap, therefore, also directly falls out from the machinery.

For convenience, (44) is reproduced in (50), with the gaps filled with the justifications given above:

(50)

	Stem	*Word*
L_1L_2	unmarked set (*avàro*)	(46): e.g. **animal*[*és*
R_1R_2	marked set (*almíbar*)	*carácter* ~ *caractères*
R_1L_2	*ómicron* ~ *omicrònes*	*régimen* ~ *regímenes*
L_1R_2	(46): e.g. **avar*[*ó*	vacuous: #(

Briefly taking stock at this point, the full set of existing Spanish stress patterns is defined by the permutations of the first two Edge Marking components, in a stem or a word domain. The results of these permutations are kept in check by both universal formal restrictions and the Spanish avoidance constraint in (46), which prohibits stressed desinences.

5.2 The three-syllable window

Crucially, the formal apparatus we are proposing does not let through just any input, the alleged role of mimicry being accordingly invalidated. In particular, the three-syllable window is respected systematically.

Consider foreign forms like *Kalevala* (the Finnish national epic), *Bratislava* (the capital of Slovakia), *Scheveningen* (a Dutch seaside resort), *Canterbury* (the Anglican archiepiscopal see) and so on. These forms have initial stress in the source languages, i.e. PPPO when computed from the right:

(51)

a.	b.	c.	d.
x	x	x	x
x x x x	x x x x	x x x x	x x x x
Kalevala	Bratislava	Scheveningen	Canterbury

If Spanish speakers simply mimicked foreign stress patterns, these forms would readily come out as PPPO in Spanish speech. Robust native

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intuition and observation strongly indicate that this is not so. Thus, *Kalevala* and *Bratislava* spontaneously come out as PO: *Kalevàla*, *Bratislàva*. This is of course the unmarked Spanish pattern with desinenced forms, as we must assume these to be: cf. for instance nonce *kalevaliense*, *bratislaveño*, without the base stem-final *-a*, which consequently needs analysing as desinence. For *Scheveningen*, in an informal experiment referred to in Roca (1997b: 243, n. 6), the subjects (a handful of Spanish speakers) produced PO stress in two conditions: reading aloud and mimicking the (presumably Dutch-speaking) experimenter. *Cantèrbury* can be heard in the media and elicited more or less at will.[37]

Evidence in the same direction is abundant in L2 acquisition: Spanish speakers notoriously move English stress rightwards in words like *secretary*, *testimony*, *acrimony*, *category*, *allegory*, *territory*, *alimony*, *mercenary*, *parsimony*, *catamaran*, etc., to bring it into line with the three-syllable window. Very revealing also are the outcomes of gratuitous stress retractions in the style of *mendìgo* 'beggar' > *méndigo*, the phenomenon well known as *manía esdrujulista* 'proparoxytone mania'.[38] In particular, the change is systematically from O_s to PO_s, *never* to PPO_s, as shown in (52):

(52) a. *Historical changes consummated in the standard language*

original O_s	*retracted* PO_s	*non-existent* PPO_s	
parasìto	parásito	párasito	'parasite'
poliglòta	políglota	póliglota	'polyglot'
saxofòno	saxófono	sáxofono	'saxophone'
torticòlis	tortícolis	tórticolis	'stiff neck'
isobàra	isóbara	ísobara	'isobar'
pelicàno	pelícano	pélicano	'pelican'

b. *Contemporary stress vacillations*

'correct' O_s	*retracted* PO_s	*non-existent* PPO_s	
electrolìto	electrólito	eléctrolito	'electrolyte'
endocrìno	endócrino	éndocrino	'endocrine'
expedìto	expédito	éxpedito	'expedite'
kilogràmo	kilógramo	kílogramo	'kilogram'
mililìtro	milílitro	mílilitro	'millilitre'
monocròmo	monócromo	mónocromo	'monochrome'

All the non-existent forms can be observed to violate the three-syllable window.

We will now see that the three-syllable window indeed falls out from the formal system being proposed. (53) displays the full set of possible

[37] Controlled experimentation on this or any other empirical points raised is obviously feasible, although beyond the scope of the present paper. The need for experiments is, however, questionable when ample evidence can be unproblematically gleaned from nature.

[38] See Alonso (1930) for a classic study, and Gómez Torrego (1989) for more recent, practically oriented discussion. The motivation for the change is, plausibly, to *mark* the word (and thus the speaker, its user) as learned.

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derivations for *Kalevala*, on the assumption of a Finnish-like word-initial input lexical accent, encoded here as a lexical left bracket in keeping with Halle & Idsardi (1995)'s machinery:

(53)				
a.		Edge: LLR(S)	ICC: L	Head: L, etc.
				x
	(x x x x	(x x**(**x x	(x x(x x	x x(**x** x
	Kalevala	Kaleval]a	Kaleval]a	Kalev**à**l]a
b.		Edge: RRR(S)	ICC: L	Head: L, etc.
				x
	(x x x x	(x x x**)** x	(x**(**x x) x	x(**x** x) x
	Kalevala	Kaleval]a	Kaleval]a	Kal**é**val]a
c.		Edge: RLR(S)	ICC: L	Head: L, etc.
				x
	(x x x x	(x x**)**x x	(x x)**(**x x	x x(**x** x
	Kalevala	Kaleval]a	Kaleval]a	Kalev**à**l]a
d.		Edge: LRR(S) *blocked by avoidance constraint*	ICC: L	Head: L, etc.
				x
	(x x x x	(x x x x	(x x**(**x x	x x(**x** x
	Kalevala	Kaleval]a	Kaleval]a	Kalev**à**l]a
e.		Edge: LLR(W) *blocked by avoidance constraint*	ICC: L	Head: L, etc.
				x
	(x x x x	(x x x x	(x x**(**x x	x x(**x** x
	Kalevala	Kaleval]a	Kaleval]a	Kalev**à**l]a
f.		Edge: RRR(W)	ICC: L	Head: L, etc.
				x
	(x x x x	(x x x x**)**	(x x**(**x x)	x x(**x** x)
	Kalevala	Kaleval]a	Kaleval]a	Kalev**à**l]a
g.		Edge: RLR(W)	ICC: L	Head: L, etc.
				x
	(x x x x	(x x x**)** x	(x**(**x x) x	x(**x** x) x
	Kalevala	Kaleval]a	Kaleval]a	Kal**é**val]a
h.		Edge: LRR(W) *blocked universally*	ICC: L	Head: L, etc.
				x
	(x x x x	(x x x x	(x x**(**x x	x x(**x** x
	Kalevala	Kaleval]a	Kaleval]a	Kalev**à**l]a

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As shown, the PPPO pattern is prevented from emerging under *any* of the settings, only PO (*Kalevàla*) and (*Kalévala*) being generated. These results are thus similar to the ones for *omicrònes* and *regímenes* above.

In Oltra-Massuet & Arregi (2005: 71), the three-syllable window follows from the fact that their avoidance constraint against bracket clash is inoperative when the two brackets are not adjacent: hypothetical underlying *A*)*meric-a* would thus become surface *A*)*meri*)*c-a* by the normal procedure, with the three-syllable window complied with. However, as Oltra-Massuet & Arregi (2005: 71, n. 43) themselves admit, this procedure does not work with the supermarked set, for which, as we saw above, they need additional (and ad hoc) machinery, in contrast with our approach, which is successful across the board. Moreover, Oltra-Massuet & Arregi's liberal use of lexical brackets and x-deletion (cf. §4.3.3 above) may actually have the effect of by-passing the three-syllable window. Thus a word like *Kalevalan* (identical with *Kalevala* in all but the final *n*, which signals the absence of a desinence), could have been lexically marked *Ka*)*leva*)*lan*. Application of the two x-deletion rules relevant to *régimen* would yield *Ka*)*levalan*, with PPPO stress (**Kàlevalan*), at least if we assume that the lexical bracket on *va*) deletes with its corresponding x (cf. the derivation of *régimen* in (42) above): x)xx)x → x)xx). → x)x.. . Note that, even if it didn't, nothing in principle seems to prevent the addition of a further x-deletion rule, in the context x) __ , hence x)x).. → x).).. → x)..., giving **Kàlevalan*.

5.3 The robustness of the Edge Marking$_3$ setting

The next, and final, question is why **Kàlevala* cannot be achieved through the simple device of Edge Marking$_3$ resetting from R to L, in the way that we have reset Edge Marking$_1$ and Edge Marking$_2$ to derive marked and supermarked stress. The corresponding derivation, on metrically virgin input, is illustrated in (54):

(54)	Edge: LLL(W)	ICC: L	Head: L, etc.
			x
x x x x	**(**x x x x	(x x**(**x x	x x(**x** x
Kalevala	Kaleval]a	Kaleval]a	Kalev**à**l]a

The output aimed for has obviously not been achieved. The key is the persistence in Spanish of the Latin ICC, and of the line 1 R settings for both Edge Marking (in all three components) and Head Location. In particular, the setting 'Line 1 Head Location: R' adds a line 2 asterisk to the last foot of the word. This foot is the sole survivor after conflation, thus rendering irrelevant the L_3 setting we are testing. For clarity, the full derivation is spelled out in (55) (the first step actually makes the representation identical to that with a lexical initial left bracket in (53)):

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(55)

Edge: LLL(W) (line 0)	ICC: L	Head: L, etc. (line 0)
		x x
(x x x x	(x x**(**x x	(x x(x x
Kaleval]a	Kaleval]a	Kaleval]a
Edge: RRR (line 1)	Head: R (line 1)	conflation
	x	
x x**)**	x x)	**x**
(x x(x x	(x x(x x	x x(**x** x
Kaleval]a	Kaleval]a	Kalev**à**l]a

As shown, the resetting of Edge Marking$_3$ to L has no effect on the output, because of the line 1 settings. In turn, the historical endurance of these settings has been imposed by the data, which have been fully consistent with them all along: without positive evidence for change, the Latin R_3 setting simply lived on.[39]

6 Remaining issues

6.1 Quantity-sensitivity

The question of whether or not Spanish stress is quantity-sensitive has been much debated through the years. The majority view is that it is, although arguments to the contrary have also been advanced.[40]

The facts are as follows:

(56) a. Latin was quantity-sensitive (cf. SBP: L(X)); heavy penults were therefore stressed.
b. The Latin stress locus (usually) persists in Spanish.
c. Therefore, Latin heavy penults are also stressed in Spanish.

However:

(57) a. The Latin vowel-length distinction was lost in Spanish.
b. Therefore, quantity-sensitivity is orthogonal to Spanish PO stress in open syllables (N.B. with a long vowel in the Latin etymon).

[39] This answers an anonymous reader's query as to why simple word-initial stress is not possible in Spanish. Clearly, grammars are acquired from data, and the Spanish data do not warrant a grammar generating such a stress pattern. The same question could of course be asked of any aspect of any analysis proposed in the literature for any language, and the same answer would be given.

[40] For consistently opposing views, cf. Harris (1983 *et seq.*) and Roca (1988 *et seq.*). Lipski (1997) provides a useful review of facts, both synchronic and diachronic. Some recent negative psychological evidence is adduced in Bárkányi (2002) and Alvord (2003).

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The view favouring Spanish quantity-sensitivity builds on (56c). However, it overlooks a number of other equally important facts:

(58) a. Opacity of Spanish open syllables to quantity-sensitivity (e.g. *sábana* 'sheet' *vs*. *sabána* 'savannah').
b. Trubetzkoy's observation that languages that exhibit quantity-sensitivity for closed syllables have a length opposition in vowels, which is not the case in Spanish.
c. Survival of the PPO stress of the toponym *Frómista* for at least a millennium, in spite of its obvious violation of quantity-sensitivity (the common noun *lémister* 'Leominster-style cloth', now obsolete for material, not linguistic, reasons, used to keep it company).
d. Free violation of quantity-sensitivity in incoming foreign words, both names (e.g. *Mànchester*, *Àmsterdam*, *Dùsseldorf*, *Ròbinson*) and common nouns (e.g. *bàdminton*, *rèmington*, *òmbudsman*).

I believe that, when all these facts are taken into consideration, the arguments for the two opposing camps are at best even. To my knowledge, the strongest evidence available for quantity-sensitivity lies in the Dominican coda *s*-hypercorrection reported in Núñez Cedeño (1988). In a nutshell, coda *s* is dropped in Dominican Republic popular speech. As a reaction, in '*hablar fisno*' ('posh speech'; HF), coda *s*-insertion occurs anywhere in the word (regardless of etymology or spelling: cf. *fi*[s]*no* for etymological and standard *fino*), except where such insertion would lead to a violation of quantity-sensitivity: e.g. standard *sábana* 'sheet' → HF *sásbana, sábanas*, but, crucially, not **sábasna*. These facts are obviously suggestive of quantity-sensitivity. However, the complexity of the situation overall advises against a rash verdict, indeed the opinion expressed in Núñez Cedeño & Morales-Front (1999: 224).

Oltra-Massuet & Arregi's account of Spanish quantity-sensitivity (2005: 73–74) involves parenthesis deletion before a heavy syllable:

(59) $) \rightarrow \emptyset \; / \; \underset{\sigma_H}{\underset{|}{x}}$

Following from this, a hypothetical lexical parenthesis in e.g. *a*)*larma* 'alarm' will disappear, with the default stem-final parenthesis then inserted by default, *alar*)*ma*, leading to the desired PO stress: *alàr*)*ma*. Crucially, therefore, the operation of (59) allows default bracket insertion to eschew the avoidance constraint. This approach, however, requires explicit ordering of the two rules: ')-deletion' > ')-insertion'. In addition, it makes the wrong prediction for word-final closed syllables, which *can* be stressless unproblematically, as we have seen: *cóndor* 'condor' (cf. *candòr* 'candour'). Oltra-Massuet & Arregi suggest that word-final syllables do

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not count as heavy (for the stress rules), but fail to explain why this is so: they simply restate the fact that 'penultimate heavy syllables do not allow stress retraction, and final heavy syllables do' (2005: 74). Note finally that application of rule (59) would have to be suspended in *Frómista* (very idiosyncratically) and in all incoming foreign forms (quite regularly).

Formalisation of quantity-sensitivity in our approach would of course be straightforward, simply involving the retention of the Latin setting SBP: L(X).[41] The problem, both for our approach and for any other (including Oltra-Massuet & Arregi's), concerns facts, not formalism: do the facts reviewed warrant postulation of quantity-sensitivity in Spanish? Answering this question is not easy, as we have seen. Happily, the matter can be left unresolved without getting in the way of the remainder of the analysis, as our discussion has clearly shown.

6.2 'Glides'

Oltra-Massuet & Arregi (2005: 74) point out that stress retraction (in their terms) also cannot occur in forms like *convòy* [kom.'boi̯] or *carìcia* [ka.'ri.θi̯a], which contain the 'glide' [i̯] (similarly for its back counterpart [u̯]).

Oltra-Massuet & Arregi (2005: 75) account for this fact with a rule of 'Parenthesis deletion before a glide', along the lines of their previous 'Parenthesis deletion before a heavy syllable' (2005: 74), as follows:

(60) $) \rightarrow \emptyset \; / \; __ \; \overset{\overset{x}{|}}{VC_0G}$

As with heavy syllables, this rule prevents survival of a hypothetical lexical ')'. As a consequence, stem-final default ')'-insertion will take place, the avoidance constraint by then being inapplicable:

(61)

		x)x x			x x x			x x) x			**x** x x) x	
/ka)riθi̯a/		kariθi̯]a	→		kariθi̯]a	→		kariθi̯]a	→		kariθi̯]a	

From our perspective, the forms in question would simply lack lexical settings R_1R_2, since such settings would yield unwanted *(*cónvoy*)], *(*cári*)*ci*]*a*. However, blocking R_1R_2 settings would be formally awkward, as it would inevitably involve diacritics. This is in contrast with

[41] This solution is not available to Oltra-Massuet & Arregi, because of their line 0 Edge Marking and Head Location settings. This is interpretable as a negative result for their analysis, which is thus prevented from making full use of the general machinery provided in Halle & Idsardi's model, a fact that forces the introduction of the ad hoc rule in (59).

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Oltra-Massuet & Arregi's approach, which operates with exclusively phonological information, and consequently should be deemed superior.

I do not consider this line of argument worth pursuing, however. In particular, Oltra-Massuet & Arregi's analysis crucially relies on the formal construct 'glide'. This construct, a leftover from the *SPE* era, is of course traditional in generative phonology, and has indeed been utilised in most relevant analyses of Spanish, as well as in the equivalents for other languages. However, the case made in Roca (1997b) for the abandonment of such a construct, at least for Spanish, is robust, and is strongly supported by Harris & Kaisse's (1999) very detailed survey.[42] If glides are simple segmental vowels, as Roca (1997b) suggests, nothing will prevent their treatment as stress bearers, and the failure of the forms in question to undergo 'stress retraction' will be accounted for automatically, without further machinery (for an analysis see Roca, to appear). The problem sketched in Oltra-Massuet & Arregi (2005: 75, n. 49), for an approach where 'glides' project a line 0 mark and therefore can illegitimately end up stressed, obviously no longer arises, simply because there are no such glides: *carìcia* 'caress' could indeed have been *caricía* (cf. *policía* 'police'), although it happens not to be because it is lexically marked as 'retracting', in Oltra-Massuet & Arregi's terms, equivalent to our R_1R_2 settings. Obviously, our account does not require any additional machinery, and therefore it scores higher than Oltra-Massuet & Arregi's, which needs rule (60) above, unmotivated outside the specific facts.

6.3 Polymorphy

Spanish obviously admits polymorphemic words. Oltra-Massuet & Arregi (2005: 65) resolve possible conflict between morphemes *vis-à-vis* stress in the simplest possible manner: the *highest* functional node determines the place of the metrical bracket. 'Consider, for instance, *nacionalización* "nationalization", decomposable as *nac-ion-al-iz-a-cion*. This word contains two nominal heads (realized as *-ion* and *-cion*) and an adjectival head (realized as *-al-*). … Only the highest head, realized as *-cion*, projects a right parenthesis, which results in final stress.'

It should be obvious that our account can simply take over this stance: indeed, it needs to, since the highest node corresponds to the head of the word, and it is the head of the word that determines the behaviour of stress, among other aspects of its phonology. Moreover, such a head invariably occupies rightmost stem position. Given our unmarked setting of Edge Marking$_d$ as 'stem', it thus stands to reason that the word's stress should be governed by this morpheme, and indeed it is.

[42] Despite keeping the ambiguous label 'glide', Harris & Kaisse (1999: 123) explicitly construe such segments as vowels and treat them as such throughout the analysis: cf. e.g. 'all speakers have an additional contrast – not in vowel quantity or quality but rather in syllabicity – between the segments transcribed as peak [i u] and their non-peak counterparts [j w]'.

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An interesting additional issue is raised by the item *metro* 'metre', which triggers 'stress retraction' (in Oltra-Massuet & Arregi's terms) when suffixed, but obviously does not when it stands by itself as an independent word. Thus, *kilómetro* 'kilometre', but *mètro* 'metre': *metro* does not contain sufficient syllables to be PPO. The question is how this result is arrived at formally.

Oltra-Massuet & Arregi (2005: 70, n. 42) suggest that the form carries a lexical parenthesis before the *e*: *m*)*etro*. This parenthesis naturally triggers 'stress retraction' when the form functions as a suffix, along the lines discussed in §4.2.2 above. When *metro* stands on its own, however, the lexical parenthesis undergoes deletion by the action of 'a universal rule that deletes a (right) parenthesis if it does not group any grid marks'. The deletion of the lexical parenthesis allows the general parenthesis-insertion procedure to apply (it would be blocked by the avoidance constraint in the absence of parenthesis deletion), and the correct stress results: *mè*)*tro*.

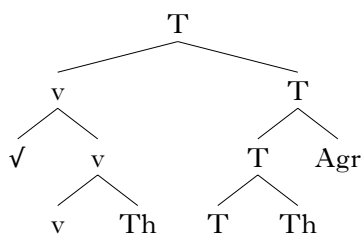
On our approach, the machinery is simpler, with no additional stipulation required. In particular, *metro* carries the lexical marking R_1R_2, corresponding to its 'retracting' behaviour. This behaviour materialises (via ICC: L) when there are sufficient syllables available, *ki*(*lóme*)*tr*]*o*, but obviously not in their absence, *mè*)*tr*]*o*. Notice also that the parenthesis in Oltra-Massuet & Arregi's representation *m*)*etro* in effect marks the *m*, which, as a consonant, does not qualify as a stress bearer: this representation is therefore questionable.

6.4 Verb stress

I have left verb stress for the end, on account of its independence. Indeed, as stated at the outset, I will not provide a full account of it here, for reasons of space and because of this conceptual and formal autonomy. I will, however, point out the main shortcomings of Oltra-Massuet & Arregi's analysis, and outline an alternative.

In line with the tenets of Distributed Morphology, Oltra-Massuet & Arregi's verb structure is anchored in the syntax, although, crucially, it is still not isomorphic with it. This is illustrated by the following diagram (2005: 46):

(62)



T (Tense) and v (verb) are syntactic functional heads. √ is an abstract root, to be fleshed out in the spell-out component of the morphology. The Th

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(Theme vowel) and Agr (Agreement) nodes are only morphological, with no role in the syntax.

The hub of Oltra-Massuet & Arregi's verb stress analysis is simple enough (2005: 49):

(63) Insert a right parenthesis to the left of T on line 0.

The left of T obviously coincides with the right of the leftmost Th: either way, the result is that the verb's leftmost Th will be stressed. This is of course the traditional 'theme vowel', the vowel characteristically placed between the root and the tense morph, and which signals verb conjugation: *-a-* for the 1st conjugation, for instance (Spanish has three conjugations; the other two include additional formal complications):

(64) *infinitive*	cant-à-r 'to sing'
gerund	cant-à-ndo
participle	cant-à-do
imperfect indicative	cant-à-ba, -ba-s, -ba, -ba-mos, ba-is, ba-n
imperfect subjunctive	cant-à-ra, -ra-s, -ra, -ra-mos, ra-is, ra-n
	cant-à-se, -se-s, -se, -se-mos, se-is, se-n
future subjunctive[43]	cant-à-re, -re-s, -re, -re-mos, re-is, re-n

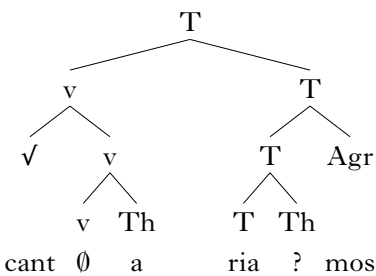
If this were the end of the story, Oltra-Massuet & Arregi's analysis could reasonably be considered fully justified. However, it is only the beginning of the story, and a substantial body of additional machinery needs to be added to make it work. In particular, when other verb forms are brought in, the account just given fails.

Consider first the conditional:

(65) *conditional* cant-a-rí-a, -rí-a-s, -rí-a, -rí-a-mos, -rí-a-is, -rí-a-n

It is clear that fitting these forms in the template in (62) above leads to incorrect stress assignment:

(66)



Application of the stress rule in (63) above yields **cantáriamos*.

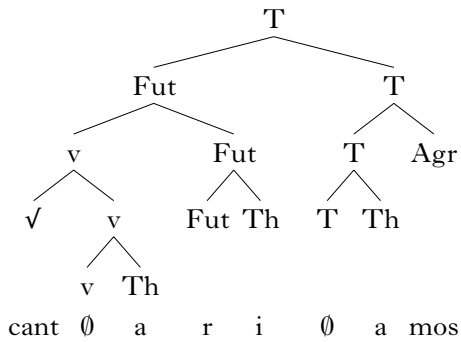
Correction of this result involves several steps. First, the conditional T (Tense/aspect/mood) morph is analysed into no fewer than four

[43] Obsolete in everyday discourse, but fully conjugatable.

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morphemes: Fut + Th + T + Th. In particular, Oltra-Massuet & Arregi (2005: 52) propose that 'the future heads a projection separate from tense', such that '"future" is future + present, and "conditional" is future + past'. In addition, they adopt the assumption (argued in Oltra-Massuet 1999 for Catalan, not Spanish) that 'at MS [Morphological Structure], all syntactic functional heads require a theme position' (2005: 46). Following on from this, the conditional is assigned the structure in (67):

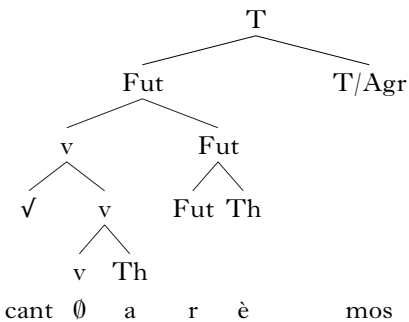
(67)



The stress procedure works when applied to this structure, since the stressed vowel (*i*) is now precisely the one preceding T: *cantaríamos*. However, it is important not to lose sight of the price being paid in terms of structure: a split between Fut and T (with T thus effectively confined to the present–past opposition) and multiplication of theme vowels. Note, moreover, that T is being assigned a ∅ realisation. In addition to its abstractness, the approach is thus heavily dependent on syntactic theory, in particular on Oltra-Massuet's (1999) analysis of Catalan, and hence not properly justified from within the Spanish verb system itself.

Despite this considerable cost, the analysis does not carry over to the future, in which 'another important ingredient … which we adopt from Oltra-Massuet 1999, is that a T node specified for the feature [–Pst] fuses with the Agr node at MS' (2005: 54). This is claimed to account 'for the fact that there is no overt realization of T separate from Agr …. Another consequence of fusion is that the theme position adjoined to T disappears' (2005: 55):

(68)

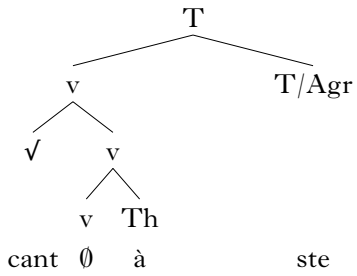


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Once again, stress now falls on the vowel preceding T, as desired. However, the formal cost implicated in this result is again considerable.

T and Agr merger is also postulated in the preterite, the Spanish indicative perfective simple tense. The preterite's initial structure is supposed to be isomorphic with the imperfective, along the lines of (62) above. However, this structure changes after the merger, as shown in (69):

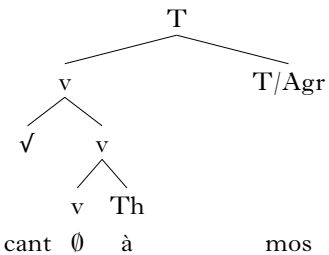
(69)



According to Oltra-Massuet & Arregi (2005: 57), 'allowing *exceptional* fusion in the perfective explains why there is only one slot for both morphemes and why the Vocabulary items inserted are specific for this tense' [my emphasis]. Here too, the analysis fits the data, as it is supposed to do (otherwise, it would clearly not have been proposed), but at the cost of apparent arbitrariness. In particular, the statements that there is only one slot for T and Agr and that the morphs are tense-specific both need proof, but this proof is not provided: a mere glance (cf. 'as can be seen by comparing the paradigms for the perfective and the ones for other tenses') is clearly insufficient.

We finally get to the present tense(s). Here too, fusion of T and Agr is assumed (2005: 59):

(70)



Notice the different substance assigned to T/Agr in this structure (and the one for the future in (68)), as compared to the structure for the preterite in (69): person/number (i.e. Agr) in the present and future, but past/perfective/indicative (i.e. T) in the preterite. While this does dovetail with the merged structure T/Agr, it raises obvious analytic questions that remain unaddressed.

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In the form *cantàmos* in (70), stress is derived by the established procedure (the vowel preceding T), as we have just seen, but this is not the case with other present tense forms: unquestionably in both 3rd singular and plural (*cànta*, plural *càntan*, not **cantá*, **cantán*) and in the 2nd singular (*càntas*, **cantás*), and perhaps also in the 1st singular *cànto*, where the constituency of the final *-o* cannot be taken for granted. Faced with this problem, Oltra-Massuet & Arregi (2005: 61) appeal to the stress-deletion rule of Roca (1990, 1999), an analysis couched in the framework of Halle & Vergnaud (1987b):

(71) $x \rightarrow . \; / \; x __)\#$

The ad hoc nature of this rule is manifest: it is introduced to fix data which do not fit in with the rest of the analysis. Moreover, its introduction into the Halle & Idsardi framework defeats the very point of this framework, of streamlining its predecessor, that of Halle & Vergnaud.

I end this section with the promised reflections on a possible alternative, leaner analysis of Spanish verb stress. As was argued in Hooper & Terrell (1976), Spanish verb stress is columnar in all the subparadigms but the present: it affects the vowel of the same morphological constituent throughout the subparadigm. It thus appears that metrical projection of the appropriate morphological brackets needs to be called on, along lines foreshadowed in Roca (1992a). As should be obvious even from this sketch, this approach will obviate much of Oltra-Massuet & Arregi's ancillary machinery. It will also free the analysis from the syntax. This is not to say that syntax cannot and does not influence morphology, along the lines standard in Distributed Morphology: only that Spanish verb metrical structure specifically hinges on morphological structure, not directly on its syntactic forerunner, contrary to Oltra-Massuet & Arregi's explicit statement that 'stress placement in Spanish is determined by syntax' (2005: 43).

7 Conclusion

In this paper we have surveyed the entirety of non-verb stress data of Spanish, for which an analysis couched in the metrical machinery of Halle & Idsardi (1995) has been proposed. The analysis involves variation in the settings of the first two components of the Edge Marking parameter and its domain. The permutations of these three variables are kept in check by an avoidance constraint that prohibits stressed desinences. This remarkably simple model accounts for all the surface data of Spanish non-verb stress and their respect for the three-syllable

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window:[44] unmarked stress (O_s), marked stress (PO_s) and supermarked stress (PPO_w). Importantly, it also accounts for the three supermarked patterns of singular ~ plural stress alternation: PO_w (*carácter ~ caractères*), PPO_w (*régimen ~ regímenes*), and $PPO_w \sim PO_w$ (*ómicron ~ omicrònes*). The remainder of the parameters made available by Halle & Idsardi's theory keep the settings they had in Latin, with the possible exception of SBP, which is perhaps inactive in current Spanish.

It is evident that this simple, compact model does not extend to Spanish verb stress, the full analysis of which must be left for another occasion. We have, however, reviewed the account advanced in Oltra-Massuet & Arregi (2005) and found it unwarrantedly complex, and arbitrary and unconstrained in parts. I have accordingly suggested that such an account cannot be accepted as it stands, and needs revision. In particular, the contrasts between Spanish verb and non-verb stress that came about through historical change do not seem liable to obliteration through formal ingenuity with the morphosyntax. Rather, the empirical differences between the two sets of data necessitate sufficiently distinct formalisations.

The simplicity and breadth of coverage of our approach suggest correctness, not only at the observational level, but also at the more ambitious descriptive and explanatory levels of Chomsky (1965). In particular, the multifarious manifestations of Spanish non-verb stress have been traced back to variation in a small set of parameters, within a metrical framework that has proved itself successful in an assorted typology of data for a number of years. We have enriched the formal machinery with a modest parametric extension of the Edge Marking domain to the stem boundary. Indeed, following Oltra-Massuet & Arregi's suggestion, it would seem reasonable to go further and reinterpret the Edge Marking parameter as a morphosyntactic bracket parameter enabling projection of *any* bracket from morphological onto metrical structure, as the successful formalisation of Spanish verb stress may well demand.

[44] This outcome thus counters (at least for Spanish non-verb stress) the statement in Farrell (1990: 37) that, on the generative approach, 'if the basic parameters are set in such a way as to allow too much freedom, a variety of mechanisms must be provided to prevent the generation of marginal patterns', while 'if the basic parameters are set in too restrictive a manner, a variety of ad hoc mechanisms must be provided to allow the marginal patterns'. In particular, *all and only* the patterns compatible with the proposed parametric machinery (legitimately complemented with the avoidance constraint) need to be and are generated on our approach. On the other hand, Farrell's assessment does seem to bear on much of Oltra-Massuet & Arregi's analysis.

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