A Reexamination of the Stress Erasure Convention and Spanish Stress
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Source: *Linguistic Inquiry,* Vol. 22, No. 1 (Winter, 1991), pp. 141-159
Published by: The MIT Press
Stable URL: http://www.jstor.org/stable/4178710
Accessed: 14-04-2018 02:15 UTC

Remarks

and

Replies

A Reexamination of the Stress Erasure Convention and Spanish Stress

Morris Halle, James W. Harris, and Jean-Roger Vergnaud

In "The Stress Erasure Convention and Cliticization in Spanish" (Harris (1989a); here-after, SECSPAN), Harris discusses the treatment of a number of phonological phe-nomena from Spanish in Halle and Vergnaud's *An Essay on Stress* (1987; hereafter, EOS). Harris concludes that

(a) the EOS analysis of Spanish (specifically, sec. 3.3.1, pp. 93–96) is descriptively incorrect in a number of respects, and
(b) the Stress Erasure Convention (SEC) proposed in EOS is not supported by the Spanish evidence, if indeed the SEC has any empirical content at all.
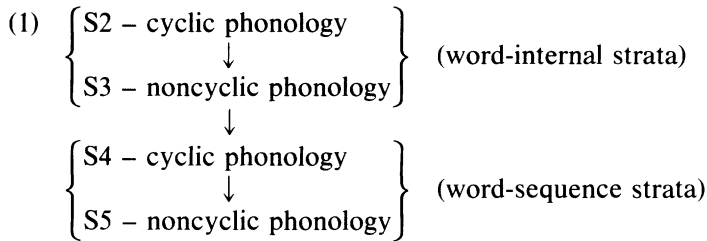
Work carried out subsequently has shown that although the first of these conclusions is correct, the second is false: the SEC has a great deal of empirical content, and it functions in Spanish just as it does in many other languages.

In this article we offer an improved description of well-known data involving Spanish stress and stress-dependent phenomena, into which we incorporate treatment of certain previously unanalyzed material. Our description takes advantage of a number of theo-retical advances developed since the writing of EOS and SECSPAN: we have a clearer understanding of certain morphological restructuring operations, due primarily to Marantz (1988); and we operate in an improved general theoretical framework, developed largely in Halle (1990b) and Halle and Kenstowicz (1989). This framework includes, in particular, a more highly constrained and hence more explanatory version of the SEC and a revised view of the operation of Conflation.

1. Theoretical Preliminaries

As in EOS and SECSPAN, we assume that phonological rules are organized into four ordered strata. The rules in the first pair of strata apply word-internally; those in the second pair apply to word sequences. Within each pair, the first stratum is cyclic and

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the second is noncyclic. We summarize this graphically in (1), which reproduces the lower half of SECSPAN (2).[1]

(1) $\begin{cases} \text{S2 – cyclic phonology} \\ \qquad\qquad \downarrow \\ \text{S3 – noncyclic phonology} \end{cases}$ (word-internal strata)

$\qquad\qquad\qquad\quad \downarrow$

$\begin{cases} \text{S4 – cyclic phonology} \\ \qquad\qquad \downarrow \\ \text{S5 – noncyclic phonology} \end{cases}$ (word-sequence strata)

The ordering of phonological rules into blocks or strata was first introduced by proponents of the theory of Lexical Phonology (see Pesetsky (1979), Kiparsky (1982; 1985), Halle and Mohanan (1985)). The organization shown in (1)—adopted in EOS, SECSPAN, and the present article—differs from that assumed in earlier studies in one important respect.

A fundamental tenet of all versions of Lexical Phonology is that affixation processes and other rules of word formation, traditionally thought to make up a separate module of the grammar (namely, the morphology) are interleaved among the rules of phonology. Counterexamples to this interleaving were noted already in Aronoff (1976) but have been widely disregarded. They are taken seriously, however, in EOS, where morphology is reinstated as a separate component of the grammar, ordered before the phonological component. This move has led to improvements in the treatment of phonological problems and to progress in our understanding of morphology (see Halle 1990a)).

If the rules adjoining affixes to stems are not interleaved among those of the phonology but are rather part of the morphology module, then it is obviously not possible to account for the different behavior of cyclic and noncyclic affixes by appropriately ordering affixation rules among phonological rules. It was therefore proposed in EOS that the distinction between the two kinds of affixes is reflected in labeling as cyclic or noncyclic the constituent generated by attachment of a particular affix. Thus, to cite familiar examples, English "class 1" suffixes such as *-al*, *-ity*, and *-ic* form cyclic constituents, whereas "class 2" suffixes such as *-ing*, *-ness*, and *-less* form noncyclic constituents. Stems—the innermost constituent of the word—are also cyclic constituents, but the effects of this fact are sometimes masked by the overriding effects of Strict Cyclicity (Mascaró (1976), Kiparsky (1982)). Note our terminology: we refer not only to "(non)cyclic affixes" but also to "(non)cyclic constituents"; this is important in the exposition below.

The rules in the cyclic stratum S2 of (1) apply to each cyclic constituent of a word in turn, in the familiar fashion, subject to Strict Cyclicity and other conditions. The rules of the noncyclic stratum S3 apply after all passes through the cyclic rules are completed.

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[1] We retain the numbering of strata in EOS and SECSPAN; the prephonological stratum numbered 1 does not concern us here.

The rules of S3 apply exactly once to the entire word, regardless of the number of noncyclic affixes in the word, including the case of words with no noncyclic affixes.

The SEC is a universal principle that controls the generation of metrical structure on each pass through the rules of S2, but not elsewhere. In (2a) we juxtapose the statement of the SEC in EOS with the revised SEC proposed in Halle (1990b) and Halle and Kenstowicz (1989). In (2b) and (2c) we add (informal statements of) the Stress Copy Rule and Conflation, respectively, to which we turn directly.

(2)   *EOS*   *Halle (1990b), Halle and*
                                                   Kenstowicz (1989)

  a. *Stress Erasure Convention*   *Stress Erasure Convention*
      In the input to the rules of cyclic   At the beginning of each pass
      strata information about stress   through S2, erase all metrical
      generated on previous passes   structure and stresses assigned on
      through the cyclic rules is carried   previous cycles.
      over only if the affixed
      constituent is itself a domain for
      the cyclic stress rules. If the
      affixed constituent is not a
      domain for the cyclic stress rules,
      information about stresses
      assigned on previous passes is
      erased. (EOS, p. 83)

  b. *Stress Copy Rule*   Ø
      Copy previously assigned stresses
      into a constituent headed by a
      cyclic affix that does not form a
      stress domain.

  c. *Conflation*   *Conflation*
      Erase all stresses and their   Erase the lower-numbered of two
      associated constituents on the   lines in the metrical grid.
      lower-numbered of two lines in
      the metrical grid, except for those
      that are also heads on the higher-
      numbered line.

As pointed up graphically in (2a,b), revision of the SEC and elimination of the Stress Copy Rule in the more recent framework remove the basis for the SECSPAN criticism of the SEC as nearly immune to empirical test.[2]

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[2] Halle (1990b) and Halle and Kenstowicz (1989) illustrate in detail the role of the revised SEC in languages as different as Latin, Levantine Arabic dialects, Macedonian, Indonesian, and Manam (New Guinea). Its function in Spanish is amply illustrated below.

As indicated in (2c), our view of Conflation has also changed since EOS and SECSPAN were written; the revised version introduced in Halle and Kenstowicz (1989) is a simpler, more constrained operation. The EOS version of Conflation is illustrated in (3).

(3)   line 2   *   *
      line 1   (*   *   *)   →   (*)
      line 0   (* *) (* *) (* *)   * * * * (* *)

In Halle and Kenstowicz (1989) some difficulties with this operation are pointed out. It is proposed instead that Conflation simply eliminates the lower of the two lines and the content of the erstwhile higher line drops down automatically. This is illustrated in (4).

(4)   line 2   *
      line 1   (*   *   *)   →   *
      line 0   (* *) (* *) (* *)   * * * * (* *)

The revisions in (2) clearly make a more constrained set of devices available to phonological descriptions than those employed in EOS and SECSPAN.

These preliminaries out of the way, we turn now to the Spanish data.

2. Stress Assignment and Stress-Related Phenomena in Spanish

Our presentation of the Spanish material is organized as follows: In section 2.1 we give the basic stress rules. We then reanalyze the cases that figure centrally in the SECSPAN commentary on EOS, namely, diphthongization (in section 2.2) and article allomorphy (in section 2.3). In section 2.4 we treat previously unanalyzed phenomena that lend striking support to the proposals of sections 2.2 and 2.3.

2.1. Basic Rules for Primary Word Stress in Spanish

Spanish words systematically surface with a single primary stress that falls on one of the last three syllables of the word. In V-final words, stress usually falls on the penultimate syllable (the unmarked case), but it can also appear on the antepenult (the marked case). Main stress appears to be shifted one syllable to the right in C-final words: it usually appears on the final syllable (the unmarked case), but it can also appear on the penult (the marked case). Primary stress is systematically disallowed on the preantepenult in V-final words and on the antepenult in C-final words. These generalizations are implemented by the rules in (5).[3]

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[3] Rule (5b) is a language-particular rule and as such has lexical exceptions, as we will illustrate. The other "rules" in (5) are the Spanish settings of universal parameters, which are not subject to idiosyncratic variation among lexical items.

We omit discussion of certain aspects of Spanish stress assignment not relevant to present concerns, for example, the role of syllable weight (see Harris (1987; 1989b,c,d)). The treatment of certain details below supersedes earlier proposals.

(5) a. Mark a word-final V extrametrical (notation: $\langle V \rangle$).
   b. Accent (that is, mark with * on line 1) the rightmost (metrical) syllable.
   c. Construct binary left-headed feet from right to left on line 0; mark the heads (stresses) on line 1.
   d. Assign main stress to the rightmost foot by constructing an unbounded right-headed constituent on line 1; mark the head on line 2.
   e. Conflate lines 1 and 2.

The maximum space within which the rules in (5) place main stress is a binary foot followed by an extrametrical syllable at the right edge of the word (that is, $(* *)\langle(*)\rangle$); this is the formal reflection of the final three-syllable stress "window" in Spanish.[4] C-final words have no extrametrical syllable, since (5a) marks only word-final vowels extrametrical; this is the formal reflection of the observed narrowing of the stress "window" to the two final syllables in C-final words. Rule (5e) guarantees that Spanish words emerge from the word-level phonology with a single stress.[5]

We illustrate the operation of the rules in (5) with *taréa* 'task' and *área* 'area', which exemplify the unmarked and marked cases, respectively. The proparoxytone pattern of the latter results from idiosyncratic exceptionality to rule (5b), which is registered lexically on particular morphemes, such as the stem of *área*.

(6)		ta.r e. a		a.r e. a		
	line 0	* * $\langle*\rangle$		* * $\langle*\rangle$		(5a)
	line 1	*		–		(5b)
	line 0	(*) (*) $\langle*\rangle$		(* *) $\langle*\rangle$		
	line 1	(* *)		(*)		(5c)
	line 2	*		*		(5d)
	line 0	* (*) $\langle*\rangle$		(* *) $\langle*\rangle$		
	line 1	*		*		(5e)

As will be seen repeatedly below, the rules in (5) apply (at least) in both the cyclic and noncyclic word-internal strata S2 and S3.

2.2. Diphthongization

As illustrated in (7), certain nonlow vowels in Spanish diphthongize under stress.

(7) c[o]nt-á-ba   'he counted'   c[ué]nt-a   'he counts'
   n[e]g-á-ba   'he denied'   n[ié]g-a   'he denies'
   j[u]g-á-ba   'he played'   j[ué]g-a   'he plays'
   adqu[i]r-í-a 'he acquired'   adqu[ié]r-e 'he acquires'

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[4] This is in fact the maximal space for stress that any language can measure from the right edge of the word. It is important to realize that this most general property of stress placement in Spanish is a consequence of Universal Grammar rather than language-particular stipulation.

[5] The subsidiary word stresses studied in Roca (1986) are assigned in the word-sequence strata; they have no effect on the matters under discussion and will therefore be disregarded.

It is not germane to present concerns how diphthongizing nonlow vowels are formally distinguished from their nondiphthongizing cognates or how this distinction is utilized in the formal statement of the diphthongization process (for details, see Harris (1985)). It is sufficient for present purposes to assume that Spanish has a rule or rules with the effect of (8).

(8)   Nonlow vowels diphthongize when stressed.

Since Diphthongization (8) is stress-dependent, it must take effect after the stress rules apply. Nothing further is required for cases like those in (7). The examples in (9), however, show that there is more to the matter, since they exhibit both alternating diphthongs and simple vowels in unstressed syllables.

(9)   b[ué]n-o 'good'   b[ue]n-ísimo 'very good'   b[o]n-dád 'goodness'
      m[ié]l   'honey'   m[ie]l-ecíta 'honey' (dim.)   m[e]l-óso 'like honey'

What accounts for the appearance of diphthongs in the words of the second column and simple vowels in the words of the third column? Since Diphthongization (8) is triggered by stress, we postulate that in the words of the second column—but not in those of the third—the initial syllable in fact bears stress at the point in the derivation at which the rule operates. We achieve the desired result if we assume that

(a)   the stress rules in (5) are assigned to both the cyclic stratum S2 and the non-cyclic stratum S3,
(b)   Diphthongization (8) is assigned only to S3, where it is ordered before the stress rules, and
(c)   the suffixes -ísimo (superlative) and -cíta (diminutive) in the second column are noncyclic, whereas -dád and -óso in the third column are cyclic.

We thus derive bondád and buenísimo as shown in (10), where superscript c and n are attached to brackets enclosing cyclic and noncyclic constituents, respectively.[6]

(10)

	[[bon]^c dad]^c		[[bon]^c isim o]^n			
line 0	(*)		(*)			S2, first pass
line 1	*		*			(5b–e)
line 0	*	(*)				S2, second pass
line 1		*				(5b–e)
	bon	dad	bon	isim	o	input to S3
line 0	*	(*)	(*)	* *	*	
line 1		*	*			
	–		buen			(8)
line 0	*	(*)	*	(* *) ⟨*⟩		(5a–e)
line 1		*		*		

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[6] We temporarily disregard the fact that the final vowel of -ísimo, -cíta, and -óso is a separate morpheme that marks declensional class. Further discussion of the assignment of Spanish affixes to cyclic and noncyclic classes can be found in Harris (1989b).

In the first pass through the rules of the cyclic stratum S2, the stem *bon-* emerges with stress (that is, an asterisk on line 1) on its only syllable in both *bondád* and *buenísimo*. After that, the derivation of the two words diverges.

In *bondád* the affix *-dad* is cyclic and thus triggers a second pass through cyclic stratum S2. At the beginning of this pass, the SEC erases the output of rules (5b–e) in the first pass. Reapplication of rules (5b–e) in the second cycle results in *bondád,* with stress on the final syllable only: rule (5c) assigns stress to the first syllable, but this stress is eliminated by Conflation (5e). Since the SEC operates only at the start of S2, *bondád* is carried over unaltered into the noncyclic stratum S3. Diphthongization (8) cannot apply in the stem *bon-* since its vowel is unstressed (has no line 1 asterisk). Finally, reapplication of the stress rules (5a–e) in S3 is effectively vacuous: in S3 as in S2, rule (5c) assigns stress to the first syllable, but this stress is eliminated by Conflation (5e).

In *buenísimo* there is no second pass through S2 since the suffix *-ísimo* is noncyclic. The SEC does not operate at the beginning of noncyclic stratum S3, so the stem *bon-* enters S3 with the stress (line 1 asterisk) and metrical constituent assigned in S2. Diphthongization (8) is thus able to apply. Subsequent application of the stress rules (5a–e) in S3 shifts main stress to the antepenult since *-ísimo* is lexically marked as not subject to rule (5b). Conflation (5e) deletes the stress assigned to the stem in S2, thus generating the correct output, *b[ue]nísimo.*[7]

We reiterate that Diphthongization (8) does not apply in *bondád* because the initial stress assigned on the first pass through S2 is removed by the SEC on the second pass through that stratum. In *buenísimo,* on the other hand, there is no second pass through S2 since the suffix *-ísimo* is noncyclic. Therefore, the stress assigned to *bon-* in S2 remains in the input to the noncyclic rules of S3 and the stem vowel undergoes Diphthongization (8). The subsequent application of Conflation (5e) eliminates stress on the stem syllable. We draw particular attention to these facts since they provide direct support for the need for the SEC.

Consider next verbs like those illustrated in (11), which contrast with those in (7) with respect to diphthongization but not stress.

(11) a-v[ie]j-á-ba 'he grew old' a-v[ié]j-a 'he grows old'
      a-m[ue]bl-á-ba 'he furnished' a-m[ué]bl-a 'he furnishes'

The nouns *v[e]jéz* 'old age' and *m[o]bláje* 'furnishings' show that the diphthongs in the stems of the corresponding verbs are derived rather than underlying. We must therefore account for the fact that these diphthongs appear in unstressed as well as stressed syllables. The key to the account we propose is that the verbs in (11)—unlike those in (7)—contain the (semantically empty) prefix *a-*, which we assign to the noncyclic set of affixes. In essence, this means that since the stem stress assigned in S2 is not erased

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[7] As noted in SECSPAN (p. 345), Diphthongization (8) cannot be ordered after the stress rules in the cyclic stratum, because then it would apply on each cycle—in particular, on the innermost stem cycle. This would incorrectly diphthongize stems in all the cases illustrated in (7) and (9).

by the SEC at the start of noncyclic stratum S3, the representations that enter S3 are
those shown in (12).

(12)   a-vej-a(-ba)   a-mobl-a(-ba)
    line 0   (*)   (*)
    line 1   *   *

   Since the stems are stressed at this point in the derivation, they can undergo Diph-
thongization (8). Subsequent application of the stress rules (5a–e) in S3 yields the correct
surface representations shown in (11). In particular, Conflation (5e) removes stem stress
when main stress falls on the poststem theme vowel: *av*[ie]*jába, am*[ue]*blába.*
   Evidence is provided in Harris (1989d) and in section 2.4 below that the verbal
theme vowel—poststem *-a-* in the examples in (7), (11), and (12)—is a derivational affix
that forms a cyclic constituent. Indeed, it is evident from simple cases like *c*[o]*nt-á-ba*
and *n*[e]*g-á-ba* in (7) that the theme vowel is a cyclic affix. Consider the derivation of
these forms shown in (13).

(13)   [[[cont]^c a]^c ba]^n [[[neg]^c a]^c ba]^n
    line 0   (*)   (*)   S2, first pass
    line 1   *   *   (5b–e)

    line 0   *   (*)   *   (*)   S2, second pass
    line 1   *   *   (5b–e)

    line 0   *   (*) ⟨*⟩   *   (*) ⟨*⟩   S3
    line 1   *   *   (5a–e)

   Because of the SEC, the stress rules (5a–e) start with a tabula rasa at the outset of
the second cycle, the theme vowel cycle. In the second cycle the theme vowel is not
word-final; therefore, rule (5a) does not apply to mark it extrametrical. The theme vowel
is also not a lexical exception to rule (5b), which therefore applies as expected, assigning
a stress to thematic *-a-*. The outputs of the second pass through S2 are thus *contá-* and
negá-, which are carried over as inputs to the noncyclic stratum S3, that of the inflectional
affix *-ba* (past tense, imperfect aspect). The stems *cont-* and *neg-* cannot be diphthongized
now since they are not stressed. Subsequent application of the stress rules in S3 straight-
forwardly produces the correct outputs *c*[o]*ntába, n*[e]*gába.*
   The main point to be observed in (13) is that the cyclic character of the theme vowel
entails operation of the SEC at the start of the second pass through S2, which results
ultimately in the failure of Diphthongization (8) to affect the stem vowels in the regular
cases illustrated. These derivations thus provide support for the SEC, but at the same
time they raise the question of how the representations in (12) can be input to S3. Spe-
cifically, why is the input to S3 *cont-á, ne   -* in (13) but *a-móbl-a-, a-véj-a-* in (12)?
   As just noted, the difference is due to the noncyclic prefix *a-*. We propose that this
prefix is responsible for the rearrangement of the constituent structure illustrated in (14a)

to that shown in (14b). The latter structure provides the input to S3 required by the cases in (12).

(14) a. *Morphologically motivated*   b. *Phonologically required*

$$[[[a \; [vej]^c]^n \; a]^c \; ba]^n \quad \rightarrow \quad [[a \; [[vej]^c \; a]^n]^n \; ba]^n$$
$$[[A \quad B \;] \; C] \qquad\qquad\qquad [A \; [\quad B \quad C] \;]$$

The constituent structure (14a) is morphologically motivated in that (a) the prefix (*a-*) is selected by the root (*vej*) and is therefore its sister, (b) the theme vowel (*-a-*) is selected by the constituent [prefix + root] (*a + vej*) and is therefore a sister of this constituent, and (c) inflectional endings like the tense/aspect marker *-ba* attach to the constituent containing the verbal theme vowel.

Languages differ with respect to whether they allow such configurations within a single (noncompound) word as inputs to phonological rules. English, for example, allows them. These configurations, however, are unacceptable phonological inputs in Sanskrit and Spanish because they contain a noncyclic constituent ($[a + vej]^n$) inside a cyclic constituent ($[[. . .] \; a]^c$).[8] The phonologically required structure (14b) is provided by the principles governing the mapping of S-Structure into Phonological Form (PF) studied in Marantz (1988). Included among these is a principle of "associativity" of adjacency relations whereby a string of the form $(A\hat{}B)\hat{}C$ can be restructured as $A\hat{}(B\hat{}C)$, where "$\hat{}$" represents the relation of sisterhood.

In the case at hand, such restructuring has the effect of moving the postroot theme vowel *-a-* (= element C) inside the noncyclic domain erected in morphological structure by the noncyclic prefix *a-*. That is, the theme vowel becomes the sister of the root in the indicated position in the structure $[[a \; [vej]^{c\hat{}}\underline{\quad}]^n \; a]^c$. As a consequence of this restructuring, the original constituent $[. . .\hat{}a]^c$ is left headless and therefore ceases to exist.[9] The output of the restructuring operation is thus $[[a \; [[vej]^c \; a]^n]^n \; ba]^n$. As noted in section 1, the rules of noncyclic stratum S3 apply only once to the entire word, regardless of the number of noncyclic affixes contained in the word; therefore, the output structure $[[a \; [[vej]^c \; a]^n]^n \; ba]^n$ is exactly equivalent to $[a \; [vej]^c \; a \; ba]^n$ as far as the application of phonological rules is concerned. For clarity, a complete derivation of *av*[ie]*jába* is given in (15).

(15) $[[[\; a \; [vej]^c]^n \; a]^c \; ba]^n$

	$[\;\; a \; [vej]^c$	a	$ba]^n$	Restructuring
line 0	(*)			S2:
line 1	*			(5b–e)

	a	vej	a	ba	Input to S3
line 0	*	(*)	*	*	
line 1		*			

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[8] Concerning Sanskrit, see EOS (pp. 84–90).

[9] The constituent structure of Spanish verbs with prefixes has long been a recalcitrant puzzle. If (14) is on the right track, we can understand why the evidence has seemed paradoxical.

                                  viej   (8)

line 0   *   *   (*) ⟨*⟩   S3 continues:
line 1   *   (5a–e)

The material under discussion extends the work of Marantz (1988) by providing evidence for the formal principle stated in (16).

(16)   When "restructuring by associativity" moves an element E into a constituent C, E assumes the cyclic or noncyclic status that was defined on C prior to rebracketing (in other words, movement of E into C does not alter the cyclicity/ noncyclicity of C).

Additional forms in which vowels unstressed on the surface undergo Diphthongization (8) are compound nouns like those illustrated in (17).

(17)   c[ue]lga-cápas   'coatrack'
       c[ie]m-piés   'centipede'

These examples provide further support for the analysis developed above. Since these are compounds, each component word undergoes the rules of both word-level strata, S2 and S3. These rules assign a stress to each of the two component words and, if the stressed vowels can be diphthongized, they undergo Diphthongization (8), which is assigned to the noncyclic stratum S3. We assume that the rules of the cyclic word-sequence stratum S4 include the rules (5d) and (5e). The former assigns main stress (a line 2 asterisk) to the right-hand constituent; Conflation (5e) thereupon eliminates stress on the left-hand constituent word and lowers the stress on the right-hand constituent from line 2 to line 1.[10]

At the end of the review of the diphthongization facts in SECSPAN, it is stated that

> either (a) the SEC is incorrect in predicting a transfer of cyclic stress that in fact does not appear in surface representations; or (b) the SEC may be correct, but some additional device with the effect of rule (10) [a stress deletion rule, which we are proposing to replace here with Conflation (5e), MH/JH/JRV] must be postulated . . . to eliminate the nonsurfacing stresses copied in accordance with the SEC. In short, we cannot accept H&V's [= EOS's, MH/JH/JRV] assertion that the SEC makes rule (10) unnecessary. Furthermore, if it can be established either that stems are not stress domains or that diphthongization is not cyclic, then the only possible conclusion is that the SEC is incorrect and that stress deletion is effected by a rule like (10), which must be ordered after Diphthongization. (p. 346)

The account we have presented above supports the second of SECSPAN's alternatives. It shows that the SEC is correct, but contrary to what was asserted in EOS, this does

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[10] Since this type of stress adjustment affects compounds but not sequences of words in the phrasal categories NP, AP, and so on (examples in (16), SECSPAN, p. 349), Conflation (5e) must not operate in the stratum in which phrasal stress is assigned, which we take to be S5. That Spanish compounds of the type illustrated in (17) surface with a single primary stress is readily documented: see Real Academia Española (1973), "El único acento prosódico del compuesto es el del segundo componente" (p. 78).

not make a stress deletion rule superfluous. Both the SEC and Conflation—the amended, strong versions of each given in (2) above—are needed for a correct account of the facts.

2.3 Article Allomorphy

As detailed in SECSPAN (pp. 346–348), the normal form of the feminine singular definite article is *la* (18a), but this form is replaced by *el* before nouns beginning with stressed [á] (18b) and also before certain nouns that begin with stressless [a] (18c).[11]

(18) a. la agwáda   'the water supply'   la alméja   'the clam'
     b. el ágwa   'the water'   el álma   'the soul'
     c. el agwíta   'the water' (dim.)   el agwaniéve   'the sleet'

It is especially noteworthy that the contexts in which stressless [a] triggers *la-el* replacement are identical to those in which stressless vowels undergo Diphthongization (8). Specifically, *el* replaces *la* before unstressed [a] if the noun has a *noncyclic derivational affix* or if the [a] is unstressed by virtue of being the first component of a *compound word*. These are the two contexts in which Diphthongization (8) affects vowels that are unstressed in surface representations, as illustrated in section 2.3. This strict parallelism between Diphthongization (8) and *la-el* replacement cannot be an accident. We propose to capture this parallelism formally by postulating that *la-el* replacement, like Diphthongization (8), occurs in the noncyclic stratum S3, before Conflation (5e).

As detailed in EOS and SECSPAN, we must also note that Spanish definite articles are clitics. That is, though definite articles in Spanish have the syntactic independence of free words, their phonological behavior is identical to that of morphological prefixes: definite articles must form a single prosodic constituent with the stem on their immediate right, regardless of the syntactic or morphological category of the latter. As also noted in EOS and SECSPAN, the status of definite articles as clitics requires that inputs to the phonological rules have constituent structures like those shown in (19b), which differ markedly from those that can readily be motivated syntactically and morphologically, shown in (19a).

(19) a. *Syntactically/morphologically*   b. *Phonologically required*
         motivated

         $_{NP}$[la $_N$[[agw]   a]]   →   [[la   [agw]   a]]
         $_{NP}$[la $_N$[[agw]   it-a]]   →   [[la   [agw]   it-a]]
         $_{NP}$[la $_N$[$_N$[agw-a] $_N$[nieve]]] →   [[la   [agw-a]] [nieve]]
              [A [B   C]]   [[A   B]   C]

It is easy to see that (19) involves exactly the same phenomenon as (14): the mapping of syntactic constituency at S-Structure into PF is mediated by certain principles whereby elements can be rebracketed because of the associative character of adjacency relations

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[11] Because of certain vagaries of conventional orthography, the stem for 'water' is written *agw-* below.

(Marantz (1988)).[12] In the case at hand, rebracketing is triggered by the clitic status of definite articles in Spanish (that is, the requirement that definite articles be bound as phonological prefixes to right-adjacent items). As another parallel with (14), the restructuring illustrated in (19) has the consequence of placing the article inside a phonologically noncyclic constituent. Principle (16) therefore comes into play, guaranteeing that the rebracketed article exhibits the phonological behavior of a noncyclic affix. It then follows from the fact that the rules of noncyclic stratum S3 apply only once to the entire word (as noted in section 1 and illustrated in connection with (14) in section 2) that the net effect of (19) on the application of phonological rules is as illustrated in (20).

(20) [la [agw]^c a]^n
     [la [agw]^c it a]^n
     [[la [agw]^c a]^n [nieve]]

La-el replacement thus interacts with stress assignment as illustrated in (21) with the phrases whose outputs are *la agwáda* and *el agwíta*. The nouns in both phrases are feminine, and the two phrases have prosodically identical surface representations. The crucial difference is in the suffixal make-up of the nouns: the *-ad-* of *agw-ad-a* is cyclic, whereas the *-it-* of *agw-it-a* is noncyclic.

(21) $_{NP}$[la [[[agw]^c ad]^c a]^n] $_{NP}$[la [[[agw]^c it]^n a]^n]

		la	agw	ad	a	la	agw	it	a	
	$_{NP}$[[[la	[agw]^c	ad]^c	a]^n]	$_{NP}$[[la	[agw]^c it		a]^n]	rebracketing	
line 0		(*)					(*)			S2, 1st pass
line 1		*					*			(5b–e)
line 0			*	(*)						S2, 2nd pass
line 1				*						(5b–e)
		la	agw	ad	a	la	agw	it	a	input to S3
line 0		*	*	(*)	*	*	(*)	*	*	
line 1				*			*			
		–				el				*la → el*
line 0		*	*	(*)	⟨*⟩	*	*	(*)	⟨*⟩	S3 continues
line 1				*				*		(5a–e)

The syndrome illustrated in (21) is familiar by now. The essential points are these: In *la agwáda*, the cyclic affix *-ad-* triggers a second pass through cyclic stratum S2, whose output is *agwád-*. Here Conflation (5e) has removed the stress on initial *a-* assigned

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in the first cycle. Thus, the environment for *la-el* replacement is not met in the noncyclic stratum S3. In *el agwíta,* on the other hand, there is no cyclic constituent other than the stem. Thus, the SEC has no chance to erase the stress assigned to stem-initial *a-* in the first cycle. The stem then enters S3 as *ágw-,* whose stressed [á] provides the context in which *la-el* replacement applies. Subsequent application of the stress rules (5a–e) in S3 assigns main stress to the diminutive affix *-ít-* and erases the previously assigned stress on the noun stem.

The crucial steps in the derivation of the substring *el agwa* are exactly the same in *el ágwa, el agwíta,* and *el agwaniéve.* In the compound noun *agwaniéve,* the stress assigned to the initial syllable of *ágwa* in the stem cycle of that word triggers *la-el* replacement; subsequent application of Conflation (5e) to the entire compound erases that stress.

It remains to formalize *la-el* replacement. For reasons outlined in Harris (1991), this process deletes the /a/ of the article *la* and a more general phonological rule then syllabifies the /l/ by epenthesizing /e/ on its left. The deletion rule has the form shown in (22) and, as noted earlier, is assigned to noncyclic stratum S3 where it is ordered before the stress rules (5a–e).

(22) $la \rightarrow l$ / $_N[$_____ $_N[a$ . . .
                          $*$
                          $*$

Rule (22) is the functional equivalent of the Article Allomorphy Rule (33) in SEC-SPAN. As noted there, it must apply only to the definite article *la* cliticized to a noun with initial stressed [á]; phonologically identical sequences in other morphological contexts are not affected. For example, (22) does not apply in a phrase like *la álta montáña* 'the high mountain', even though the article is cliticized to the following adjective *álta* just as it is to a following noun.

SECSPAN mentions the possibility of capturing the *la-el* alternation not by means of a phonological rule with heavy morphological conditions such as (22) but rather by means of a "disjunctively related pair of lexical entries for the feminine singular definite article: the item /el/ has the contextual restriction _____ $_N[/á/;$ /la/ is inserted elsewhere" (p. 362). SECSPAN declines to take a stand on this issue, however, on the grounds that "the crucial factor in the present discussion—namely, the interaction of (33) (SEC's Article Allomorphy Rule) with the rules of stress—is unaffected by the outcome" (p. 362). It appears to us now that this stance glosses over an issue with crucial bearing on the organization of the grammar, and we return to this matter in section 3.

2.4. Stress in Verbs; Bracketing Paradoxes

The most conspicuous descriptive failure of recent investigations of stress in Spanish is their inability to integrate an analysis of the stress patterns of verb forms with an account of stress in nouns, adjectives, and adverbs (see comments in Harris (1989d)). The contrasts illustrated in (23) are the major stumbling block for such an integration.

(23)   *Noun/Adjective*   *Verb*

   a.   arrúga   'wrinkle'   arrúga   'he wrinkles'

        precísa   'precise'   precísa   'he makes precise'

   b.   práctica   'practice, practical'   practíca   'he practices'

        contínua   'continuous'   continúa   'he continues'

As noted in section 2.1, penultimate stress is the norm in V-final nouns and adjectives (*arrúga, precísa*); antepenultimate stress is the marked case (*práctica, contínua*), registered formally as lexical exceptionality to rule (5b). In present tense verb forms, however, stress is exceptionless penultimate—even in cases like (23b), where the same stem has the marked pattern in a segmentally identical noun, adjective, or adverb. Ever since their discovery in Harris (1969), these cases have been taken as solid evidence that verb forms cannot be assigned stress by the same rules that apply to other categories.

On the account developed above, however, the stress rules in (5) are adequate to handle all cases, including those in (23b). We take *práctica* (N/A) versus *practíca* (V) as our example. Though these forms are segmentally identical, they do not have the same morphological structure. In the noun and adjective, the final -*a* is a "word marker," which signals declensional class (and, in these particular forms, feminine gender); in the verb, -*a* is the "theme vowel," which forms the base to which inflectional or derivational suffixes are attached. The word marker is a noncyclic affix, but the theme vowel is a cyclic affix.[13] The correct stress patterns are thus readily derived as shown in (24).

(24)   *Noun/Adjective*   *Verb*

                  [[practic]^c a]^n [[practic]^c a]^c

   line 0   (* *)   (* *)   S2, first pass

   line 1   *   *   (5c–e)

                                   practic a   S2, second pass

   line 0   * * *   input

   line 0   * (*) ⟨*⟩   (5a–e)

   line 1   *

                    practic a   practic a   input to S3

   line 0   (* *) *   * (*) ⟨*⟩

   line 1   *   *

The stem *practic*- is lexically marked as an exception to rule (5b). Thus, the output of the stem cycle is *práctic*- for the verb as well as for the noun and the adjective. Since only the verb has a cyclic affix, only the verb is subject to a second pass through the cyclic stratum S2. At the beginning of this pass, the SEC erases constituent structure and stress assigned in the previous cycle. Thus, the verb enters the second cycle as a

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[13] Morphological structure is discussed in more detail in Harris (1989b), and the cyclicity/noncyclicity of the affixes in question is motivated in Harris (1989d).

metrical tabula rasa—in particular, without the information that marked stress was as-
signed to the stem in the first cycle. The head of the current cycle—theme vowel -a—
is not exceptional in any way; thus, rules (5a–e) apply as expected, producing the output
practíc⟨a⟩. The SEC does not operate at the beginning of the noncyclic stratum S3,
whose inputs are thus *práctica* (Noun/Adjective) and *practíc⟨a⟩* (Verb). Reapplication
of the stress rules (5a–e) in S3 is effectively vacuous: in the Noun/Adjective *práctica*
the word-final vowel is marked extrametrical and no further change is possible since all
remaining syllables are already incorporated into metrical structure; in the Verb *prac-
tíc⟨a⟩* rule (5c) assigns stress to the first syllable but this stress is eliminated by Conflation
(5e).

   In sum, the key to the heretofore highly problematic contrast illustrated in (23) is
the SEC, operating in conjunction with independently motivated morphological struc-
ture. As (24) makes clear, the crucial step in the derivation of the forms in question is
the elimination of previously assigned irregular stress by the SEC in the input to the
cycle headed by the verbal theme vowel. From this point forward in the derivation of
the verb forms, there is no basis for treating exceptional stems like *practic-* and *continu-*
(23b) differently from regular stems like *arrug-* and *precis-*: all undergo the accent rule
(5b) and thus surface with primary stress on the penultimate syllable of the full word.
It is hardly obvious how this material can be handled in an equally motivated way without
the SEC. The proposed treatment thus constitutes direct support for the SEC and its
operation in Spanish.

   Consider now the expressions in (25).

(25) come-m[ié]rda   'shit eater'   come-m[e]rdería   'shit eating'[14]
      rópa v[ié]ja   'old clothes'   ropa-v[e]jéro   'old-clothes dealer'

   The diphthongs in *m[ié]rda* and *v[ié]ja* are obviously derived rather than underlying,
since their cognate segments are simple vowels in the words in the second column.
Indeed, these simple vowels are what make the words *come-m[e]rdería* and *ropa-
v[e]jéro* interesting. The structure that can readily be motivated for them on morpho-
logical and semantic grounds is approximately as shown in (26).[15]

(26) ₙ[ₙ[come mierd(a)] eria]
      ₙ[ₙ·[ropa viej(a)] ero]

   A *come-merdería* is something typical of a *come-miérda*; compare *tónt(o)* 'foolish
(person)'/*tont-ería* 'foolishness', *bellák(o)* 'rascal'/*bellak-ería* 'rascality', and many other
words of this sort. Therefore, the base to which the suffix *-ería* is attached in *come-
merdería* is evidently the compound noun *come-miérd(a)*; there is no independent word

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   [14] The compound noun *come-miérda* is a derogatory epithet applied mainly to humans. The count noun
come-merdería would be more accurately glossed as 'action or attitude typical of a *come-miérda*'.
   [15] The final vowels of *miérda* and *viéja* (like those of *-ería*, *rópa*, and *-éro*) are (noncyclic) declension
class marking affixes that cannot appear inside other (cyclic or noncyclic) affixes except for (noncyclic)
plural *-s*.

*merdería. A *ropa-vejéro* is a person who deals in *rópa viéja*; compare *jóy(a)* 'jewel'/
joy-éro 'jeweler', *zapát(o)* 'shoe'/*zapat-éro* 'cobbler, shoe salesman', and many analo-
gous pairs. Therefore, the base to which *-éro* is attached in *ropa-vejéro* is evidently *rópa
viéj(a);* there is no independent word *vejéro.

The structures in (26), however, cannot be those that undergo phonological inter-
pretation. If they were, the inevitable phonetic outputs would be the incorrect *come-
m[ie]rdería and *ropa-v[ie]jéro, as a quick review of (10) and (15) will make clear. Instead
of (26), the constituent structures required as input to the phonological rules are those
shown in (27).

(27)   [come [[[merd]^c eri]^c a]^n]
        [ropa [[[vej]^c er]^c o]^n]

At this point it is no mystery how (27) is obtained from (an appropriately detailed
version of) (26). Namely, the associativity principles that mediate between S-Structure
and PF operate as shown in (28).

(28)   *S-Structure*   →   *PF*
        [[[come merd]^c eri]^c a]^n →   [come [[[merd]^c eri]^c a]^n]
        [[[ropa vej]^c er]^c o]^n →   [ropa [[[vej]^c er]^c o]^n]

The output *come-merd*[e]*ría* is derived as shown in (29). (We disregard until the
very end of (29) the assignment of stress to the left component *come-*, which is irrelevant
to the main thrust of the discussion.)

(29)   [[[com e   merd]^c eri]^c a]^n

                              [com e [[[merd]^c eri]^c a]^n]   Restructuring
        line 0   (*)   S2, first pass
        line 1   *   (5b–e)

        line 0   *   *(*)   S2, second pass
        line 1   *   (5b–e)

                                        merd   eri   a   input to S3
        line 0   *   *(*)
        line 1   *

                                         –   Diphthongization (8) fails

        line 0   *   *   *   *(*) ⟨*⟩   S3 continues
        line 1   *   (5a–e)

The crucial element in (29) is that restructuring removes the stem *merd-* from the
constituent that would otherwise surface as in the compound noun *come-m*[ié]*rda*, and
places this stem inside the cyclic constituent headed by the cyclic affix *-erí(a)*. Principle
(16) thus guarantees that there are two passes through the cyclic stratum S2. In the
second pass the SEC erases the stress assigned to *merd-* in the first pass. After Conflation

(5e) operates in the second cycle, the only stress transferred to the noncyclic stratum S3 (ignoring *come-*) is that of the final syllable of *merderí-*. Thus, Diphthongization (8) correctly fails to apply in *merd-* although its vowel is obviously the kind that diphthongizes under the relevant conditions (that is, when stressed).

In short, examples like those in (25) provide further evidence that restructuring and the SEC interact in just the right way to produce correct results in cases that are extremely puzzling at first glance.

3. Concluding Remarks

We return to the matter with which we closed section 2.3: the fact that SECSPAN takes no position on whether *la-el* replacement should be formalized as a phonological phenomenon or as a contextually determined lexical choice. This issue deserves scrutiny since it constitutes important evidence bearing on the organization of the grammar. If the *la-el* alternation is described by means of a rule of the noncyclic word phonology such as (22)—rule (33) in SECSPAN—then this phenomenon involves no interaction between morphological rules and those of the phonology; the separateness of these two modules of the grammar is maintained. On the other hand, if the phenomenon is treated by multiple listings in the lexicon, then the separateness of morphology from phonology is compromised (insofar as this type of lexical choice is a matter of morphology) since the choice of allomorph is determined by stress, assigned by phonological rules in strata S2 and S3.

The concluding paragraph of SECSPAN highlights two major results of that study: "The first is a detailed discrediting of the SEC. Spanish obviously does not support it; it is an open question whether any support for it exists. The second is a thorough documentation and explicit description of a case in which word-sequence allomorphy and word-internal phonology (in the standard understanding of these terms) are inextricably interspersed" (p. 362). Though both these points were valid in the context in which SECSPAN was written, neither can be upheld in the light of what has been presented here. The theoretical advances described in section 1 eliminate the basis for the criticism leveled at the SEC in SECSPAN; the extensive discussion in section 2 demonstrates that the SEC plays the same essential role in Spanish as in the other languages examined in EOS and in Halle and Kenstowicz (1989). The reassociation principles advanced in Marantz (1988) dispose of the second SECSPAN conclusion. These principles permit the *la-el* "allomorphy" phenomenon—which involves a single morpheme in a single syntactic context—to be handled by a rule assigned to the phonological stratum S3. All relevant facts are thus successfully handled in a grammar in which ostensible word-sequence allomorphy (morphology) and word-internal phonology are kept formally separate.

We list in (30) the rules developed above and indicate the position that each rule occupies in the general order of phonological rules of Spanish.

(30) a. *S-Structure to PF*
         Reassociation of adjacent elements (see (14)–(15), (19)–(21), (24), (26)–(29))

     b. *Stratum S2*
         Stress rules (5a–e)

         Stratum S3
         Diphthongization (8)
         La-el allomorphy (22)
         Stress rules (5a–e)

         Stratum S4
         Stress subordination in compounds (5d–e)

Each of our rules has a precise analogue in SECSPAN; thus, (30) can be readily compared with (29) in SECSPAN (p. 358). The two analyses are similar in several respects; in both, the stress rules are assigned to both cyclic and noncyclic strata, Diphthongization and *la-el* replacement are noncyclic, *la-el* replacement is ordered before Stress Assignment, and so on. The most significant difference between the two analyses lies in the role assigned to the SEC—none at all in SECSPAN, a central and crucial one in the present study. Since the SEC imposes significant constraints on allowable derivations, accounts subject to the SEC must be preferred over accounts without it.

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Reciprocal Scope

Edwin Williams

In Williams (1986) I proposed that the ambiguity seen clearly in (1) is nothing more than the ambiguity latent in (2):

(1) John and Mary think they like each other.
    a. John thinks John likes Mary and Mary thinks Mary likes John.
    b. John and Mary think that John and Mary like each other.