

Foreword

We, the editors, are pleased to present the thirty-second volume of the Calgary Working Papers in Linguistics (CWPL). CWPL is a publication affiliated with the School of Languages, Linguistics, Literatures and Cultures (SLLLC) at the University of Calgary, focusing on recent and ongoing work in linguistics and related disciplines by researchers affiliated with the University of Calgary. This and all previous volumes of CWPL since Volume 1 (originally published in print in 1975) are digitally stored in PRISM: The University of Calgary Digital Repository and can be accessed at: <http://dspace.ucalgary.ca/handle/1880/51236>.

Before further discussing the papers in this volume, we would like to take this opportunity to acknowledge that the University of Calgary and city of Calgary, called *Mohkinstsis* in Blackfoot, exists within the traditional territories of the people of the Treaty 7 region in Southern Alberta, which includes the Blackfoot Confederacy (comprising the Siksika, Piikani, and Kainai First Nations), the Tsuut'ina First Nation, and the Stoney Nakoda (including the Chiniki, Bearspaw, and Wesley First Nations). The city of Calgary is also home to members of Métis Nation of Alberta, Region 3.

Each paper submitted to Volume 32 has been reviewed and edited by two editors, all graduate students of linguistics at the University of Calgary. It should be noted that the papers published in CWPL represent works in progress and should not be considered as final or definitive papers. Therefore, publication in CWPL does not preclude submission of further revisions of the same papers to another journal or publication.

Volume 32 contains three papers from both undergraduate and graduate students at the SLLLC. These papers explore topics in phonology, dialectology, nominal syntax, and particle syntax. The languages featured in this volume include Spanish and Mandarin Chinese.

Finally, we thank and express our most sincere gratitude to all contributors, editors, and advisors and supervisors of those contributors and editors for their time, effort, and patience in their participation in the editing and publishing process of this volume. This continuation of CWPL's longstanding tradition at the University of Calgary would be impossible without you and your work.

Editors of CWPL – Vol. 32

BrettC Nelson
Summer Abdalla
Charles Boyede
Quinn Goddard
Kang Xu

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Approaches to coda /s/ in Ecuadorian Spanish

Andrés Giudice Grillo

University of Calgary

Abstract

Ecuadorian Spanish displays significant regional variation affecting the realization of coda /s/. Within the highlands of Ecuador, the pronunciation of coda /s/ as [z] occupies different phonological environments depending on the subregion: While in the far north and south [z] is only found preceding voiced consonants, central and central-southern varieties display [z] in more environments, namely word-final prevocalic and prefix-final environments, which makes them unique in the Spanish-speaking world. In this investigation, I review the main studies that have focused on the description and analysis of coda /s/ voicing in Ecuadorian Spanish (Lipski, 1989 and Bradley & Delforge, 2006) and combine their insights with those of other studies (Muñiz Cachón & Cuevas Alonso, 2012, Navarro Tomás, 1968) which have explored the sonority of pre-consonantal /s/. Stemming from this exploration, I present a conciliatory solution to the problem of /s/-voicing. I modify Lipski's formal analysis to include a voice-neutral [S] that appears in pre-consonantal position, which resonates with the findings by Muñiz Cachón and Cuevas Alonso (2012) and the observations by Navarro Tomás (1968), both of which show that pre-consonantal /s/ in Spanish has gradient voicing.

Key words: Ecuadorian Spanish, /s/-voicing, phonology, dialectology

1. Introduction

Ecuador is a region of interest for Spanish dialectology due to its regional variation affecting phonology. Although the most significant dialect division lies in the border between the coast and the highlands, the highlands display an internal variation with regard to coda /s/ that merits close attention. Understanding highland Ecuadorian as a dialect with conservative or “highland” phonology¹, the sound [z] is expected to be found as an allophone of /s/ in the environment preceding voiced consonants. However, central and central-southern varieties of highland Ecuadorian Spanish display [z] in more environments, namely word-final prevocalic and prefix-final environments, which makes them unique in the Spanish-speaking world. The main focus of this investigation is the presence of the sound [z] with varying environmental restrictions across highland varieties. I will review the available literature that has focused on the description and analysis of coda /s/ voicing in Ecuadorian Spanish (Lipski, 1989 and Bradley & Delforge, 2006), gather their insights and combine them with those of other authors (Muñiz Cachón & Cuevas Alonso, 2012; Navarro Tomás, 1968) who have explored the sonority of preconsonantal /s/, to produce a more conciliatory solution to the problem of /s/-voicing.

2. Dialect variation

There is a high degree of dialect variation in Ecuador in relation to the small size of the country. The most striking division is between the coastal and highland regions, with the coastal dialect bearing a lot of similarity to Caribbean and other lowland dialects², and the highland dialect displaying a more conservative (or “highland”) phonology similar to that of western Bolivia and central Mexico. There is, nonetheless, well-defined variation affecting the production of coda /s/ within highland Ecuadorian Spanish, identifiable by the voicing of coda /s/ in certain positions. The characteristics of coda /s/ pertaining to each dialect area are listed in the next table, based on Lipski (1996):

¹ The classification of dialects into “lowland” and “highland” was defended by Ureña (1921) (as cited in Rosenblat, 1965), and is based on the hypothesis that colonists from Andalusia were predominant in coastal and lowland areas, which they preferred due to environmental affinity to their homeland, while colonists from the interior of Spain preferred the higher regions to settle. The result of such distribution of settlers was that phonologically innovative traits characteristic of Andalusia such as s-aspiration and merger of liquids became characteristic of coasts and lowlands in Latin America.

²Same as footnote (1).

Table 1: Pronunciation of coda /s/ in four dialect areas of Ecuador

Coast	Coda /s/ is generally [h], and deleted utterance-finally: s→h/σ, s→∅/_# . (where “.” means end of utterance). As in ‘los lobos’: lo[h]lobo
Carchi and Loja provinces	Coda /s/ is [s] except before voiced consonants: s→z/_C[+voi] As in ‘rasgos andinos’: ra[z]go[s]andino[s]
Central Ecuador	Coda /s/ is pronounced [z] before a voiced consonant, and word-finally before a vowel, and [s] elsewhere: s→z/_#V, _C[+voi] As in ‘rasgos andinos’: ra[z]go[z]andino[s]
Azuay and Cañar provinces	Coda /s/ is pronounced [z] before a voiced consonant, word-finally before a vowel, and at the end of a prefix inside a word: s→z/[prefix_]V, _#V, _C[+voi] As in ‘desechar’: de[z]echar

The Amazon has been omitted from this list because, according to Lipski (1996, p. 267), it does not display a stable local dialect of Spanish, as its population speaks Indigenous languages.

In this research, I will focus on areas 3 and 4, due to their special treatment of coda /s/, which is unique in the Spanish-speaking world and deserves a close analysis.

3. History of /s/-voicing

Highland Ecuadorian Spanish of areas 3 and 4 is unique in its conservation of a voicing distinction between [s] and [z], whose origin can be traced to medieval Spanish. In most Spanish dialects, /s/ is only voiced before a voiced consonant, while in Ecuador the sound [z] appears intervocally.

Based on previous research of my own (Giudice Grillo, 2020), with Menéndez Pidal (1968), Lathrop (1984), and Loporcaro (2011) as resources, medieval Spanish had the following (Table 2) inventory of sibilants and of affricates that would later become sibilants:

Table 2: Medieval Spanish sibilant system

Voiceless	Voiced
/s/ as in <i>passar</i> ‘to pass’	/z/ as in <i>casa</i> ‘house’
/ts/ as in <i>cielo</i> ‘sky’	/dz/ as in <i>vezino</i> ‘neighbour’
/ʃ/ as in <i>caxa</i> ‘box’	/ʒ/ as in <i>fijo</i> ‘son’

After a process of deaffrication, the inventory was the following, with affricates becoming dentalized fricatives:

Table 3: Spanish sibilant system after deaffrication

Voiceless	Voiced
/s/	/z/
/s̺/	/z̺/
/ʃ/	/ʒ/

This inventory lost the three voiced phonemes toward the 14th century in the northern half of Spain, and the loss spread southward no earlier than the 16th (as can be verified in Fray Juan de Córdoba's *Arte de la lengua zapoteca* (1578) where he says that "those from Old Castile say *hacer* and in Toledo *hazer*, they say *xugar* and in Toledo *jugar*" – cited by Lincoln Canfield, 1981). Ultimately, the three-phoneme inventory became reduced to a two-phoneme inventory with /s/ as the single alveolar sibilant in southern Spain, a system termed *seseo* (non-distinction of alveolar sibilants). People from southern Spain constituted the most important group of settlers in the American continent according to studies by Boyd-Bowman (as reported in Vaquero, 1996, p. 51), and that is thought to be the reason why all of Spanish-speaking America is *seseante*. The only remnant of the intervocalic (word-internal) voicing distinction is found in a few municipalities of the province of Cáceres in Spain whose dialect is described in Menéndez Pidal's *Manual de Gramática Histórica Española* (1968, p. 116). We would be led to think that the merger of alveolar sibilants in the Spanish that was brought to the Americas was total, as it is in almost all Spanish dialects today, where there is no intervocalic voicing of /s/. However, in Ecuadorian Quichua there are minimal pairs, such as /misa/ 'mass' and /miza/ 'table' (Robinson, 1979, p. 138) that testify in favour of there having been a phoneme /z/ in the phonological inventory of the Spanish brought to the region in the 16th century. This points to the likelihood that the phoneme /z/ and the phenomenon of *liaison* voicing (word-final prevocalic voicing) of /s/ remained widespread in Spain in the 16th century, and possibly in areas of Spain where *seseo* had become dominant. That is to say, *seseo* was likely not total in some regions, and while the contrast between plain alveolar and dentalized alveolar sibilants was lost, the voicing distinction would have remained for some time, until disappearing in later centuries.

Bradley and Delforge (2006) draw on the comparative argument based on the voicing pattern of alveolar sibilants in Portuguese and Judeo-Spanish, to affirm that medieval Spanish must have displayed the same pattern. For example, Portuguese *asas inúteis* 'useless wings' is pronounced *asa[z] inutei[ʃ]*, and in Judaeo-Spanish "*more or less*" is *ma[z] o meno[s]*. And Penny (1991) said "since the medieval Castilian sibilant subsystem was similar in other regards [...] to that of Catalan, Portuguese, and Judeo-Spanish, it is likely that the similarity extended to having voiced word-final sibilants before a word-initial vowel." (Penny, 1991, p. 80-81).

It is not possible to know to what extent voicing of the type of central Ecuador (*liaison* voicing) was widespread in the Spanish-speaking world in previous centuries, but we can make the conjecture that it was present in more places than just Ecuador, at least in the initial stage of colonization when Spanish arrived. We could even propose, based on the evidence from Quichua (the *misa/miza* pair), that a variety of Spanish that still carried /z/ in its contrastive inventory was brought to Ecuador by colonists, and therefore that the retention

of the voicing contrast of alveolar sibilants was significantly more widespread in Spain in the 16th century than it is today.

4. Lipski, Bradley and Delforge, and Robinson

In this section I will review three approaches that address the phonetic value of [z] in Ecuadorian phonology: Lipski (1989), Bradley and Delforge (2006), and Robinson (1979).

4.1. On the non-phonemic status of [z]

It is evident that the voicing contrast of the alveolar sibilant is important for word identification in highland Ecuadorian, but we must discard the idea that /z/ is a phoneme in Ecuador. This position is defended by all authors cited in this research.

Second language acquisition provides evidence of the non-phonemic value of [z]. Robinson (1979) made it clear that “it would be difficult to reconcile an analysis of the /s/ of *desastre* as being /z/ with the fact that the residents of Cuenca have as much difficulty as other Spanish-speakers in mastering the English /z/-/s/ opposition” (Robinson, 1979, p. 141).

4.2. Lipski (1989)

John Lipski makes an extensive analysis of /s/-voicing in Ecuadorian Spanish in his article “/s/-Voicing in Ecuadoran Spanish” (1989), where, abiding by the view that [z] is not a phoneme, he resorts to phonological cycles and to syllabification to explain the voicing and devoicing processes that the alveolar sibilant undergoes.

According to Lipski, there is a special relationship between preconsonantal voicing and prevocalic voicing in that they are both syllable-final. Lipski proposes that the process is actually a phonetic devoicing of an already voiced /s/. This means there is a step at which coda /s/ is voiced, early in the derivation. The challenge with this approach is finding the order in which rules apply: Word-final prevocalic voicing seems to apply at least before resyllabification. The initial phoneme is /s/ but through a process it becomes voiced before resyllabification, and is finally devoiced in some phonetic environments (utterance-finally and before voiceless consonants). To solve this problem theoretically, Lipski first resorts to rule ordering and to the lexical cycle (Steriade, 2016, p. 143), applying cycles of syllabification: The first cycle corresponds to word-initial and word-internal /s/, such as in *saco* ‘coat’ and *casa* ‘house’, which is assigned underlyingly as /s/ (Lipski, 1989, p. 52-53), and the last cycle (post-cyclic) corresponds to coda /s/ and prefix-final /s/ (in Cañar and Azuay), such as in *lo[z] amigos* ‘the friends’ and *de[z]empeño* ‘performance’; it is understood from this that post-cyclic resyllabification does not affect voicing. He further says that there are three “degrees” of coda-s syllabification in non-aspirating Spanish dialects: the first corresponds to most non-aspirating dialects of Spanish, where “voicing is assigned last-cyclically as [+voice] in syllable codas before a C-slot specified as [+voice], and as [-voice] elsewhere”, the second corresponds to central Ecuadorian, where voicing is assigned “last-cyclically as [+voice] in syllable codas before any slot on the CV tier specified as [+voice], and as [-voice] elsewhere”, and the third corresponds to the Cuenca dialect (Cañar and Azuay),

where voicing is assigned at the lexical cycle as “+voice in syllable codas before any slot on the CV tier specified as +voice, and as -voice elsewhere.” (Lipski, 1989, p. 53). Thus, Lipski argues that prefix-final voicing in the Cañar and Azuay dialect is lexical as opposed to “post-cyclical” as for central Ecuadorian, and he never suggests there to be a contrast between [s] and [z] at the phonemic level.

Lipski gives a formal solution to the issue of coda /s/ voicing by drawing a skeletal tier (a representation of syllabification) that displays a boundary slot for the word boundary and produces [z] as a result of an /s/ in coda position being followed by this boundary slot. In his words, “at the point where syllable-final consonantal modifications apply, Spanish word-final consonants are followed by an unattached slot on the skeletal tier.” (Lipski, 1989, p. 58) In his reasoning, coda /s/ in highland Ecuadorian is not outright resyllabified as onset of the next syllable, as is the case in other dialects, but retains the features of a coda /s/ (voicing in this case) due to the boundary slot. In this view, [z] actually starts out as /s/ at the lexical level, and is voiced by virtue of being in the coda. This is Lipski’s skeletal tier representation:

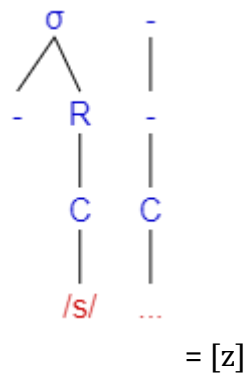


Figure 1: Skeletal tier (Lipski, 1989, p. 59, fig. 8)

Following this, it is evident that Ecuadorian Spanish has different syllabification parameters from standard Spanish, something that is further corroborated by Ecuadorian speakers identifying word-internal pauses in words with the prefix *des-* (Robinson, 1979, p. 141), that is, speakers of the Cañar and Azuay provinces.

4.3. Bradley and Delforge

I now examine the theoretical study done by Bradley and Delforge (2006). In this study, they use an Optimality Theory approach for describing the conditions that favor the distinction between [s], [z], and neutral [S]. Their OT description is the following: They give the two constraints IDENT-SIB and *MERGE to ensure that the distinction between [s] and [z] in Ecuadorian Spanish is maintained in the surface.

IDENT-SIB(voice) Corresponding input and output sibilants are identical in [voice].

*MERGE No output word has multiple input correspondents.

“*MERGE is crucial in accounting for the voicing of word-final prevocalic sibilants in both medieval and modern Ecuadorian Spanish.” (Bradley & Delforge, 2006). In their analysis, a phonology that merges all intervocalic alveolar sibilant occurrences into /s/ violates both of the constraints stated above.

Bradley and Delforge make an important argument, which is that of the neutrality of preconsonantal /s/, graphed [S]. This is the /s/ that appears in words like /desde/ [dɛzðe]. “Following Steriade (1997) and Ernestus (2003), we distinguish between phonologically contrastive obstruents, specified as either +voice or -voice, and neutral obstruents, which are 0voice.” (Bradley & Delforge, 2006, p. 27). This /s/ “need not be perceived as belonging to either category” (Bradley & Delforge, 2006, p. 27). They say that the length of the sibilant emission is relevant to the voicing of [S] because longer constriction durations result in devoicing for aerodynamic reasons; voiceless fricatives are usually longer than voiced ones, and shorter constrictions tend to favor voicing (Bradley & Delforge, 2006, p. 27).

Bradley and Delforge say that voicing of coda /s/ in prevocalic position “presumably reflects a phonological [+voice] specification” (Bradley & Delforge, 2006, p. 39), but they do not delve into the derivational steps that produce [z] or [S], which is something Lipski did more clearly. They treat the Ecuadorian voicing phenomenon as a (partial) re-emergence of the old Spanish voicing pattern but they do not explain the process by which the pattern allegedly resurges. Nonetheless, they introduce the concept of neutral [S], which I will embrace and attempt to integrate into Lipski’s analysis in the next section.

5. Analysis considering Muñiz Cachón and Cuevas Alonso

We have examined two extensive analyses of coda-s-voicing in highland Ecuadorian Spanish: Lipski (1989) and Bradley and Delforge (2006). The first one contributes an approach based on the cyclic nature of resyllabification and a skeletal tier analysis that defines the derivation of [z] in highland Ecuadorian as resulting from the position of /s/ in the coda followed by a word-boundary or prefix-boundary slot. The second (Bradley & Delforge, 2006) contributes an OT analysis of the voicing contrast, as well as the concept of a voice-neutral [S] which corresponds to preconsonantal coda /s/ in Spanish.

Lipski’s skeletal tier approach is a solid base for understanding the derivation of [z] in dialect areas 3 and 4 (referring to the chart in section 2), but he does not include in his analysis the neutrality of preconsonantal coda /s/. Apart from Bradley and Delforge, the neutrality of this consonant has been supported by Navarro Tomás (1968) and Muñiz Cachón and Cuevas Alonso (2012) for other varieties of Spanish.

Muñiz Cachón and Cuevas Alonso (2012) undertook a phonetic investigation of the Spanish spoken in Asturias, Spain in 2003-2004. They tested the voicing of /s/ in the environment $_C[+voice]$. For this, they interviewed a sample of twenty university students from central Asturias, ten male and ten female, from which they obtained a total of 4,200 samples of /s/ preceding a voiced consonant (which were /m, n, l, b, d, g, j/, to the exclusion of /ʎ/ due to the full dominance of *yeísmo*³ in the region, and /r/ due to the disappearance or

³ *Yeísmo* is the merger of the phonemes /ʎ/ and /j/, which is present in most Spanish dialects.

rhotacization of /s/ preceding it.). Their parameters considered three possible variants of /s/: voiced, voiceless, and “mixed”. I here present their results, which are separated by gender of the study subject.

Table 4: Proportion of voiced and voiceless realizations of /s/ preceding voiced consonants.

	Voiceless	voiced	mixed
Male	34.81%	63.71%	1.48%
Female	59.09%	39.09%	1.81%
Total	46.95%	51.40%	1.64%

The authors suggest that we should perceive voicelessness of the sibilant before a voiced consonant as a tense pronunciation resulting from a tendency toward more formal speech. They call male speech “less effortful, more lax, which favors [...] the contagion of sonority between neighboring sounds” (Muñiz Cachón & Cuevas Alonso, 2012, p. 298, my translation).

These results, which nearly favored voicelessness in the environments in which voicing is expected for /s/, and which recognized a mixed, half-voiced, half-voiceless sibilant, are suggestive of a much more general trend in Spanish when combined with Navarro Tomás’s assertion that, cross-dialectally, while in normal speech /s/ becomes [z] before voiced consonants, in “slow or strong” articulation it becomes [s] (Navarro Tomás, 1968, p. 108). This naturally leads us to assume that all non-aspirating varieties of Spanish display gradient voicing of preconsonantal /s/, in line with Bradley and Delforge’s claim that this is a voice-neutral [S] in Ecuador.

Taking into account the concept of neutral [S] proposed by Bradley and Delforge (2006), and the results found in Muñiz Cachón and Cuevas Alonso (2012) together with Navarro Tomás’s (1968) assertion, it is sound to assume that preconsonantal /s/ is voice-neutral [S] in highland Ecuador and predict that if a study like Muñiz Cachón and Cuevas Alonso were performed in the region it would yield similar results. However, Lipski’s skeletal tier analysis generalizes the sound [z] for coda /s/ in highland Ecuadorian Spanish, not including voice-neutral [S] in his analysis. It is necessary, therefore, that we modify Lipski’s skeletal tier analysis to make it fit with the contributions from the other authors. I propose the following modification to the skeletal tier analysis: that the [z] produced from contact with the word boundary node is realized as voice-neutral [S] if a consonant (onset node filled with a ‘C’) follows the boundary node, therefore:

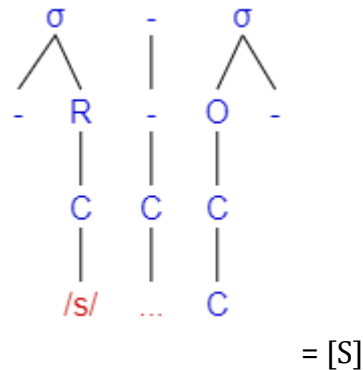


Figure 2: Modified skeletal tier

Nonetheless, the facts from Robinson (1979) and Lipski (1989) which tell us that coda /s/ in highland Ecuadorian, in slow or paused speech tends to be pronounced [z], could pose a challenge to our assertion that voice-neutral [S] exists in central and central-southern Ecuador. For example, Robinson recorded the utterance “es... tres” (‘it’s...uh...three’), pronounced [ez...tres] (1979, p. 141). Therefore, the only way we can confirm the presence of neutral [S] in preconsonantal position in Ecuador is through a phonetic study like Muñiz Cachón and Cuevas Alonso (2012) in dialect regions 3 and 4 (referring to the chart in section 2).

6. Conclusion

In this study we have explored the dialect areas of Ecuador with regard to the realization of coda /s/, the history of s-voicing in Spanish, and various approaches to the phenomenon of coda /s/ voicing. We have seen that there are four dialect areas with regard to coda /s/ in Ecuador, out of which we have focused on two areas that display peculiar voicing phenomena, namely the voicing of prevocalic word-final /s/ and the voicing of prefix-final word-internal /s/. The history of the evolution of Spanish sibilants, and evidence from Spanish borrowings into Ecuadorian Quichua, lead us to propose that /s/ voicing in Ecuador is a phenomenon inherited from the voicing patterns of medieval Spanish, and that this could be revealing of a wider distribution of /s/ voicing in Spanish in the 16th century than what remains today. As for the phonological analysis of coda /s/ voicing in Ecuador, Lipski (1989) and Bradley and Delforge (2006) give us some important insights. The first, Lipski, provides us with a cyclic explanation of resyllabification asserting that highland Ecuadorian has different syllabification parameters than standard Spanish, and he represents the process formally through a skeletal tier analysis that produces [z] from an /s/ followed by a word boundary node. The second approach, Bradley and Delforge, introduces the concept of a voice-neutral [S], corresponding to preconsonantal position, which is very useful for the description of preconsonantal /s/ specially after support from the study by Muñiz Cachón and Cuevas Alonso (2012). My contribution to this investigation of /s/ voicing in Spanish has been to modify Lipski’s skeletal tier analysis in order to make it resonate with Bradley and Delforge’s neutral [S] proposal and the findings by Muñiz Cachón and Cuevas Alonso on the frequent voicelessness of preconsonantal [S], creating a skeletal tier that produces neutral [S] when the word-boundary slot after a coda /s/ is followed by a consonant slot. Further

investigation of the voicing of preconsonantal /s/ in Ecuadorian Spanish is necessary in order to confirm the applicability of this analysis.

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Contact Information

Andrés Giudice Grillo

agiudice@ucalgary.ca

University of Calgary

60 Edgeland Rd. NW

Calgary, AB T3A 2Y4

Canada