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## A NEW HYPOTHESIS ON THE ORIGIN OF THE EASTERN ANDALUSIAN VOWEL SYSTEM

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Since the interest and originality of the Eastern Andalusian vowel system was pointed out in articles by Navarro Tomás (1939) and Alonso, Canellada & Zamora Vicente (1950), this phenomenon has attracted the interest of numerous researchers, who have studied it from very different theoretical perspectives (cf. Alarcos 1958, 1983, Salvador 1957, 1977, Hooper 1976, Gómez Asencio 1977, Zubizarreta 1979, Cerdà Massó 1984, Manaster-Ramer 1989, Villena Ponsoda 1987, Listerri & Poch 1987, Lieber 1987, Mondéjar 1991, Sanders 1994, among others). In our view, nevertheless, the historical development of the system has not been adequately elucidated.

In the relevant Andalusian varieties, we find oppositions such as [lɨβrɔ] 'book' vs. [lɨβrɔ] 'books', [lɨβrɛ] 'free, sg.' vs. [lɨβrɛ] 'free, pl.' and [lɨβra] 'pound' vs. [lɨβrã] 'pounds'. In these pairs, the quality of the final vowel has a distinctive function. We, thus, find a greater number of vowel oppositions than in other Spanish dialects. Some authors have spoken of 'vowel doubling' with respect to this phenomenon. There are authors who have maintained that for each of the five vowels of standard Spanish there are two in Eastern Andalusian, one close or tense and one open or lax. This is the position that Gregorio Salvador adopted in his 1957 study where a ten vowel system *i, ï, e, ɛ, a, ɑ, o, ɔ, u, ʊ* is proposed.

Nevertheless, it now seems certain that the high back vowel /u/ does not participate in this 'vowel doubling' (Salvador 1975, 1977) and the existence of an opposition between two variants of the high front vowel /i/ is also dubious (Moya Corral 1979:25, Sanders 1994). The doubling is thus very likely limited to the nonhigh vowels, with a surface opposition between tense and lax mid and low vowels resulting in an eight-vowel surface system:<sup>1</sup> *i, ɛ, ɛ̃, a, ɑ, ɔ, ɔ̃, u*. The merger between the low-mid front vowel and the fronted low vowel has also been reported for certain areas (Alonso 1956, Alvar 1958).

The problem that we want to address in this paper is that of the origin of this 'vowel doubling' phenomenon. The standard, and seemingly unanimous, view on this matter is that the loss of final /s/ has somehow triggered the appearance of open or lax vowels. More specifically, the assumption is that the final aspiration found as an intermediate stage between the preservation of /s/ and its total loss has influenced the preceding vowel by opening it (Navarro Tomás 1939, Hooper 1976, Salvador 1977, Mondéjar 1991, Alarcos 1958, 1983, etc.). This opening or laxing would acquire a distinctive value once the aspiration was also lost. That is, we would have the following evolution:<sup>2</sup> [lɨβros] > [lɨβroh] > [lɨβrɔh] > [lɨβrɔ]

In the most advanced stage in this evolution, the open character of the final vowel in the example in can be used to obtain a phonological opposition with the final vowel of the corresponding singular form.<sup>3</sup> This standard explanation has a certain plausibility, but leaves a number of facts unexplained. First of all, given this

hypothetical development it is somewhat surprising that similar vocalic effects are not found in other areas where final /s/ is also weakened. The aspiration and deletion of syllable-final /s/ are phenomena that are widespread in Spanish, being found with greater or lesser intensity in numerous areas of both Spain and Latin America; but only in Eastern Andalusian do we find the vocalic effects that we are concerned with.<sup>4</sup>

Secondly, even though the origin of the Eastern Andalusian 'vowel doubling' has always been sought in the loss of /s/, as distinctive as the opening of vowels in plural forms (and other originally /s/-final forms) is the closing that takes place in singular forms, at least in some varieties. A number of authors have noted that final /e/ and /o/ in Eastern Andalusian are considerably higher than in Castilian Spanish, showing a clear tendency towards /i/ and /u/, respectively (cf. Rodríguez Castellano & Palacio 1948, Alonso et al. 1950, Alvar 1990). In the study by Alonso et al. (1950), vowels of intermediate quality between /o/ and /u/ are often transcribed in word-final position in singular items. Alvar (1990:235) remarks that "en Almería, Jaén y Granada, en el singular *niño* o *pobre* se pronuncian con una vocal final muy cerrada, con lo que el singular queda así marcado, mientras que los equivalentes regionales de *niños* o *pobres* tienen una vocal final muy abierta (por supuesto falta la -s), con lo que la marca de abertura sirve para indicar el plural." [in Almería, Jaén and Granada, in the singular *niño* or *pobre* are pronounced with a very close final vowel, with which the singular is thus marked, whereas the regional equivalents of *niños* or *pobres* have a very open final vowel (of course, the -s is lacking), with which the openness feature indicates the plural.] Both in the singular AND in the plural do we thus find final vowels which are different from those that are common in Castilian Spanish. In absolute word-final position we may even find vowels that are phonetically [u], [i], instead of the corresponding mid vowels: [péʃu] *pecho* 'chest', [tráx<sup>hi</sup>] *traje* 'suit' (Zamora Vicente 1970:293). For reasons that are not entirely clear to us (but we will come back to this point), both synchronic and diachronic accounts of the Andalusian vowel system have always taken the opening of vowels in the plural as the fact that needed an explanation, glossing over the raising that takes place in the singular, which, when addressed at all, is considered a mere secondary phenomenon. The standard assumption is that the primary phenomenon is the opening or laxing of vowels in the plural and that the raising of vowels in the singular is only a secondary development with the goal of maximizing the distinction (cf. Alarcos 1985:198). It is difficult to understand, however, how the change schematized above may have had as a consequence the extraordinary raising that vowels in a different environment have experienced. In our view, the traditional account of the historical origin of the Eastern Andalusian vowel system has concentrated on the wrong set of data.

The alternative hypothesis that we want to defend here is that the aspiration and loss of final /s/ has resulted in a singular/plural distinction based on vowel quality in Eastern Andalusia (and not in other areas), because an independent vowel contrast already existed in this area at the phonetic level. This phonetic contrast was prior to and independent from the weakening of final /s/. To be more specific, in this area of Andalusia, as in areas of the Peninsula of Leonese speech, unstressed

word-final /e/ and /o/ were and are articulated as very close vowels, approaching the quality of the high vowels. This final raising is limited to the absolute word-final position and does not take place when the word ends in a consonant. This difference in vowel quality, which would predate the weakening of final consonants in Andalusia, has become evident once these have been lost.

Our contention is, thus, that in a contrast like the one that we find between the final vowels of [lɪbr̥o] 'book' and [lɪbr̥o] 'books', the origin of the differentiation may very well have been a process of raising affecting word-final vowels (against the traditional hypothesis). Final vowel raising could have created a subphonemic contrast that was made distinctive once final consonants were lost. In this way we can explain why the loss of /s/ and other final consonants has not created a vowel contrast in other dialects where final vowels were not raised. Furthermore, as already mentioned, the raising of mid vowels in absolute word final position, far from being a rare phenomenon, is well-attested in other areas of the Iberian Peninsula. Final raising is in fact one of the distinctive features of the Leonese macro-dialect and is found in varieties from Asturias and Cantabria to Extremadura. In certain Asturian varieties, for instance, we find pairs such as *llibru* 'book' vs. *llibros* 'books', where the raising of the final vowel in the singular has created a contrast between singular /-u/ and plural /-os/, without the aspiration of /-s/ playing any role in the creation of the vowel contrast, since this consonant is not weakened in this area.

Our hypothesis is that the vowel contrast that we find in Eastern Andalusia originated in the same fashion as in the Leonese varieties, although the raising was normally less pronounced, and that the weakening of final consonants only served to reinforce a contrast that already existed at the phonetic level. As Penny (1994) suggests, rather than there being a historical raising process, the case might be that final /-u/ (but not before /s/) from spoken Latin was preserved in some areas of the Peninsula.

A phenomenon that is parasitic on the contrast in final syllables is vowel harmony. Several authors who have studied Eastern Andalusian varieties have noted that the open or close character of the final vowel is communicated, at least in certain cases, to the stressed vowel and posttonic vowels (and, with less certainty to pretonic vowels as well). Thus, in examples such as [m̥oŋo] 'monkey' vs. [m̥oŋo] 'monkeys' and [p̥ẽro] 'dog' vs. [p̥ẽro] 'dogs' the stressed vowel shares the openness or closeness of the final vowel.

Here again, those authors who have analyzed this phenomenon have assumed that a harmonization process takes place in the plural, the singular being the unmarked case. This assumption has been adopted both by authors who have approached the facts from a structuralist perspective, such as Alarcos (1958, 1983) and by authors who have adopted some version of generative phonology, such as Hooper (1976) and Zubizarreta (1979). These authors have proposed a laxing harmony rule which would take place in plurals such as [m̥oŋo] 'monkeys' or [p̥ẽro] 'dogs'. The fact is, however, that the tonic vowel is equally affected by the final in the corresponding singular forms [m̥oŋo] 'monkey', [p̥ẽro] 'dog'. If in a word such as singular *perro* the tonic vowel is close this must undoubtedly be a consequence of harmonization, since in the position that it occupies, adjacent to /r/,

we would otherwise expect an open vowel, given the allophony rules of other Spanish dialects (Navarro Tomás 1977) and general tendencies in Romance languages and elsewhere (cf. Prieto 1993). There is no reason to assume either that synchronically a rule of harmonization operates only in the plural or that historically the original phenomenon is laxing harmony instead of raising harmony. Alonso et al. (1950:212) do in fact describe the existence of harmony both in the plural and in the singular: "Cuando en la palabra van varias vocales idénticas, la cerrazón del singular o la abertura del plural se extienden a toda la palabra, con extraordinaria diferenciación." [when the word contains several identical vowels, the closeness of the singular or the openness of the plural extend to the whole word, with extraordinary differentiation]. Similarly, when they analyze stressed /e/ they note that "la e tónica se cierra notoriamente en los singulares" (212) [tonic /e/ closes remarkably in the singular] and a similar description is also found with respect to stressed /o/: "la vocal se abre en el plural; se cierra en el singular" (214) [the vowel opens in the plural and closes in the singular]. Vowel harmony is thus found in the singular as much as it is in the plural, and could have had its historical origin as easily in one case as in the other. If, against the received opinion, we assume that the origin of vowel harmony in Eastern Andalusian may have been the raising of non-final vowels under the influence of close or tense final vowels, the Andalusian phenomenon loses its exceptional character within the Romance family. Raising harmony is again well attested in Asturias and Cantabria (cf. Rodríguez Castellano 1952, Catalán 1953, Neira 1955, Blaylock 1965, Galmés de Fuentes 1966, Díaz Castañón 1966, Penny 1969, 1969b, 1970, 1978, Hualde 1989, among many others) as well as in large areas of Italy.

A fact that we have not addressed so far is the laxing and palatalization of /a/. As Alvar (1991:228-31) explains, the palatalization of the low vowel in the context of certain word-final consonants is a phenomenon which includes cases with different geographical and social distributions. The palatalization of /a/ is the fronting of the tongue in the articulation of this vowel. This fronting may be accompanied by a greater opening in some areas; but in other areas this vowel is articulated as a front lax vowel that overlaps with realizations of the mid front vowel /e/, cf. Alonso (1956), Llorente (1962). Different consonants may also produce different effects. This is a phenomenon that may be taken to be unrelated from a genetic point of view. In any case, the palatalization of the low vowel could be independent from the weakening of final consonants; not caused by it. We may compare plural forms such as *cases* in Asturian or Valencian Catalan where palatalization has occurred without weakening of the consonant. In fact, the change *-as* > *-es* in feminine plurals is well attested in Mozarabic (the Romance varieties formerly spoken in Muslim Spain) and well represented in Andalusian toponyms (Galmés de Fuentes 1983:307-319). Thus, whereas in our hypothesis the contrast between open and close mid vowels is due to a historical process of vowel raising in word final position, the contrast between palatalized and non-palatalized variants of the low vowel could be due to a process of palatalization of /a/ in final unstressed closed syllables, like the one that has produced plurals in /-es/ for feminine words ending in /-a/ in Asturian, Valencian Catalan and, importantly, in Andalusian Mozarabic. The two phenomena could then be genetically independent and also without causal connection with the loss of /s/ and other final consonants.

The role of the loss of /s/ has been to give distinctive value to differences that were subphonemic.

The three phenomena that we have examined: the raising of word final mid vowels (*libro* > *libro*), the palatalization of the low vowel in final syllables closed by certain consonants (*libras* > *librã(s)*), and the metaphonic influence of the final vowels on other vowels in the word are phenomena that have parallels in varieties of the Leonese type. There is no need to assume a direct influence of Leonese varieties on Eastern Andalusian, since none of the three phenomena is particularly unusual and they could have originated independently in the two areas. Nevertheless, it is certainly possible that there might have been a direct link. The focal area from which the Eastern Andalusian vocalism originally spread may have been populated by Leonese speakers who carried their phonetic habits to the area. We may note that there are some other noticeable coincidences between Leonese and Eastern Andalusian. The characteristic change from /l/ to /r/ after a tautosyllabic consonant found in Leonese and Galician-Portuguese is also found in Andalusia, reaching its highest intensity in Eastern Andalusia, specifically in the southern part of the province of Granada (ALEA = Alvar 1961-73, map 1721). This feature is taken to be a clear sign of Leonese colonization by Zamora Vicente (1970:325). In towns of the Alpujarras mountains of Granada which have such Leonese or Galician-sounding names as Ferreira (ALEA, point Gr 409) and Lanteira (ALEA, point Gr 410)<sup>5</sup> this phenomenon is systematic and we find examples such as [diábɾo] *diablo* 'devil', (ALEA, map 1530), [brãjko] *blanco* (ALEA, map 1574), [tãbra] *tabla* 'board' (ALEA, map 24), etc. In our recording from an informant from Lanjarón (to be discussed later) we find, for instance, [deθãgradãbre] *desagradable* 'disagreeable', [teřfɾe] *terrible*, [impoθfɾe] *imposible* 'impossible', together with the hypercorrected [éblo] *Ebro* 'name of a river'. Other, less striking, coincidences that can be mentioned are the velarization of nasals, the deletion of intervocalic /d/, the presence of a laryngeal fricative /h/ instead of velar /x/ and also from Latin /f/ (cf. Rodríguez Castellano 1954, Penny 1978, Alvar 1977) and, indeed, the aspiration of /s/, which also occurs in some areas of the Leonese macrodialect (Penny 1978).<sup>6</sup> These coincidences may point to a common origin also for the vowel phenomena with which we are concerned. Be that as it may, it is not necessary to assume a direct Leonese influence to maintain our hypothesis on the evolution of the Eastern Andalusian vocalism.

To sum up so far, the standard assumption on the origin of the contrast between close and open vowels in Eastern Andalusian has been that this phenomenon is a result of the opening of vowels in contact with [h], from original /s/. This assumption leaves a number of problems unresolved. We have attempted to address these problems by starting from the assumption that historically the first and main event was the raising of final mid vowels, as in Leonese. Final raising is independent from the loss of final /s/. When final /s/ was weakened, a vowel contrast in final position arose only in those areas that had an earlier process of final raising (or had preserved final high vowels).

Now we may go back to the question of why researchers have traditionally focused on the lowering that takes place in plurals and other forms with a "latent" final consonant and not on the raising of vowels in absolute word-final position.

We believe that a reason for this might be that vowel raising could very well be a receding phenomenon, for which there is some evidence, as we will see.

The most extensive acoustic study available of the Eastern Andalusian vowels is that in Sanders (1994).<sup>7</sup> In this study a large corpus of utterances from three male college students from Granada was analyzed instrumentally. This study found a quite consistent alternation in vowel quality between singular and plural forms. The alternation affected the mid vowels in all positions, pretonic, tonic and final; and also the low vowel in word-final position. The average values for the mid vowels for all three informants are presented in Table 1.

If we compare these values with the average formant values for male speakers of standard Spanish given in Martínez Celdrán (1984:293-4), reproduced in the left columns in Table 2, or Quilis and Esgueva (1983:244), right columns in Table 2, we note that the Andalusian plural mid vowels are more open, but there is no evidence for any raising in the singular. The formant values of Eastern Andalusian singular vowels in Sanders (1994) are very similar to the standard Spanish values. These data thus appear difficult to reconcile with the hypothesis that we are defending in this paper.

We have made an hour-long recording of the oral poetry of AR, an elderly illiterate speaker from Lanjarón, in the Alpujarras mountains near Granada. The comparison of this corpus, which we have begun to analyze, with the results obtained in Sanders (1994) is rather revealing. In both cases there is a fairly systematic distinction in vowel quality depending on whether the word is singular or plural (i.e. whether it ends in a vowel or in a latent consonant), but the nature of the distinction is not the same. Both the college students in Sanders' (1994) study and AR show generally lower variants in plural than in nonplural forms. In addition, however, AR's final singular /e/ and /o/ (especially the latter) are significantly raised, which is not the case for the college students.

AR's final /e/ and /o/ often approach the quality of high vowels. Compare the examples in Table 3, where first and second formant values for the final vowel are given, with those for the corresponding vowels in Tables 1 and 2.

The acoustic impression given by these examples is that of a very close mid or a high vowel.<sup>8</sup> The raising is not always as extreme as in these selected examples, but when a comparison is made with the quality of final vowels in plural forms the existence of noticeable differences is apparent, especially in the case of final /o/, as mentioned. Incidentally, in our hour-long recording of AR, etymological syllable or word-final *-s* is never pronounced as such and the aspirated allophone [-h] has a very low incidence in word-final position. By far the most common pronunciation presents no trace of a final consonant. This is consistent with the situation reported in other studies of Eastern Andalusian.<sup>9</sup> From AR's text, we have scored 37 tokens of /o/ in absolute word-final position and 19 tokens in the final syllable of plurals (where a 'latent', although seldom realized final consonant can be postulated). The average formant values for final /o/ in final unstressed syllable for A.R. are the following: /-o#/<sup>10</sup> F1 413.38 / F2 1163.71 (average of 37 tokens); plural F1 544.46 / F2 1155.20 (average of 19 tokens). A scatter graph where all scored tokens are represented is given in Graph 1.

As can be seen from Graph 1, in the plural final /-o/ presents, in general, higher values for the first formant, i.e. it is a lower vowel. All instances of very

raised /o/ (on the top part of the figure) correspond to non-plural items, whereas plural tokens concentrate on the bottom part of the figure. Graph 1 for our elderly speaker AR, can be compared with Graph 2, reproduced from Sanders (1994), which represents the values for final /o/ for AMB, one of the subjects in this study.

Both graphs are similar in the relative distribution of plural and non-plural tokens in the vowel space. But non-plural tokens for AMB are never as raised as for AR. The extreme raising that non-plural final /o/ can undergo in AR's speech is absent from AMB's data (notice that in Graph 2, no token has a F1 value lower than about 225 Hz). This is not a feature of his speech. The difference is apparent to a trained ear.

In non-plurals, AR shows a very pronounced raising of final mid vowels, which often approach high vowels in their quality. The younger speakers, on the other hand, do not present any raising (when compared with the values that are normal in Spanish). How are we to interpret these facts? According to our hypothesis the raising of final vowels is the element that creates the condition for 'vowel doubling'. The data from AR, our elderly informant, show a great measure of raising and are consistent with our hypothesis. This would represent a more conservative dialectal pronunciation. In recent times, and for sociolinguistic reasons, there would have been a tendency to reduce the raising in the singular and, in order to maintain the opposition, to also increase the lowering or laxing in the plural. This is what has happened in the speech of the college students in Sanders' (1994) study.

The raising of final vowels is nowadays highly stigmatized in Spain and is viewed as a trait of a rural, uneducated background (cf. Holmquist 1988). Zamora Vicente (1970:293) states that in Granada the raising of final mid vowels to high is characteristic of uncultured folk ("todas las clases poco cultas"). Moya Corral (1979:27) implies that raised final vowels are receding in the variety of Jaén, when he indicates that a very close [o̞] (which he sometimes transcribes with a superscript [u] over the [o]) in word-final position in the singular is especially frequent in the speech of his older informants. It does not seem unreasonable to suggest that the association of final raising with illiteracy has been a factor leading to the progressive dismissal of this linguistic feature.

On the other hand, laxing does not convey any negative associations. The different social valuation of these phenomena would have induced the reduction of raising; the opposition being now preserved in the speech of these speakers solely by means of a greater lowering of the lower mid vowels.

Whereas we cannot claim to have presented conclusive evidence that final raising is a receding feature, which presumably once had a more general distribution, the evidence that we do have is rather suggestive. The striking difference between the pronunciation of our elderly informant and that of the college students studied in Sanders (1994), together with the repeated reference in the literature to final raising as characteristic of older and/or uneducated speakers, are facts that point in this direction.

The final outcome would be that the raising of unstressed mid vowels in absolute final position which, in our hypothesis, was the original trigger of a sg/pl distinction based on vowel quality, appears to be on its way out, given its negative



connotations; whereas, lowering or laxing in the plural, a secondary development which does not carry the same social stigma, is establishing itself as the significant feature in the opposition.

## TABLES AND GRAPHS

Table 1: Average vowel formant values in Sanders (1994:168)

		singular		plural	
		F1	F2	F1	F2
/e/	pretonic	479.75	1830.53	588.66	1664.94
	tonic	476.07	1937.76	579.26	1791.52
	final	489.15	1867.41	568.06	1774.16
/o/	pretonic	482.44	1077.49	578.97	1113.49
	tonic	504.96	1119.66	602.31	1179.86
	final	497.03	1099.99	564.49	1147.82

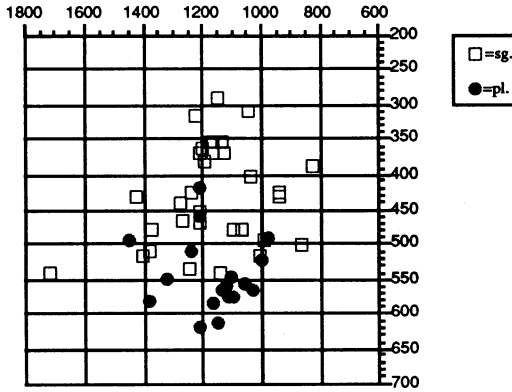
Table 2: Average vowel formant values for standard Spanish

		a. Martínez Celdrán (1984)		b. Quilis & Esgueva (1983)	
		F1	F2	F1	F2
/i/	tonic	344	2202	268.28	2342.15
	atonic	347	2193	260.68	2294.09
/e/	tonic	451	1921	449.71	2052.7
	atonic	451	1847	454.96	1935.28
/a/	tonic	710	1230	665.68	1220.4
	atonic	650	1300	648.84	1211.59
/o/	tonic	506	1037	475.8	900.46
	atonic	496	1007	473.3	895.18
/u/	tonic	361	954	291.09	685.12
	atonic	385	1008	283.5	653.06

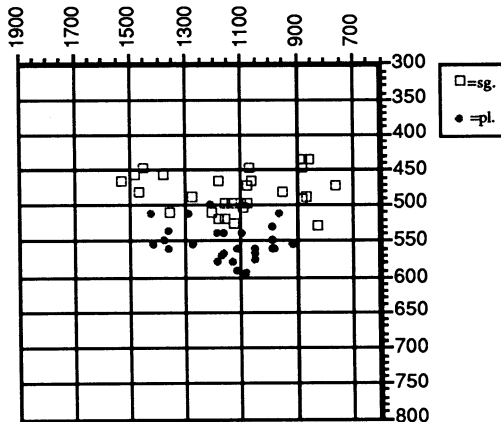
Table 3: AR's word-final mid vowels (selected examples)

noche [-e]	'night'	F1 331.17	F2 2150.05
leche [-e]	'milk'	F1 229.27	F2 2099.10
tiempo [-o]	'time'	F1 387.21	F2 820.28
dinero [-o]	'money'	F1 310.79	F2 1039.36
cuando [-o]	'when'	F1 315.88	F2 1217.68
fuego [-o]	'fire'	F1 361.74	F2 1192.21

Graph 1: final /o/ for AR (elderly speaker)



Graph 2: final /o/ for AMB (college student, from Sanders 1994)



### NOTES

<sup>1</sup> As mentioned, these are contrasting surface phones. Framing these vowel oppositions in terms of 'doubling of vowel phonemes', as some authors have done starting with Navarro Tomás (1939) and including Salvador (1977, 1987), is clearly unwarranted (cf. Zubizarreta 1979, Alarcos 1983, Cerdà Massó 1984, López Morales 1984, among others).

<sup>2</sup> The influential Spanish phonetician Navarro Tomás (1957) recognizes the existence of open and close allophones for the mid vowels of standard Castilian Spanish. But the situation would be very different from that of Andalusian. To begin with, the allophones of Castilian, which would be conditioned by the phonetic environment, would not have the degree of

differentiation that open and close mid vowels have in Andalusian. Secondly, their distribution would be quite different. For instance, the vowel /e/ is described as being close when followed by /s/ in a checked syllable (Navarro Tomás 1977[1957]:52). More recent instrumental studies have failed to confirm the existence of this allophonic distribution in Castilian (Monroy Casas 1980:49-57, cf. also Martínez Celdrán 1984:294, 301, Quilis 1981:169-171).

<sup>3</sup> Although, in some areas the most frequent pronunciation shows complete deletion of the final consonant, this evolution has not yet been completed and forms with some remnant of final aspiration are still found in the relevant varieties (cf. López Morales 1984). A 'latent' word-final consonant may also block diphthong formation and vowel elision when followed by a vowel (Villena Ponsoda 1987, Hualde 1994) and cause certain modifications of a following consonant.

<sup>4</sup> This vocalic phenomenon is not found in western Andalusia (cf. ALEA, map 1696, and also Morillo-Velarde 1985). Some researchers have reported the existence of traces of vowel doubling in the Canary Islands (Catalán 1989 [1960]:133), the Caribbean (Navarro Tomás 1974 [1948]:46, among others) and the River Plate region of South America (Honsa 1965, Cassano 1972). However, other studies of the same dialects have failed to confirm the facts (Hammond 1978, López Morales 1979, 1983, Vaquero and Guerra de la Fuente 1992). For the Canary Islands, Alvar (1965) reports neutralization of singular and plural forms with a tendency to raise final mid vowels in both cases. The maps on phonetic phenomena in vol. 3 of the ALEIC (Alvar 1975-78) can be compared with those of vol. 6 of the ALEA. It appears that the opening of vowels in contact with deleted final consonants, if found at all, is at most a sporadic phenomenon without any systematicity in Spanish dialects outside of Eastern Andalusian.

<sup>5</sup> Unless these toponyms are Mozarabic.

<sup>6</sup> Walsh (1985) defends the hypothesis of a Leonese source for southern Spanish aspiration.

<sup>7</sup> Two earlier acoustic studies are Martínez Melgar (1986) and Llisterri & Poch (1987).

<sup>8</sup> The text was given to transcribe, as an exercise, to the students of a graduate class on Spanish phonetics and phonology taught by one of the authors (Hualde). Several of the students transcribed final high vowels for the examples in (9) and some other examples in the text.

<sup>9</sup> For a comparison of rates of aspiration and deletion of -s in different Spanish dialects, cf. Lipski (1986).

<sup>10</sup> Including singulars in /-o/ and also adverbs, prepositions and other forms with this ending (*cuando* 'when', *siendo* 'being', *pero* 'but').

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