

/S/-VOICING IN ECUADORAN SPANISH:

Patterns and Principles of Consonantal Modification

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Highland Ecuadoran Spanish is unique among Spanish dialects in voicing word-final prevocalic /s/: los otros [loz otros] 'the others'. This process has never received an adequate explanation within linear phonological models, despite attempts to relate it to 'close juncture'. In the present study, the claim is motivated that at intermediate stages of derivation, Spanish word-final /s/ is followed by an unattached slot on the skeletal tier, as the phonological marker of Word Boundary. This accounts for the frequent similarity of preconsonantal, prepausal and word-final prevocalic position with respect to several consonantal modifications in Spanish. /s/-voicing in Spanish is analyzed as originally stemming from preconsonantal voicing of /s/ at the postcyclic lexical level, at times counteracted by low-level processes of devoicing. Spanish dialects, in turn, are characterized by the Extension Principle, which states that phrase-final consonantal modifications will preferentially be extended to all word-final environments. The positive choice of this parameter in Ecuadoran Spanish results in prevocalic voicing of word-final /s/, as well as other word-final processes.

1. Introduction: /s/-voicing in Ecuadoran Spanish

One of the major issues in contemporary Spanish phonology is accounting for the behavior and variation of syllable- and word-final consonants, whose manifestations provide the most consistent set of dialectal defining characteristics. The present study takes as its point of departure a relatively minor and geographically limited consonantal modification, voicing of word-final prevocalic /s/ in highland Ecuadoran Spanish, and extends the treatment to encompass more widespread consonantal modifications in other dialects, in an initial exploration of systematic consonantal behavior in Spanish. The remainder of this paper is organized as follows: section 2 presents and refines the Ecuadoran data on distribution of [s] and [z]; section 3 briefly considers a potential solution; section 4 considers the point of application of voicing of

/s/ within the phonology of Ecuadoran Spanish; section 5 considers parallels with the behavior of other word-final consonants in various Spanish dialects; section 6 offers an alternative analysis of word-final consonantal modifications in Spanish; section 7 suggests a principle accounting for synchronic and diachronic developments affecting all Spanish word-final consonants; section 8 summarizes the discussion.

2. The Ecuadoran data

Of Spanish consonants subject to frequent and widespread modification, syllable- and word-final /s/ has formed the core of the greatest number of theoretical and descriptive inquiries; its realization ranges from a prominent sibilant [s] to a weak aspiration [h] or total effacement [∅] (Canfield (1981), Lipski (1984, 1985), Terrell (1977, 1978, 1979), Núñez Cedeño (1980), Cedergren (1973), Poplack (1980), Bordelois (1984)). A unique development affecting /s/ is practically restricted to the central highland dialects of Ecuadoran Spanish (centered on Quito), where word-final prevocalic /s/ becomes voiced to [z], providing the only consistent instance of intervocalic [z] in contemporary Spanish (Robinson (1979), Toscano Mateus (1953), for sporadic examples outside of Ecuador, cf. Torreblanca (1986), Montes Giraldo (1984), Obaid (1973), Dykstra (1955)):

(1a) casa	[kasa]	'house'
(1b) este	[este]	'this'
(1c) mismo	[mizmo]	'same'
(1d) las casas	[las kasa]	'the houses'
(1e) las vacas	[laz bakas]	'the cows'
(1f) los otros	[loz otros]	'the others'
(1g) es él	[ez el]	'it's he'
(1h) pues en ..	[pwez en]	'well, in ...'
(1i) eres un	[erez un]	'you are a(n) ...'
(1j) casas altas	[kasaz altas]	'tall houses'
(1k) no sé	[no se]	'I don't know'

Grammatical structure is irrelevant to /s/-voicing, as is the relative configuration of stressed and unstressed syllables. On the other hand, word-internal intervocalic /s/ is not normally voiced (1a), except marginally in the Cuenca

subdialect,¹ and word-initial postvocalic /s/ is never voiced (1k). The distribution illustrated in (1) demonstrates that in the Ecuadoran dialects under consideration, [z] appears principally in two contexts: (syllable-finally) before voiced consonants – a natural process of voicing assimilation – and in word-final prevocalic environments. The obligatory presence of the word-boundary is striking, given that Spanish phrase-level phonology normally obliterates phonetic signalling of word boundaries (Penny (1986), Lipski (1983a, in press).

The Ecuadoran data hint at a more than coincidental relation between preconsonantal voicing assimilation of /s/ and word-final prevocalic voicing of /s/. That such a relation is not universal and inexorable is demonstrated by the fact that many Spanish dialects in which syllable-final /s/ is retained as a sibilant (e.g. not 'aspirated' to [h] or elided) contain a process of preconsonantal voicing assimilation, while central Ecuadoran Spanish is the only dialect in which word-final prevocalic /s/ is routinely voiced.

In the following paragraphs, the fundamental operating principle will be

¹ Robinson (1979) suggests that the subdialect of Cuenca (in the southern highlands) differs systematically from the Quito dialect in voicing morpheme-final prevocalic /s/: *desechable* 'disposable', *desayuno* 'breakfast', etc. Apparent minimal pairs exist: e.g. *desalar*, analyzable as *de + salar* 'desalinate', or *des + alar* 'remove the wings'. Upon prompting with a questionnaire, Robinson's respondents pronounced the former word with [s] and the latter with [z]. Not all of Robinson's data support the analysis of morpheme-final voicing of /s/, as he himself admits; for example *desastre* 'disaster' (usually pronounced with [z] in Cuenca) cannot be synchronically analyzed as **des + astre*, while *desayuno*, although clearly originating from *ayuno* 'fast', is probably not perceived by most contemporary Spanish speakers as bimorphemic. The data collected as part of the present investigation do not support the conclusion that the Cuenca dialect systematically voices morpheme-final prevocalic /s/. It appears that 'morpheme-final' voicing of /s/ is restricted to prefixes and to words that have the general phonetic form of prefixes; moreover, in nearly all cases of non-prompted speech, it is the prefix *des-* which is involved, although the overall text frequency of relevant forms is so low (in my interview data averaging one example every 10–15 minutes) as to make any conclusions suspect. Apparently only prefixes are involved, since voicing of stem-final /s/ is never observed in plural forms (e.g. *mes + es* 'months'), in diminutives (*pez + ecito* 'little fish') or preceding derivational affixes (e.g. *aprendiz + aje* 'learning', *feliz + idad* 'happiness'). It may be that only stress-neutral affixation incurs voicing of morpheme-final /s/, but in this case affixation of the plural morpheme should cause /s/-voicing. The most logical conclusion is lexicalization of a handful of items. This may reflect some type of imperfectly constructed analogy (similar to that postulated for aspiration of word-internal intervocalic /s/ in Honduran/Salvadoran Spanish, cf. Lipski (1985, 1986a)) or perhaps just a handful of lexical idiosyncrasies such as have been observed, for example in Mexico (Perissinotto (1975: 57–58)), in Colombia (Flórez (1964: 5–7)), and in the Canary Islands (Catalán (1964: 240–241)), etc.

the search for general principles defining consonantal behavior among Spanish dialects, rather than a limited solution which may in the long run entail contradictory conclusions when compared with a wider range of comparative data. In terms of consonantal behavior, central Ecuadoran Spanish fits in among other Latin American dialects in a fashion suggesting not an isolated idiosyncrasy but rather a slight realignment of general processes.

3. A first attempt at an integrated phonological solution

It is not feasible to conflate word-final prevocalic voicing and syllable-final preconsonantal voicing into a general rule of voicing assimilation before [+voiced] segments, consonants and vowels alike, given that word-internal intervocalic /s/ is not voiced, nor is word-initial postvocalic /s/. In the history of Spanish and other (western) Romance languages, intervocalic voicing was a general process originally affecting stops as well as fricatives.² Preconsonantal voicing assimilation, on the other hand, is only convincingly demonstrated for /s/, while other Spanish obstruents occurring preconsonantly do not undergo any such process, being subject to a variable combination of reduction phenomena (e.g. spirantization, voicing/devoicing, neutralization of place of articulation, elision) which are best described as autosegmental delinking of one or more tiers.

Rather than conflating rules which appear to respond to different processes, rule ordering offers a potential solution: word-final prevocalic voicing could apply before resyllabification, which assigns a single word-final prevocalic consonant to the onset of the next syllable in the phonological phrase.³ Word-final prevocalic voicing would affect only syllable/rhyme-final /s/, leaving untouched word-internal intervocalic /s/, which is assigned to the

² Intervocalic voicing of /p/, /t/ and /k/ does occur in some Canary Island dialects; cf. Almeida Suarez (1982), Oftedal (1985). A similar process occurs variably among some speakers of the Havana dialect of Cuban Spanish (cf. Guitart (1980)). Torreblanca (1978) regards voicing of /s/ as a form of weakened articulatory tension. In the case of Ecuadoran voicing of word-final prevocalic /s/, there is little possibility that a Quechua substrate is involved. Although Ecuadoran Quechua is unique among Quechua dialects in possessing the phoneme /z/, this phoneme has relatively limited distribution, and in many instances may be due to a loan-transfer from earlier periods of Spanish, when intervocalic /s/ was realized as [z] (cf. Lombeida-Naranjo (1976: 150-151), Cassano (1974: 479)). Moreover, Ecuadoran Quechua opposes intervocalic /s/ and /z/, and does not voice word-final prevocalic /s/.

³ This is essentially the analysis offered by Harris (1983) for aspiration of word-final prevocalic /s/, and velarization of word-final /n/.

syllable onset on the first (cyclic) application of syllabification. This method, while usually producing the correct output, is functionally equivalent to a formal conflation of preconsonantal and prevocalic voicing, since no justification is given for combining an unquestionably syllable-final voicing assimilation (preconsonantal) with voicing in an environment which is ultimately intervocalic; the recourse to ordered rules is descriptive but not explanatory. The explanatory power of an ordered-rule solution can be extended slightly by postulating an underlying segment unspecified for voicing.⁴ Voicing would then be specified after some level of syllabification in the lexicon, according to two parametric choices: (i) in most Spanish dialects, voicing is assigned last-cyclically/post-cyclically as [+voice] in syllable codas before a C slot specified as [+voice], and as [-voice] elsewhere; (ii) in central Ecuadoran Spanish, voicing is assigned last-cyclically/post-cyclically as [+voice] in syllable codas before any slot on the CV tier specified as [+voice], and as [-voice] otherwise; (iii) in the Cuenca dialect, voicing is assigned cyclically (at each lexical level) as [+voice] in syllable codas before any slot on the CV tier specified [+voice], and as [-voice] otherwise.

A proposal such as the one just sketched brings us closer to the type of solution envisioned as the ultimate goal for a comprehensive Hispanic dialectology. In its present form, however, this schema is inadequate for a number of reasons. First, a comparison of this scheme and disjoint or conflated rules of preconsonantal and prevocalic voicing reveals that the former solution is functionally equivalent to the latter. Claiming that voicing assignment takes place before or after resyllabification is merely another way of describing certain data, and gives no insight into the interaction between voicing assimilation, generally regarded as a low-level phonetic process, and resyllabification, a process which affects prosodic structures. Moreover, Spanish resyllabification is far from exceptionless, being dependent on speech rate and register. Rapid speech results in nearly exceptionless resyllabification, while formal, slow speech (whose extreme case is reading lists and prepared sentences) impedes resyllabification.⁵ In central Ecuadoran Spanish, voicing of word-final prevocalic /s/ is general in all styles and speech rates, and may be frequently observed even in slow, disconnected or interrupted

⁴ This proposal, which will ultimately be replaced, results from suggestions and comments on earlier versions of this paper, and which provided the impetus for an expanded analysis.

⁵ In many Spanish dialects with heavy indigenous influence and/or bilingualism, resyllabification is also impeded by the presence of a slight pause or glottal constriction between words; this is observed among indigenous bilinguals in the Yucatan Peninsula of Mexico, in Guatemala, Paraguay, and in the Andean region of South America, including Ecuador.

speech where resyllabification has clearly not taken place. Extensive recordings during a prolonged stay in highland Ecuador (cf. Lipski (1986c, 1987)), confirm Robinson's (1979: 141) comments as regards voicing of /s/ before hesitation pauses, where the speaker evidently has the intention of continuing the sentence following completion of a thought or accessing of a lexical item (whether or not the sentence is actually completed). The data also reveal a number of cases of voicing of /s/ before true pauses (i.e. following a descending, phrase-final intonational contour), in apparent violation of quasi-universal tendencies of word-final obstruent devoicing which prevail among Spanish dialects. Typical examples include:

- (2) si el profesor no e[z] ... lo suficientemente capa[z]
'if the teacher is not sufficiently capable'
- (3) es, digamo[z] ...
'it's, let's say ...'
- (4) los precios de lo[z] ... comerciantes
'the prices of the ... business owners'
- (5) no todos lo[z] ... profesionales
'not all ... professionals'
- (6) yo tenía, pue[z] ...
'I had, then ...'

It could be that since in highland Ecuador word-final /s/ is voiced before vowels and voiced consonants, voicing of prepausal /s/ responds to the high statistical probability that the segment which eventually follows the pause will be voiced. This voicing process is often extended to true phrase-final /s/, although in this environment voicing of /s/ has to compete with another process, general to most of the Andean region, whereby unstressed final syllables are entirely devoiced, usually followed by severe shortening and eventual elision, especially in contact with /s/ (cf. Hundley (1983) for Peru; Lope Blanch (1963) for Mexico; Lipski (1988) for Ecuador). This devoicing is a low-level phonetic process affecting all discourse and at times obliterating the results of other phonological processes affecting particular segments or configurations.⁶

⁶ This type of situation is described by Kiparsky (1985: 94), who notes that it is possible to have a truly phonological (postlexical) rule partially overlaid by a gradient phonetic process such as final devoicing.

4. The place of /s/-voicing in Ecuadoran Spanish phonology

At least some facet of preconsantal voicing assignment of /s/ occurs at the postlexical level, since its effects appear across word boundaries (e.g. *los patos* [los patos] 'the ducks', vs. *las vacas* [laz bakas] 'the cows') as well as word-internally, and the output in all cases is both variable and gradient (cf. Perissinotto (1975: 57–58) for a detailed description of a comparable case). It will be claimed shortly that the relevant process is actually postlexical devoicing. Speakers do not ordinarily differentiate the resulting [s] and [z], regarding both as manifestations of /s/, and in most Spanish dialects, pauses effectively block voicing assimilation across word boundaries.⁷

The case of word-final prevocalic /s/ is more complex. Native speakers perceive a phonological difference between [s] and [z] in this environment (e.g. *has ido* [aziðo] 'you have gone', *ha sido* [asiðo] 'it has been'). At the same time, voicing of word-final prevocalic /s/ is both variable and gradient in central Ecuador, although not subject to lexical exceptions. If we assume that regular inflection, including plural formation, takes place at a stratum higher than that containing stress-neutral affixation,⁸ then the claim that in the Cuenca dialect final /s/ is voiced morpheme-finally (i.e. in stress-neutral prefixes such as *des-*) is incompatible with postlexical application of this rule, since an intermediate stratum is skipped, in violation of the Continuous Stratum Hypothesis (Mohanani (1982, 1985)).

There is evidence which suggests placement of prevocalic /s/-voicing within

⁷ Among significant differences between phonological rule application at the lexical and the postlexical level is native speakers' perception of (phonological) difference between segments: the output of the lexical component (the lexical alphabet) produces forms which untrained native speakers typically perceive as different from the input, while the output of postlexical rules is not assumed to produce a perception of difference (Mohanani and Mohanani (1984: 596), Kaisse and Shaw (1985: 7)). Other key traits distinguish lexical and postlexical rules; for example, lexical rules are normally obligatory but allow lexical exceptions and are unaffected by pauses, while postlexical rules allow no lexical exceptions, produce an output which may be gradient and variable, and are blocked (or triggered) by pauses (Kiparsky (1985: 86–92), Kaisse and Shaw (1985: 4–8), Mohanani and Mohanani (1984)). Obviously, only postlexical rules can apply across word boundaries.

⁸ To date, no comprehensive lexical phonological model has been developed for Spanish comparable to those available for English, but available studies make it almost certain that at least two and perhaps three lexical strata exist, in addition to postlexical rules (Wong-opasi (1987), Den Os and Kager (1986)). It is likely that assignment of lexical strata is similar to that of English (cf. Kiparsky (1985), Halle and Mohanani (1985), Mohanani (1985)). Cf. Booij and Rubach (1987) for a counterproposal denying the need to postulate more than one lexical stratum.

the lexical phonological component. As noted above, central Ecuadoran Spanish is characterized by severe reduction of unstressed vowels, particularly before syllable-final /s/. This process operates at the word level and is unaffected by relative strength of unstressed syllables or by stress rearrangement in the phonological phrase (Lipski (1988)). Unstressed vowel loss has priority over resyllabification: *ustedes allá* > *usteds allá* 'you there', where if resyllabification had applied before vowel dropping, the /s/ would have become syllable-initial, impeding vowel dropping. In combinations such as *usted(e)s alla*, where the vowel preceding word-final /s/ has been elided, the final /s/ is still normally voiced. This suggests that voicing of word-final /s/ applies 'before' vowel dropping (otherwise devoicing of both /s/ and the preceding consonant would be the expected result), a process which operates at the level of the phonological word, and which must therefore be ordered before the clearly phrase-level process of resyllabification.

5. Parallels with other consonantal modifications

The distributional behavior of word-final /s/ in central Ecuador fits in among a pattern of rule generalization which affects a wide range of consonants and dialects: from preconsonantal environment, to phrase-final (also 'syllable-final') context, to word-final prevocalic position. Similar Spanish consonantal modifications include:

(a) aspiration/elision of syllable- and word-final /s/. Spanish dialects range from 'conservative' /s/-reducing dialects (such as the educated speech of Buenos Aires), in which only preconsonantal /s/ is aspirated to [h], to the most 'radical' dialects such as those of southern Spain and the Caribbean, where phrase-final and word-final prevocalic /s/ is also reduced to [h], or elided. In between lie several dialect clusters in which extension of reduction to word-final prevocalic contexts is frequent but not exceptionless; rates of prevocalic reduction are usually less than rates of reduction of prepausal /s/ (Lipski (1983b, 1984)).⁹

(b) A large number of Spanish dialects velarize phrase-final /n/, and in the

⁹ There is graphological evidence that reduction of /s/ in Spanish began first in preconsonantal environments (Lapesa (1980: par. 248), Lipski (1984)), and certainly the distribution of reduced vs. nonreduced variants of /s/ in all contemporary Spanish dialects supports this route of evolution.

vast majority of cases (including all Ecuadoran dialects), extension to word-final prevocalic contexts is general.¹⁰

(c) Many Spanish dialects present partial or total neutralization of syllable-final /l/ and /r/, with widely varying phonetic results. No contemporary Spanish dialect exhibits reduction/neutralization of liquids only in preconsonantal environments and not in phrase-final contexts, although in some dialects preconsonantal neutralization is relatively more frequent. Dialects in which rates of phrase-final neutralization of /l/ and /r/ are high generally exhibit not insignificant rates of extension of the resulting variant to prevocalic cases (e.g. Terrell (1976), Uber (1984, 1986)).

(d) In many Andean dialects, where phrase-final /r/ is pronounced as a groove fricative, this pronunciation is frequently extended to prevocalic contexts.¹¹

6. Ecuadoran /s/-voicing in an expanded perspective

Traditional accounts of intervocalic /s/-voicing in Ecuador, of which Robinson (1979) is the most highly articulated, have postulated some type of 'close juncture' for the differential behavior of word-final /s/. The examples in (1) may give the impression that an intimate syntactic connection between words is necessary to trigger final /s/-voicing, but this is not the case, since virtually any case of word-final /s/ will be voiced before a following word-initial vowel in normal connected speech, regardless of rate or register. The same is true for voicing of word-final /s/ before voiced consonants, i.e. voicing is normal except in artificially disconnected speech. This distribution suggests that in central Ecuadoran Spanish, voicing of /s/ is not the result of spreading, but rather that syllable-final /s/ is already voiced at the output of the lexical phonological component, and that a subsequent phonetic imple-

¹⁰ Preconsonantal /n/ in Spanish is normally subject to low-level homorganic assimilation to following consonants, but in the most 'radical' dialects (which include most of Ecuador), preconsonantal /n/ is velarized as well. Evidence on the historical evolution of velarization is difficult to come by, since graphological indications are all but nonexistent (but cf. Boyd-Bowman (1975)), but it appears almost certain that velarization in phrase-final position preceded extension to word-final prevocalic contexts. There are Spanish dialects which routinely velarize phrase-final /n/ while rarely extending this pronunciation to prevocalic environments, but no Spanish dialect provides the opposite configuration.

¹¹ No phonological ambiguity is produced: the groove fricative pronunciation of /R/ and/or /λ/ in the same dialect is qualitatively different from that of phrase-final /r/ (Toscano Mateus (1953: 94-97)).

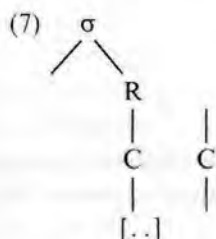
mentation rule devoices this [z] in appropriate contexts. Robinson (1979: 141) suggests that ' /s/ is voiced syllable-finally unless followed in close juncture by a voiceless consonant or by terminal intonation ...', which is a far cry from the archaic Spanish distribution of [s] and [z], where the latter sound is presumed to have resulted from two well-documented sources, namely intervocalic voicing (lenition) and preconsonantal voicing (assimilation).

In order to relate the behavior of /s/ in Ecuadoran Spanish to other word-final consonantal modifications, it is claimed that at the point where 'syllable-final' consonantal modifications apply, Spanish word-final consonants are followed by an unattached slot on the skeletal tier. Resyllabification must then deal with the 'second' slot, rather than simply detaching a slot from the rhyme of one syllable and attaching it to the onset of the following syllable.¹² Since the postulated 'floating' slot is by definition not realized phonetically, the only supporting evidence must be indirect and cumulative, offering new or improved characterization of Spanish phonological phenomena through use of this structure.

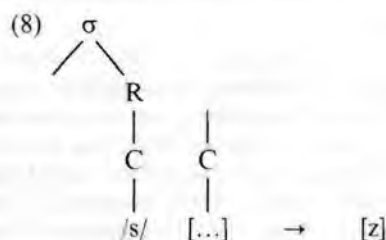
There is no compelling reason to suppose that the consonant /s/ is singled out for a 'dual' representation in word-final position, despite the special phonological properties acknowledged for /s/ in other contexts (Harris (1983: 26-31); Holt (1984: 188)). The strongest possible hypothesis regarding the phonological structure of word-final consonants is that all (/r/, /l/, /n/ and

¹² A possible interpretation of resyllabification would be the creation of an ambisyllabic consonant straddling the word boundary, which would in effect serve as a phonological marker of juncture even in the absence of surface phonetic differentiation. Voicing of word-final prevocalic /s/ in Ecuadoran Spanish could then be limited to ambisyllabic /s/, which by definition will occur only across word boundaries/before vowels; the word boundary would no longer be required for specification of the process. This would not affect combinations of the form /s#sV/ (e.g. *los soldados* 'the soldiers'), since in the latter case an ambisyllabic [s] is not involved; rather a geminate (or fake geminate; cf. McCarthy (1986), Schein and Steriade (1986)) [ss] is initially generated, which is usually reduced to [s] via the global Spanish process reducing double segments, including those resulting from neighborhood assimilations (e.g. *un ñame* 'a yam', *tal llave* 'such a key', *usted dice* 'you say', *el loro* 'the parrot'; cf. Harris (1983: 63), Lope Blanch (1963), Sanz (1979). Claiming ambisyllabicity for Spanish immediately places an additional onus on the hypothesis, since there is no incontrovertible phonetic evidence in favor of a special ambisyllabic status for prevocalic word-final /s/ in any Spanish dialect, regardless of the phonetic realization which /s/ receives. There is another way of constraining this type of rule so that it applies only to ambisyllabic consonants, via the Linking Constraint (Hayes (1986: 472)): 'Association lines in structural descriptions are interpreted as exhaustive'. By specifying an ambisyllabic configuration in the SD of the rule, the LC would automatically exclude the rule from applying to other configurations. The ad hoc status of ambisyllabic consonants would remain, however.

/s/),¹³ are followed by an unattached slot at some point in the derivation, and that this representation is in effect the proper phonological representation of Word Boundary; this is the hypothesis that will be provisionally adopted in order to test the widest possible range of Spanish dialectal data. Also provisionally adopted is the hypothesis that the second slot is not necessarily linked via association lines to the phonological matrix defining the final consonant, but can in principle be a completely dissociated timing slot:



This provides a mechanism for explaining the identical voicing of pre-consonantal and prepausal /s/ in Ecuadoran Spanish, since initial assignment of [+voice] to an underspecified matrix (here abbreviated as /s/) can refer simply to the presence of a following c, whether or not associated at any level with a filled phonological matrix:



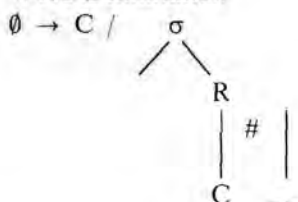
The output of (8) is eventually modified by a low-level rule of *devoicing*, which is postlexical, variable and rate-dependent.¹⁴ I assume that the unat-

¹³ Word-final /d/ is an essentially marginal and asystematic element in phrase-final position (cf. D'Introno and Sosa (1986)), and word-final /x/, limited to the single common word *reloj* 'watch' in which /x/ is not normally pronounced (plus a few learned words in which retention of /x/ is a clear spelling pronunciation), is even less integrated.

¹⁴ It could be possible to include devoicing of phrase-final /s/ through an extension of this process, claiming, e.g. that universal markedness conditions require that a null phonological matrix associated with a C-slot be specified [-voice] at the surface phonetic level (a variant of

tached slot is not present at the underlying phonological level, but rather is attached as a (very early) postcyclic rule, which may be termed Word Delimitation:¹⁵

(9) Word Delimitation



What appears to be incipient or vestigial prefix-final voicing of prevocalic /s/ in the Cuenca dialect may signal a potential modification of (9) to cyclic application.

Assuming for the moment that (7)–(9) correctly account for Ecuadoran /s/-voicing (some tentative supporting evidence will be offered shortly), there are several possibilities for the interaction with resyllabification. It could be that following the application of a rule such as (8), the second C-slot disappears through some mechanism. Alternatively, resyllabification could receive as input a structure such as (7), upon which a rule like (8) has already operated, perhaps creating an ambisyllabic consonant en route to eventual reduction to the usually occurring onset-initial consonant.¹⁶

earlier 'boundaries as obstruents' theories, e.g. Lass (1971)). In Ecuadoran Spanish, however, the overwhelming majority of final unstressed syllables and most pretonic syllables are subject to a general devoicing rule which affects consonants and vowels alike (Lipski (1988)). This devoicing may extend over more than one syllable, and is ultimately responsible for unstressed vowel reduction or even elision, and possibly for the assibilated pronunciation of phrase-final *r*. As with other postlexical processes, devoicing of final unstressed syllables is variable, as is the number of segments affected by devoicing. Thus no special provision need be made to account for the occasional appearance of phrase-final [z], since this simply reflects failure of final devoicing to apply in a given instance.

¹⁵ In (8) the rhyme of the final syllable is deliberately left unspecified, leaving open the possibility that it might be attached to a V-slot as well as to an already specified C-slot. In the present study, only the latter configuration will be dealt with, i.e. the possible presence of an unattached C-slot following a fully specified V-slot has no immediate repercussions for the present analysis. I prefer to leave open this possibility, however, since it may eventually lead to a characterization of Spanish vowel sandhi phenomena (e.g. along the lines of Haas (1987)), or of the noteworthy separation between words in such dialects as Yucatan, Andean and Paraguayan Spanish, as conditioned by the parametric transparency of the unattached C.

¹⁶ The possible phonetic correlates of ambisyllabicity in Spanish are still at best partially

Several indirect bits of evidence combine to suggest that any unattached slot must be disposed of before resyllabification. For example, although no patrimonial Spanish word ends in a two-element cluster, in reasonably well-integrated foreign borrowings or Latinisms such as *tórax* 'thorax', *vals* 'waltz', etc., at most *one* consonant of the rhyme is reattached to the following syllable (e.g. Núñez Cedeño (1985: 279–280)).¹⁷ In the analysis of Harris (1983) and Núñez Cedeño (1985), the CV template of a vowel-initial word contains an initial unspecified (potential or immanent) C, which in the case of resyllabification is autosegmentally associated with a preceding consonant. If the preceding consonant were an unspecified phonological matrix (an unattached slot), then resyllabification would have the null effect of associating one unspecified matrix to another, which is manifestly not the case. It is therefore concluded that at the point in the derivation of the phonological phrase where resyllabification applies, any (word-final) unattached slots have been eliminated. At present there is insufficient evidence to force a choice among the alternative points of elimination of the unattached slot.

The notion that Spanish words ending in consonants have a structure similar to (7) at some level of derivation is consistent with facts unrelated to voicing of word-final /s/:

(a) Although Spanish permits two-segment rhyme-final consonant clusters (invariably ending in /s/, e.g. *instante* 'instant', *abstracto* 'abstract', *extra* 'extra', *solsticio* 'solstice', *perspectiva* 'perspective'), no patrimonial Spanish

understood, and while native speaker intuitions suggest ambisyllabicity in certain cases (e.g. Amastae (1986)), there is a dearth of experimental evidence supporting such assertions. The most convincing arguments involve phonotactic patterning, for example the fact that the intervocalic [ŋ] created by velarization of word-final prevocalic /n/ 'should not' be strictly onset-initial, given the lack of Spanish words beginning with a velar nasal. For an idea of the lack of consensus surrounding this interpretation, cf. Zamora and Guitart (1982: 119–120), Núñez Cedeño (1980: 53), Hammond (1979, 1980), Chela Flores (1986: 21–30), Uber (1984), Penny (1986), Becerra (1985: 150), Canellada and Madsen (1987: 43), Quilis (1964). The same argument could be made for intervocalic [z] in Ecuadoran Spanish, but at least at the impressionistic level, there is no perceptible difference in pronunciation when resyllabification is applied to word-final prevocalic consonants which can also occur in word-initial contexts, such as *el hombre* 'the man'; only the case of the velar nasal stands apart, and spontaneous pauses and hesitations reveal that few if any speakers analyze this segment as totally syllable-initial.

¹⁷ A similar situation holds for Catalan, where word-final consonant clusters are commonplace (e.g. Wheeler (1986: 476)). Admittedly the failure to attach both consonants of the rhyme to the onset of the following syllable reflects the filtering out of unacceptable onset clusters, but (accepting the dual-C representation) if resyllabification attached two C-slots to a following (vowel-initial) syllable, an unacceptable /s/-, /l/-, /r/-, etc. initial cluster would be formed (Harris (1983: 31–33)).

words end in two-segment clusters, although the general syllable template for Spanish permits two consonants in the rhyme. This suggests that Spanish words ending in a consonant contain a potential for two-consonant clusters.

(b) Spanish contains a small set of words ending in *-Cs*, which have intruded their exceptionality into many comprehensive analyses of Spanish syllable structure and morphological formation (e.g. Núñez Cedeño (1985), Harris (1987)); these include *tórax*, *vals*, *biceps*, *fénix* 'phoenix', etc. These words, largely of unevolved Latin origin, are relatively infrequent and nearly always felt to pertain to an erudite level of vocabulary (with the exception of the common given name *Félix*), but native Spanish speakers of all levels do not reject such words as phonotactically unacceptable, handling them without difficulty. The variation in plural forms of clearly non-Hispanic words (e.g. *clubs/clubes*, *yens/yenes*) indicates that earlier phonotactic restrictions against final two-member clusters may have been relaxed, and that the lack of more final clusters in modern Spanish is merely a carryover from earlier developments, rather than a rigid phonotactic filter. In dialects such as those of the Caribbean where consonants undergo systematic weakening, phonologists (e.g. Guitart (1982)) have noted that consonants are weakened in the syllabic rhyme and not necessarily syllable-finally; thus the velarization of /n/ in *instante* and lateralization of /r/ in *perspectiva*. Although these same dialects routinely weaken/elide 'syllable-final' /s/, in fact this weakening does not normally occur when the preceding consonant of a word-final *-Cs* cluster has not been previously elided: *Félix* may be pronounced as [feliks] (the full form), [felis] (elision of preconsonantal [k], [felih] or [feli] (weakening of /s/), but *[felik]/*[felikh] are not possible (cf. Núñez Cedeño (1985: 281)). This suggests that weakening takes place not in all rhyme-final positions, but only when preceding another C-slot. In word-internal position, the branching rhyme structure postulated by Harris (1983: 46) and Núñez Cedeño (1985: 282) for the *-Cs* clusters in *instante* and *perspectiva* also allows for aspiration/deletion of /s/, since not only is each segment in the syllabic rhyme, but each is immediately dominated by an R-node. Words ending in a final [-obstr] consonant plus /s/ (e.g. *vals*) alternate between [s] and [∅] as the final sound, with the former being more common even in /s/-reducing dialects. In nonstandard Dominican Spanish, for which evidence exists that syllable-final /s/ has been deleted from the underlying phonological representation, it is not infrequent for hypercorrect final /s/ to be added, even to words ending in a consonant: *mayor* > *mayors* 'older' (Terrell (1986), Núñez Cedeño (1986, 1988)). This distribution suggests that word-final /s/ as part of a cluster does not participate in rhyme-final weakening, but rather is directly introduced

and removed by a fundamental syllable template-building rule, such as formulated by Harris (1983:28): 'Adjoin the segment /s/ to the right of an existing rhyme'. Núñez Cedeño (1988) notes that this intrusive word-final /s/ does not usually participate in resyllabification when the following word begins with a vowel. Even the occasionally perceived 'aspiration' of word-internal /s/ in *instante*, *perspectiva*, etc. is suspect, and may well be the manifestation of simple deletion of /s/, followed by partial spreading of voicelessness to the preceding consonant; nearly all consonants which follow word-internal -Cs clusters are voiceless.

(c) Weakening of Spanish /s/ appears to have occurred first in preconsonantal position, and there are still dialects in which preconsonantal /s/ is weakened but prepausal /s/ is retained as [s]. Once prepausal /s/ succumbs to weakening, there is a completely regular extension of weakening to word-final prevocalic contexts (e.g. *los amigos* [loh amigoh] 'the friends'), and until the weakening process has been carried to such an extreme that lexical restructuring is possible, rates of aspiration/deletion of phrase-final /s/ are comparable to those of word-final prevocalic /s/.¹⁸ An analysis more consistent with observed data can be achieved if weakening is restricted to instances in which the slot associated with /s/ is followed by another C-slot, whether or not associated with a phonetic segment. The other modifications noted in section 5 affecting word-final consonants suggest a similar analysis. In each case, a phenomenon originally occurring preconsonantly was extended to prepausal contexts, and then (variably) extended to word-final prevocalic position.

¹⁸ Cf. Lipski (1984, 1985, 1986a,b). The Liège dialect of Walloon apparently has a distribution of [s] and [z] identical to that of central Ecuador, with /s/ being voiced before voiced consonants and in word-final prevocalic contexts, while retaining the realization [s] in other contexts. The same distribution holds for [f] and [v], the other fricative which may occur word-finally in Walloon. Francard and Morin (1986:457) suggest that this phenomenon might be analyzed as a form of phonological weakening as described by Hooper (1976), as '... a case of intervocalic voicing of weak fricatives. This could entail that the allophonic rule responsible for the weakening of fricatives in syllable codas applies to lexical words, before enchainement rules resyllabify word-final fricatives, such as [z] ... with a following vowel'. This suggestion, however, is difficult to interpret within contemporary phonological models, since intervocalic 'weakening' is usually assumed to occur in syllable onsets, following universal principles of unmarked syllabic structure; at the same time a 'lexical' rule in the sense of contemporary lexical phonology, is not the same as an 'allophonic' rule, which is usually taken to be a postlexical or 'phonetic implementation' rule (cf. Mohanan and Mohanan (1984:591)).

7. Toward a systematic account of word-final consonantism

The majority of phenomena affecting Spanish word-final consonants have their origin in processes of modification in preconsonantal contexts (often assumed to represent some form of 'weakening').¹⁹ Eventually, most such processes become extended to prepausal contexts, which while still syllable-final are no longer 'implosive.' Extension to word-final prevocalic contexts then logically follows as the preferred development. This extension, in effect allowing the process to apply uniformly to all preconsonantal and/or word-final contexts, is best analyzed as opacity of the unattached slot adjoined through Word Delimitation. The opacity of the empty slot is by definition transitory, since complete generalization of rule application to all preconsonantal and word-final contexts is equivalent to partial lexicalization; in the model elaborated by Kaisse (1985), the rule moves from being a fast-speech (P_2) rule to an external sandhi (P_1) rule and eventually to a postcyclic lexical rule. During the (indefinitely long) transitional period in which the opaque unattached slot is available as a model of phonological structure, idiolectal variability of the sort studied in sociolinguistic variational studies will typically occur. *Ceteris paribus*, a given Spanish dialect will treat all word-final consonantal modifications in the same fashion, although any synchronic cross-section will probably represent varying stages of evolution of the individual rules.

These claims suggest a minimally marked configuration, regulating the extent to which phrase-final consonantal modifications will be generalized to all phonetic contexts. This configuration, which as a first approximation may be called the *Extension Principle*, is schematically stated as follows:

(10) *Extension principle:*

- (a) An unassociated C-slot behaves the same as a filled matrix for rules of the form $a \rightarrow b / _C$, where a , b and C are consonants.
- (b) Once condition (a) has been implemented, any rule of the form $a \rightarrow b / _C$, where a , b and C are consonants, will be extended to all word-final environments: $a \rightarrow b / _]_X$, where X ranges over all lexical categories.

¹⁹ This has been questioned in the case of velarized final /n/, e.g. by Uber (1984), Hammond (1980). It is also difficult to postulate lateralization of /r/ or rhotacism of /l/ as weakening, given that both processes occur frequently in Spanish. However, neutralization of the opposition occurs regularly only in positions which independent evidence regards as phonologically weakest.

The statement of (10) as a bipartite implicational relationship suggests that whereas Spanish dialects exemplifying only (10b) but not (10a) do not exist, it may be possible to find dialects/individuals exhibiting (10a) without (10b). Available variational data bear out these predictions.²⁰ Apparent counterexamples to the predictions of (10) usually involve modifications which are more intimately tied to the rapid decay of phonation which characterizes phrase-final position (e.g. assibilation of /r/ in parts of Mexico and Central America), or instances in which extension of a phrase-final realization to prevocalic contexts could result in massive homonymic clash (e.g. neutralization of /l/ and /r/, labialization of /n/, etc.). Principle (10) represents the unmarked case from a phonological point of view, but given the relative perceptual prominence of phrase-final consonants, as well as the fact that in Spanish final consonants often serve grammatical functions (marking person and number), other pressures may counter this natural extension.²¹

Preconsonantal syllable-final position can be described as weak since the consonantal articulation in question cannot always reach its fullest manifestation, but may be cut short by shifting of articulatory organs in preparation for a following segment. Prepausal position, on the other hand, is both strong and weak in terms of observed behavior. It is weak in that it is also syllable-final, and depending upon the dialect, the decay of phonation immediately preceding a pause can be so abrupt as to severely reduce or suppress one or more of the final segments (cf. also Bordelois (1984)). Prepausal position is strong in that it contains the potential for perceptual prominence, since whatever sound is uttered before a pause, however slight, acquires salience. It

²⁰ For example aspiration/deletion of /s/ occurs only preconsonantly in some dialects (e.g. the educated speech of Buenos Aires and Montevideo), it occurs postconsonantly and occasionally in prepausal environments in, e.g. educated Lima (Peru) Spanish, and is routinely aspirated/deleted preconsonantly and in all word-final contexts in large areas, including southern and western Spain, the Canary Islands, the Caribbean and much of South America, except for the Andean highlands. No known Spanish dialect weakens only prepausal/word-final prevocalic /s/ without also regularly weakening preconsonantal /s/. Also, no stable dialect has been unearthed which routinely reduces prepausal /s/ without extending this pronunciation to word-final prevocalic contexts.

²¹ In the case of phrase-final /s/ and /n/, the possible functional constraints on deletion have been well studied, although there is not total agreement on the results (e.g. Terrell (1977, 1979), Poplack (1980, 1981, 1986), Hochberg (1986), Uber (1984)). In other cases, the pressures may involve sociolinguistic stigmatization of variants which have little or no functional load; examples include elision of the final /r/ of verbal infinitives in Andalusian Spanish, lateralization of word-final /r/ in Puerto Rican Spanish, and in a few cases, velarization of word-final /n/ (which in most instances entails no demonstrable social stigma).

is therefore not axiomatic that a process of preconsonantal neutralization or weakening will be extended to the 'other' syllable-final environment, namely before pause, and in fact pause-final consonants in many Spanish dialects often undergo processes which are arguably analyzed as strengthening.²² The main motivation for extending a preconsonantal modification to prepausal environments is probably reduction of allomorphy, since a word-final consonant now has fewer realizations; extension to word-final prevocalic contexts continues the generalization in favor of a single rule affecting all word-final contexts. Once this occurs, the rule is in effect lexicalized, applying last-cyclically or post-cyclically. The solution adopted here is to represent the inherent unity of preconsonantal and generalized word-final consonantal modifications via the use of unattached slots inserted postcyclically as the phonological signal of Word Boundary. A key stage in the evolution of phonological rules is reached when a preconsonantal process is extended to prepausal environments, i.e. when a pause offers the same conditioning as a consonant in the onset of the following syllable. At this point, a naturally-motivated (although not inexorable) extension is facilitated, which if unchecked by other factors, will eventually encompass all word-final contexts.

8. Summary and conclusions

The main points of the preceding discussion may be summarized as follows:

- (1) Spanish word boundaries [in consonant-final words] are represented at intermediate derivational stages as an unattached skeletal slot following the final consonant, attached post-cyclically by rule (9) of Word Delimitation.
- (2) Processes of Spanish consonantal modification occurring originally in preconsonantal position may optionally be extended to phrase-final position.

²² Such processes include: strong trilling of /r/, an apical articulation of /s/ in emphatic speech in dialects such as Caribbean and Andalusian Spanish, where word-final /s/ is normally reduced or suppressed, articulation of phrase-final /d/ (normally [d] or [θ]) as [t] in emphatic Panamanian Spanish and devoicing and lengthening to [θ] in the Madrid dialect, labialization of phrase-final /n/ in parts of Yucatan Spanish and in certain areas along the Pacific coast of Colombia; cf. Ramírez Wohlmuth (1980) for a more systematic account of phrase-final reinforcement vs. weakening of consonants. Although velarization of /n/ has frequently been regarded as phonological weakening, evidence in favor of this interpretation is not conclusive, since it is common for Spanish dialects to survive indefinitely with phrase-final velar /n/, showing no signs of instability or further erosion (Hammon (1977, 1980), Uber (1984)).

This is equivalent to the condition that empty (word-final) slots behave the same as filled (consonantal) matrices.

(3) The Extension Principle declares that in the unmarked case, once preconsonantal modifications are extended to phrase-final contexts, further extension to word-final prevocalic contexts occurs. Full application of this principle eventually results in lexicalization of the rule in question; i.e. it ascends from the postlexical stratum to the (postcyclic) lexical stratum.

(4) The maximally unmarked configuration involves operation of the Extension Principle for *all* preconsonantal modifications. Spanish dialects differ not only in the implementation of certain preconsonantal modifications, but also in extension of these processes to prepausal and word-final prevocalic contexts.

(5) In the dialects of central Ecuador, there exists a process voicing all instances of /s/ followed by a C-slot. Voicing of /s/ is a postcyclical lexical rule, in principle independent of both speech rate and the presence of pauses. The resulting segment is subsequently devoiced in certain contexts through phonetic implementation rules.²³

(6) The behavior of word-final /s/ in central Ecuador can be fitted in among other Spanish dialects, in combining an unmarked configuration (the Extension Principle) and a relatively marked process, voicing of preconsonantal /s/.

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²³ The extraordinary resistance of syllable-final /s/ to reduction and effacement in these dialects is probably not coincidental, since this increases the chances that a sibilant preconsonantal [s] will become voiced to [z] when preceding a voiced consonant. This in turn increases the syntagmatic frequency of [z], and may contribute to the eventual voicing of pause-final and word-final prevocalic /s/. After all, any word-final /s/ which can naturally occur in prevocalic contexts can occur equally well before word-initial consonants, including voiced consonants (which trigger voicing of /s/ to [z]). I have observed similar although less consistent behavior in Costa Rican Spanish, while in Mexican Spanish of the Jalisco region the [n] which is often perceived after word-final /s/ also represents voicing in an unusual position, perhaps with concomitant nasalization in certain cases; cf. Wright and Robe (1939), Cardenas (1967).

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