Spanish Definite Article Allomorphy:  
A Correspondence Approach*

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1. Introduction

In Spanish, the feminine singular definite article *la* alternates with the apparent masculine form *el* before a noun beginning with a stressed *a*. This alternation is interesting, because the alternation of a morpheme is conditioned by the phonological properties of the adjacent word. Moreover, it has posed a serious problem for the assumption that the morpho-syntactic operations precede the phonological operations, because the disagreement between an article and a noun is triggered by the surface phonological properties, such as stress.

In this paper, I propose a positional faithfulness account for the Spanish definite article allomorphy. Based on the fact that a sequence of two identical vowels across the word boundary is merged into a single vowel, I argue that the allomorph *el* occurs as a resolution of the identical vowel sequence in stressed position. The vowel sequence is avoided by coalescence in unstressed position. In contrast, the vowel coalescence is prohibited when one of the two adjacent vowels is stressed, and the allomorph *el* occurs to avoid the vowel sequence. I also argue that, as opposed to the approach which assumes more than one underlying representation to the allomorphic alternation (Kager 1996, Mascaró 1996), the allomorph *el* is phonologically derived from a single underlying representation /la/.

The rest of this paper is organised as follows: Section 2 introduces the basic data of the Spanish definite article allomorphy and shows the relationship between the allomorphy and the Spanish resyllabification. Section 3 proposes a basic analysis using the multiple UR approach for a simple illustration. Section 4 proposes an analysis based on the single underlying representation. Section 5 concludes the paper.

2. Spanish Definite Article Allomorphy
2.1. Spanish definite article allomorphy

The Spanish definite article has four distinct forms corresponding to gender and number:
Among the articles in (1), the feminine singular form has two allomorphs:

(2) a. la alméja 'the clam' la anguíla 'the eel'
    la aréna 'the arena' la amíga 'the friend'
    b. el álma (*la álma) 'the soul' el águila 'the eagle'
    el área 'the area' el áma 'the mistress'
    c. el água 'the water'
    la aguáda (*el aguáda) 'the water supply'
    d. la misma água (*el misma água) 'the same water'

As shown in (2a), the feminine singular definite article is la. However, when it precedes a noun beginning with a stressed á, el occurs instead, as shown in (2b). The examples in (2c-d) show that the occurrence of el is not morpheme-specific: if the noun-initial stress is removed by suffixation, la occurs (2c). If the definite article is not adjacent to the noun, la occurs (2d). The pairs in (3) show that the definite articles other than the feminine singular form do not show allomorphy.

(3) a. el amigo 'the friend' el ánimo 'the spirit'
    b. los amigos 'the friends' los ánimos 'the spirits'
    c. las amígas 'the friends' las ámas 'the mistress'

This paper addresses the following questions about the Spanish definite article allomorphy: 1) Why and how does the feminine singular definite article la change to el before the noun beginning with a stressed á? 2) Why does only the feminine singular article show allomorphy? To answer these questions, I propose an account based on the positional faithfulness constraint on stressed syllable (Alderete 1995, Beckman 1998). Before we proceed to the analysis, in the next subsection we briefly introduce the resyllabification in Spanish which plays a crucial role in the account of the allomorphy.

2.2. Allomorphy and resyllabification in Spanish

It is well-known that Spanish has a resyllabification process (Navarro Tomás 1974, Hutchingson 1974, Roca 1991), which is summarised as follows:

(4) a. color azul co.lo.ra.zul 'blue color'
    tan alto ta.nal.to 'so tall'
    b. tu uniforme tu.ni.for.me 'your uniform'
    era así e.ra.sí 'It was so'

The examples in (4a) show that if a word ending with a consonant is followed by another word beginning with a vowel, the final consonant of the preceding word is resyllabified to the onset of the following onsetless syllable. Examples (4b) show that a sequence of two identical vowels across the word boundary is merged into a single vowel.
By taking the resyllabification process in (4) into account, the definite article allomorphy is described as follows:

\[(5) \begin{align*}
\text{a. } & \text{la}_1 \text{ a}_2 \text{míga} \quad \text{la}_1 \text{2.míga} \\
\text{b. } & \text{el áma} \quad \text{e.lá.ma} \quad (*\text{la}_1 \text{ á}_2 \text{ma} \quad *\text{lá}_1 \text{2.ma}) \\
\text{c. } & \text{el ánimo} \quad \text{e.lá.ni.mo} \\
& \text{los ánimos} \quad \text{lo.sá.ni.mos} \\
& \text{las ámas} \quad \text{la.sá.mas}
\end{align*}\]

Assuming that definite articles are clitics and that they are prosodically incorporated into the following prosodic word\(^1\) (Harris 1987), the identical vowel sequences across the word boundary are avoided in two different ways according to whether the noun-initial vowel is stressed. (5a) shows that if the noun-initial vowel is not stressed, two adjacent vowels are coalesced into a single vowel. Contrastively, (5b) shows that the vowel coalescence is not allowed if the noun-initial vowel is stressed. Instead, the allomorph \textit{el} occurs to avoid the vowel sequence. This is an instance of the positional faithfulness effect (Alderete 1995, Beckman 1998). The examples in (5c) provides the answer to the second question introduced at the end of section 2.1: articles other than the feminine singular form do not show allomorphy because they are consonant-final and there is no vowel sequence.

3. A Correspondence Analysis of Spanish Definite Article Allomorphy: The Basics

Assuming that the faithfulness constraints can refer to the linguistically prominent positions (Alderete 1995, Beckman 1998), I propose the positional faithfulness constraint against coalescence in stressed syllable in (6).

\[(6) \text{UNIFORMITY}_\sigma : \text{No segment in a stressed syllable in the output has multiple correspondents in the input.}\]

cf. \text{UNIFORMITY}_\sigma (McCarthy and Prince 1995):

\text{No segment in the output has multiple correspondents in the input.}

Other constraints relevant to the analysis are shown in (7).

\[(7) \begin{align*}
\text{a. } & \text{*V}_i \text{V}_i : \text{Avoid sequence of two identical vowels.} \\
\text{b. } & \text{ONSET} : \text{Avoid onsetless syllable.} \\
\text{c. } & \text{DEP}_\sigma \text{-C} : \text{Output consonants must have input correspondents.} \\
\text{d. } & \text{ANCHOR}_\sigma (\text{stem, } \sigma, \text{initial}) = *\text{RESYLLABIFICATION}: \\
& \text{The initial segment of the stem in the input must be in correspondence with} \\
& \text{a syllable-initial segment in the output.}
\end{align*}\]

Although I argue against the multiple UR approach later, I tentatively assume that the feminine singular definite article has two underlying representations, /la/ and /el/, in the lexicon. If a lexical item has more than one underlying representation, the constraint evaluation proceeds as follows (Kager 1996, Mascaró 1996): for each underlying representation an infinite number of candidates is generated by Gen. Then, Eval evaluates all output candidates based on different underlying representations in parallel and selects a
single optimal candidate.

Given that the feminine singular definite article has two underlying representations, the allomorph is selected by the following constraint ranking:

\[(8) \text{UNIFORMITY}_{\text{IO}} \rightarrow \sigma, \text{DEP}_{\text{IO}} - \text{C, } *V_{i}V_{i} \rightarrow \text{ONSET} \rightarrow \text{UNIFORMITY}_{\text{IO}}, *\text{RESYLLABIFICATION}\]

The ranking (8) consists of the following three rankings: \text{ONSET} \rightarrow *\text{RESYLLABIFICATION} is responsible for the resyllabification process. \text{DEP}_{\text{IO}} - \text{C, } *V_{i}V_{i} \rightarrow \text{ONSET} \rightarrow \text{UNIFORMITY}_{\text{IO}} requires the coalescence of two identical vowel across the word boundary. \text{UNIFORMITY}_{\text{IO}} \rightarrow \sigma \rightarrow \text{ONSET} \rightarrow \text{UNIFORMITY}_{\text{IO}} prohibits the vowel coalescence in stressed syllable.

Let us first consider the occurrence of \textit{la} before an unstressed \textit{a}. Tableau (9) shows that the ranking (8) selects the optimal candidate which avoids the identical vowel sequence by vowel coalescence. In the following tableaux, word boundaries are indicated by square brackets.

\[(9) \text{Input: [la1/el [a2miga]] Output: la12.mi.ga}\]

<table>
<thead>
<tr>
<th>Candidates</th>
<th>\text{UNIFORM-\sigma}</th>
<th>\text{DEP-C}</th>
<th>*V_{i}V_{i}</th>
<th>\text{ONSET}</th>
<th>\text{UNIFORM}</th>
<th>*\text{RESYL}</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. la1.[a2.mi.ga]</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. l[a12.mi.ga]</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. la1.[a2.mi.ga]</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. el.[a2.mi.ga]</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. e.l[a2.mi.ga]</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Candidates (9a-c) are generated from the input \textit{la1 a2miga}, while candidates (9d-e) are generated from \textit{el a2miga}. Candidate (9a), which is faithful to the input /la/, has a vowel sequence and is ruled out by the dominant *V_{i}V_{i}. Candidate (9c) avoids the vowel sequence by inserting a consonant between vowels. This candidate is not optimal because it violates \text{DEP}_{\text{IO}} - \text{C}, which is also dominant in Spanish. The candidates (9d-e) have \textit{el} as the definite article and vacuously satisfy *V_{i}V_{i}. However, these candidates have an onsetless syllable in phrase-initial position and are ruled out by \text{ONSET}. As a result, candidate (9b), which avoids the vowel sequence by vowel coalescence, is selected as optimal, since it only violates the lower-ranked constraints.

Next, the occurrence of \textit{el} before a stressed \textit{\acute{a}} is illustrated in tableau (10).

\[(10) \text{Input: [la1/el [a2gua]] Output: e.l\acute{a}2.gua}\]

<table>
<thead>
<tr>
<th>Candidates</th>
<th>\text{UNIFORM-\sigma}</th>
<th>\text{DEP-C}</th>
<th>*V_{i}V_{i}</th>
<th>\text{ONSET}</th>
<th>\text{UNIFORM}</th>
<th>*\text{RESYL}</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. la1.[\acute{a}2.gua]</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. l[\acute{a}12.gua]</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. la1.[\acute{a}2.gua]</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. el.[\acute{a}2.gua]</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. e.l[\acute{a}2.gua]</td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Candidates (10a-c) are generated from the input with *la, while candidates (10d-e) are from the input with *el. The sequence of identical vowels are prohibited by the dominant \( *V_iV_i \), which excludes the faithful candidate (10a). The vowel sequence cannot be resolved by consonantal epenthesis because DEPIO-C is also dominant (excluding 10c). Although the optimal solution to avoid the vowel sequence is vowel coalescence in tableau (9), this is not an option when the noun-initial vowel is stressed because the vowel coalescence in stressed syllable violates the highest-ranked UNIFORMITY\( _i \sigma \). This is shown by the failure of candidate (10b). Among the remaining candidates (10d-e), which have *el as the definite article, candidate (10e) is the optimal candidate because its competitor (10d) without resyllabification incurs an additional ONSET violation.

4. On the Phonological Shape of *el

The analysis proposed in the previous section crucially assumes that the feminine singular definite article has two underlying representations in the lexicon. This approach has a problem: it cannot explain why *la alternates with *el but not with other forms. This is because *el is merely stipulated as an alternate form of *la in this approach. In this section, I propose the alternative approach that assumes a single underlying representation and analyses the allomorph *el as a result of the phonological processes.

In order to account for the phonological shape of the allomorph *el, I propose that the allomorph *el is phonologically derived from the underlying representation /la/ by vowel deletion and vowel epenthesis. The vowel deletion is triggered by the dominant constraints, \( *V_iV_i \) and UNIFORMITY\( _i \sigma \). The vowel epenthesis is triggered by a constraint on the minimum size of functional words shown in (11).

(11) Minimum Size Requirement on functional words (MSR):

An input functional word must have an output exponent that can form a syllable by itself.

The constraint in (11) requires that functional words can be independently syllabifiable. In Spanish, which allows both onsetless and coda-full syllables, the output exponents of functional words must contain at least V, CV, VC, or CVC, and a single consonant is not permitted as a realisation of functional words. This requirement is quite natural if we consider the fact that functional words must be independently pronounceable.

In addition to MSR, the analysis requires two more constraints: MAXIO, which requires input segments to have output correspondents, and DEPIO-V, which requires vowels in the output to have correspondents in the input.

By incorporating the three constraints introduced above to the basic ranking in (8), we have the revised ranking in (12):

(12) MSR, UNIFORMIO-\( _i \sigma \), DEPIO-C, \( *V_iV_i \) » MAXIO, DEPIO-V » ONSET » UNIFORMIO, *RESYLLABIFICATION

MSR must be dominant because there is no functional word consisting of a single
consonant. $\text{MAX}_{10} \gg \text{ONSET}$ is independently motivated by the fact that vowel deletion is not a general strategy of the resolution of hiatus in Spanish. The ranking between $\text{DEP}_{10}-V$ and $\text{ONSET}$ cannot be determined because hiatus is never resolved by vowel epenthesis. However, $\text{DEP}_{10}-V$ may not be a dominant constraint because vowel epenthesis is attested to resolve the complex onset in word-initial position (e.g. $\text{studio} \Rightarrow \text{estudio}$ 'studio').

The ranking in (12) correctly derives the allomorph $el$ from the input /la/, as shown in the following tableau (the exponents of the article are underscored):

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline
 & MSR & $\text{UNIFORM-}\sigma$ & $\ast V_i V_i$ & $\text{MAX}$ & $\text{DEP-V}$ & $\text{ONSET}$ & $\text{UNIFORM}$ \\
\hline
a. $\text{la}_1[\acute{a}_2,\text{ma}]$ & & & $\ast$ & & $\ast$ & & \\
\hline
b. $\lceil[\acute{a}_2,\text{ma}]$ & & $\ast$ & & & & & \\
\hline
c. $\lceil[\acute{a}_2,\text{ma}]$ & & $\ast$ & & & $\ast$ & & \\
\hline
d. $\le[\acute{a}_2,\text{ma}]$ & & & $\ast$ & $\ast$ & & & \\
\hline
\end{tabular}
\end{table}

Unlike the tableaux discussed in section 3, the input has a single underlying representation /la/. The faithful candidate (13a) is ruled out by $\ast V_i V_i$ because it has an identical vowel sequence. Candidate (13b), which avoids the sequence by coalescence, is also ruled out by the dominant $\text{UNIFORMITY}_{10}-\sigma$. Candidate (13c) avoids the vowel sequence by deleting one of the adjacent vowels. This candidate is excluded by MSR because the output exponent of the article consists of a single consonant. Candidate (13d) also avoids the vowel sequence by deletion, but this candidate insert a vowel to phrase-initial position. This candidate has $el$ as the exponent of the article, because $e$ is a general epenthetic vowel in Spanish. This candidate does not violate MSR, because VC can form a syllable independently. Since this candidate does not violate the dominant constraints, it is selected as optimal.

The revised ranking (12) correctly predicts the occurrence of $la$ before noun beginning with an unstressed $a$ because both $\text{MAX}_{10}$ and $\text{DEP}_{10}-V$ dominate $\text{UNIFORMITY}_{10}$. This is shown by tableau (14).

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline
 & MSR & $\text{UNIFORM-}\sigma$ & $\ast V_i V_i$ & $\text{MAX}$ & $\text{DEP-V}$ & $\text{ONSET}$ & $\text{UNIFORM}$ \\
\hline
a. $\text{la}_1[a_2,\text{mi.ga}]$ & & & $\ast$ & & $\ast$ & & \\
\hline
b. $\lceil[a_2,\text{mi.ga}]$ & & & & & $\ast$ & & \\
\hline
c. $\lceil[a_2,\text{mi.ga}]$ & & $\ast$ & & $\ast$ & & \\
\hline
d. $\le[a_2,\text{mi.ga}]$ & & $\ast$ & $\ast$ & $\ast$ & & & \\
\hline
\end{tabular}
\end{table}

Finally, the following tableau shows that the article other than the feminine singular form does not show allomorphic alternation because there is no vowel sequence across the word boundary.
(15) Input: [la₁s [a₂mas]]  
Output: [la₁så₂₃mas]

<table>
<thead>
<tr>
<th></th>
<th>UNIFORM-Ô</th>
<th>DEP-C</th>
<th>*V/ÔV</th>
<th>MAX</th>
<th>DEP-V</th>
<th>ONSET</th>
<th>RESYL</th>
</tr>
</thead>
</table>
| a. | la₁s[å₂₃mas] |       |        |     |       |       | *!
| b. | la₁s[å₂₃mas] |       |        |     |       |       | *     |
| c. | la₁[å₂₃mas] |       |        |     |       | *    | *     |
| d. | la₁s₃t[å₂₃mas] |       |        |     |       | *!   |       |

When the article ending in a consonant is followed by a vowel-initial noun, the faithful candidate fatally violates ONSET (shown by 15a). The attempts to avoid an onsetless syllable by consonant deletion (15c) or consonant epenthesis (15d) end in violations of the higher-ranked faithfulness constraints. Therefore, the final consonant of the article is resyllabified to the following syllable to avoid the ONSET violation (shown by 15b).

5. Conclusions

This paper examined the Spanish definite article allomorphy. It is argued that the occurrence of allomorph el is a positional faithfulness effect. While a sequence of unstressed vowels is resolved by vowel coalescence, the vowel coalescence is not allowed in stressed position. Therefore, the allomorph el occurs to avoid the vowel sequence. Only the feminine singular article shows allomorphy, since it is the only article that ends in a vowel. The articles which end in a consonant do not show allomorphy, because there is no vowel sequence across the word boundary. It is also claimed that the allomorphic alternation can be accounted for by the purely phonological manner without assuming more than one underlying representation in the lexicon.

The proposed analysis has some advantages over the previous analyses. First, it accounts for the allomorphic alternation as a result of the phonological conditions that are independently motivated in Spanish. The identical vowel sequences across the word boundary is generally avoided by resyllabification, and the prohibition of vowel coalescence in stressed positions is independently motivated in diphthong/monophthong alternations (Kikuchi 1997) and other morpho-phonological processes in Spanish. In contrast, the previous analyses, such as Harris (1987), have to stipulate the rule that deletes the article-final vowel before a stressed á and do not explain why the final vowel of the article must be deleted in this position. Second, the proposed analysis is compatible with the assumption that morpho-syntactic operations precede the phonological ones, because the allomorph el is not the masculine singular form but is derived phonologically from the feminine singular form and there is no disagreement between the article and the noun.

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Notes

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1 The incorporation of the definite articles into the following prosodic word results from the ranking where LEX=PRWD, which requires a lexical word to correspond to a prosodic word, is dominated by the constraint that prohibits function words to form a prosodic word.

2 There is a possible candidate lái,[ma] which deletes the noun-initial vowel. This candidate is excluded by MAXIO-CONTENTWORD, which is universally ranked higher than MAXIO-FUNCTIONALWORD. I am grateful to Kazutaka Kurisu for reminding me of the existence of this candidate.

References