THEORIES OF STRESS ASSIGNMENT
IN SPANISH PHONOLOGY

THESIS

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By

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This thesis examines existing theories of Spanish stress assignment in generative phonology and proposes an alternative theory that is more effective in predicting the surface representations of Spanish stress. Stress is characterized according to traditional textbook standards and examples are given (Chapter I). The current theoretical setting, especially the theories of James W. Harris, is then described (Chapter II). This writer's own theory, based upon an underlying distinction between tense and lax vowels, is delineated (Chapter III) and defended (Chapter IV). The new stress assignment rule—along with a rule of vowel laxing before a word boundary (#) and a rule of stress adjustment—shows stress in Spanish to be predictable and, therefore, not phonemic.
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CHAPTER I

THE PHENOMENON OF STRESS IN SPANISH

Stress assignment on the surface level of Spanish words has always been considered relatively straightforward in terms of whether the final letter of the word is a vowel or a consonant. Rules similar to the following are common in traditional textbook grammars:

a. The greater part of words ending in a vowel are stressed on the penultimate.

b. The greater part of words ending in n or s are stressed on the penultimate.

c. The greater part of words ending in other consonants than n or s are stressed on the last syllable.

d. Words stressed on any syllable before the antepenultimate are usually compounds: bébaselo, escribiéndonosla (Ramsey and Spaulding 1965:11).

The weakness of such a rule as that above lies, of course, in its imprecision. The expression "the greater part" omits some forms--although one does not know which forms--from the generalization in the rule. While exceptional forms are to be expected in any natural language, they must necessarily be kept to a minimum and examined carefully for evidence that might relate them to more general statements that can be made about the language.
As for the occurrence of stress in Spanish, the most general rule (and, therefore, the most imprecise) is

(1) Stress may occur on any of the last three syllables.

What a statement like (1) does, however, is to give some idea of what kinds of forms not to expect. From this point, one can begin formulation of rules that will not only describe the occurrence of stress in the language, but also effectively predict it.

The element of prediction is a property of generative grammar. If any feature can be predicted in a language, then it is not distinctive—that is, it need not be listed separately in the lexicon, or in the total list of morphemes of the language. Those features which are predictable result from the application of one or more rules within the grammar. Since stress is a phonological process, rules predicting its assignment belong to the phonological component of a generative grammar.

The most comprehensive work dealing with the phonological component of a transformational generative grammar of Spanish is James W. Harris' Spanish Phonology (1969). Harris lists his purpose as two-fold on page one:

First, there is an attempt to gain deeper insight into the widely studied facts of Spanish pronunciation by presenting a theory of these facts in the form of a generative grammar. . . . Second, a large and detailed body of data is made available in a form appropriate for testing certain parts of the universal phonological theory whose most recent and comprehensive statement is found in Chomsky and Halle (1968), The Sound Pattern of English.
In his work, Harris writes at some length about the assignment of Spanish stress. The rule that he tentatively formalizes to describe stress in non-verbs (118-122), is very close to the diachronic Latin Stress Rule (henceforth, LSR).¹ Harris quickly points out the exceptions to the LSR:

(a) Stress on the final syllable.

(b) Stress four syllables form the end.

(c) Antepenultimate stress in words with a "strong" penultimate syllable.

(d) Stress on a penultimate lax vowel in a "weak" syllable. (119)

Of the exceptions Harris lists, two categories seem vacuous. Stress four syllables from the end, for example, occurs only in composites like dándonoslos.² Exceptions of the third type (c) would have the shape of the hypothetical *tánampo, but Harris notes that Spanish simply contains no such forms (119). Therefore, the first and the last categories (types a and d) are the largest and most important exceptions.

¹Harris' definition of the LSR is that it "roughly, assigns stress to the penultimate syllable of polysyllabic words if that syllable is 'strong' (contains a tense vowel or lax vowel followed by two or more consonants) and to the antepenultimate if the penultimate is 'weak' (contains a lax vowel followed by at most one consonant)" (118).

²Certain apparent exceptions Harris explains by assuming appropriate lexical representations. Thus, Harris (1969:119) says that words like laudano, "laudanum," have a glide /lawdano/ in their underlying forms. Ventrílocuo, "ventriloquist," has a rounded consonant /ventr1ıkwo/. Other apparent counter-examples may be accounted for similarly.
The preterite and future verb forms account for many occurrences of final stress. The vosotros form (second person plural familiar) of the second and third conjugations i.e., those that end in -er and -ir, respectively—in the present tense also has final stress (pedir: pedís, "you ask for;" comer: comís, "you eat"). Also, there are abundant examples of non-verbs with final stress. Thus, the following examples are merely representative of a much larger class:

(2) Final Stress in Non-Verbs

- café, "coffee"
- jabalí, "javelina"
- Perú, "Peru"
- mamá, "mama"
- motín, "mutiny"
- dominó, "game of dominoes"
- compás, "mathematical instrument"
- rubí, "ruby"

Stress on a lax vowel in a penultimate weak syllable, Harris' type (d) exception, shows up very regularly in forms like those in the left-hand column of (3).

---

3 Harris postulates the underlying forms of the preterite (79-86) and future (91-96) so that they are only exceptions to the LSR on the surface level.

4 In this paper standard orthography is employed to the extent that it does not obscure the discussion at hand. Directly relevant phonetic material is enclosed in brackets, with the exception of the marking of primary stress. Primary stress is not always enclosed in brackets, even though it is not necessarily present in the orthography. (Thus the accent marks in régimen and papa are part of Spanish orthography, whereas those in casa and animo are not.) Lexical representations are enclosed in slashes (/) unless otherwise labeled.
The purpose of this thesis is to examine the validity of the existing theories of Spanish stress assignment in generative phonology and to determine the need for an alternative theory that is perhaps more effective in predicting the surface representations of Spanish stress. Chapter II reviews current theories of stress assignment in Spanish. Chapter III sets forth and justifies my own set of rules for the prediction of stress occurrence in Spanish. In my view, these new rules reduce dramatically the number of exceptions, account for otherwise unexplained stress shifts, and are compatible with other rules in the generative phonology of Spanish.

Examples in this chart are from Ramsey and Spaulding (14).
CHAPTER II

THE THEORETICAL SETTING

The first interestingly complete transformational-generative account of stress assignment in Spanish was included in Harris' *Spanish Phonology* (1969). Although restricted in general to a synchronic description of the phonology of Mexico City Spanish, Harris' work provides brilliant insights into the structure of all dialects of the language, and his original contributions to the description of Spanish have made this work truly seminal in the area of Romance linguistics. Indeed, Harris' *Spanish Phonology* enjoys for Spanish the same position that Chomsky and Halle's *The Sound Pattern of English* enjoys for English phonology: later works may disagree with Harris, but no work in the field will be taken seriously that ignores him.

For these reasons, any review of the literature on generative stress assignment must start with Harris' 1969 account, even though more recently (1975) Harris admits that the earlier treatment "did not pretend to be either exhaustive or definitive" (56). In fact, he has himself presented a refined version of stress assignment in Spanish within the framework of transformational-generative phonology.

Because they reject many of the theoretical assumptions of transformational-generative phonology, some linguists,
calling themselves natural generative phonologists have criticized Harris' theories of Spanish phonology. Foremost among these are Joan B. Hooper and Tracey Terrell. Hooper and Terrell (1976) present an alternative to Harris' generative account of stress\(^1\) and other transformational generative theories which assign stress "by counting vowels from the end of the word" (64). The analysis by Hooper and Terrell, rather, is based on natural generative theory which differs from the standard transformational generative theory in that it "places strong constraints on phonological abstractness."

This chapter presents the theories of Harris\(^2\), as well as Hooper and Terrell in some detail. Moreover, areas of difficulty within the frameworks of their theories will be discussed in efforts to establish the theoretical setting concerning the phenomenon of stress in the Spanish language.

**Harris' Theory**

In both his works (1969:120-122; 1975:56-57), Harris maintains that the principles governing stress in verbs are at least partially distinct from those that govern stress in

\(^1\)Many of Harris' formulations were based on ideas purported by James Foley (1967).

\(^2\)Since Harris' work is by far the most complete treatment of Spanish stress to date and since transformational generative phonology is the most widely accepted approach to generative grammar, the most exhaustive examinations of this paper will concern them.
non-verbs. In Spanish Phonology, a non-exhaustive list of nouns and adjectives and verbs that are minimal pairs distinguished by the location of stress is given. Such words as prospéro (adjective; "prosperous") and prospéro (verb; "I prosper"), partícipe (noun; "participant") and partícipe (verb; "he participates;" subjunctive) indicate that the stress rules for verbs differ from those for non-verbs. Harris (1975) maintains this distinction and surmises that stress is obviously assigned differently to representations that are identical in all relevant respects to surface representations.

**Stress in Non-Verb Forms**

The rule for the assignment of stress in non-verb forms was postulated by Harris (1969:121) as being "just the LSR."

Here, (1) quotes Harris' rule:

(1) $V \longrightarrow [+\text{stress}] / \underline{(C_0)(V^1_C)(L)V}C_0^\#]NA$

In this formulation the symbol $L$ represents a liquid, the presence of which does not permit a single preceding consonant to function as a strong syllable. Rule (1) may be viewed as an abbreviation of three rules, each of which is illustrated in (2).
(2)

a. \[ _{\ldots} C_0 V C^1 (L) V C^0 \]

Antepenultimate

- íntegro "integral" (with L)
- múltiple "multiple" (with L)
- último "last"
- lástima "shame"
- júpiter "jupiter" (without L)
- espécimen "specimen" (without L)
- computo "computer"

b. \[ _{\ldots} C_0 V C^0 \]

Penultimate

- casa "house"
- cubéza "head"
- moréno "brown"
- álbum "album"
- fácil "easy"
- carácter "character"
- estudiante "student"

c. \[ _{\ldots} C_0 \]

Ultimate

- rubí "ruby"
- barril "barrel"
- matador "matador"
- virtud "virtue"
- café "coffee"
- menú "menu"
- mamá "mama"
- dominó "domino"

Harris' 1975 rule for stressing non-verbs is reflected in (3).

(3)

\[ V \rightarrow [+\text{stress}] / \left\{ \begin{array}{c} _{\ldots} C_0 V C^0 V C^0 \# ] \ltimes \quad \text{(a)} \\ _{\ldots} C_0 V C^0 \# ] \ltimes \quad \text{(b)} \\ _{\ldots} C_0 \# ] \ltimes \quad \text{(c)} \end{array} \right\} \]

Where cases (a), (b), and (c) are disjunctively ordered; the symbol \( \ltimes \) = non-verb.
Harris then lists both penultimately and antepenultimately stressed words that do not violate case (a) of (3). He lists near minimal pairs such as epístola, "epistle" and pístola, "pistol" and one absolute minimal pair sébana, "sheet," and sabána, "savannah, treeless plain" (58). He postulates a special mark that must be supplied in the lexical representations of the words in question that determines the occurrence of penultimate or antepenultimate stress. Harris explains his "special mark" in the following: "... every vowel that appears unstressed in the penultimate syllable of the phonetic representation of any form is assigned in the lexicon the abstract diacritic feature [X]" (59). As an example, he postulates teléfono, "telephone," as /tel e fŏ no/ and telefónico, "telephonic," as /telef ō nĭ ko/, yielding the divergent stresses in [teléfono] and [telefónico]. The feature [X] does not absolutely rule out stress on the syllable in question: it only prohibits the assignment of stress when the marked vowel is in a penultimate syllable, instead permitting the retraction of stress to the antepenultimate syllable.

What Harris prescribes, then, is a grammar in which penultimate stress is the "unmarked" case and antepenultimate stress is "marked" (1975: 60). Rule (1.a) must now be revised as in (4):

(4) $V \rightarrow [+\text{stress}] / \_\_C_o V C_o [X] C_o \# ]^<$

In 1975, Harris takes issue with critics--specifically Saciuk (1974)--who label (1) as the LSR:
It has been stated a number of times that it is claimed in *SpPh* [Spanish Phonology] that stress is assigned to non-verb forms by the so-called Latin Stress Rule. However, the position actually taken in *SpPh* (see for example, 30-31, 118-120) was that something like the Latin Stress Rule has just enough right with it to be taken as a first hypothesis and just enough wrong with it to preclude uncritical acceptance. Rule (4) [reflected by rules (3-4) of the present paper], like its counterpart in *SpPh*, bears a striking similarity to the Latin Stress Rule, but in point of technical fact it would be incoherent to say that (4) "is" the Latin Stress Rule (or more accurately, one of its cases) since (4) makes reference to the arbitrary, nonphonological diacritic feature [X] while the Latin Stress Rule makes reference to the phonological property of long versus short, vowels, a property that is of no relevance whatsoever in Spanish (63).

As for polysyllabic words with stress on the final syllable, Harris notes two important categories of examples: words ending with a single voiced dental [+cons] segment (e.g., *papel* and those ending with a single stressed vowel (e.g., *papa*). Words like *papél* are not listed as exceptional; Harris instead postulates a terminal feature /e/ in the following derivation taken from Harris (1975 61):

(5)  

<table>
<thead>
<tr>
<th></th>
<th>singular</th>
<th>plural</th>
</tr>
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<tbody>
<tr>
<td>Lexical Repres.</td>
<td>papel + e</td>
<td>papel + e + s</td>
</tr>
<tr>
<td>Stress</td>
<td>e</td>
<td>e</td>
</tr>
<tr>
<td>Apocope</td>
<td>g</td>
<td></td>
</tr>
<tr>
<td>Phonetic Repres.</td>
<td>papé1</td>
<td>papéles</td>
</tr>
</tbody>
</table>

According to Harris, the crucial point "is the final /+e/ of singular forms and the Apocope rule that deletes this segment in singular forms. Both would still be motivated even if stress placement in Spanish were radically different from what it is..." (61).
The only major deviation between Harris' analysis of non-verb stress in (1975) and that of (1969) is in the distinction of the features [X] and [D]. In the earlier work, Harris had held out the prospect that the same feature which triggers diphthongization [D] could be the feature that determines stress assignment [X]. In view of such pairs as Venezuela/venezolano, "Venezuela/Venezuelan:" consuelo/consolar, "consolation/to console:" and sosiégo/sosegada, "peacefulness/peaceful," Harris has discounted the possibility of the two features being the same. The penultimate vowels of the first of each pair of examples must be marked [D] to account for the diphthongization; however, they cannot be marked [X] since the stress is not on the penultimate syllable. Harris, thereby concludes that the [D] ≠ [X] as he had earlier thought possible.

Stress in Verb Forms

Spanish verb forms, like their non-verb counterparts can only be stressed on one of the last three syllables.\(^3\) Harris' (1969) rule (24) included a case (b) which was intended as his generalization of the assignment of verb stress:

\[
V \rightarrow \ [+\text{stress}] / \_\_\_ \ (\ [-\text{perf}] \ C_0 V) C_0 \# \] Verb
\]

\(^3\) The addition of the enclitic pronouns does not present a counter-example, as has been noted.
Again, the outermost set of parenthesis is intended to render the rule applicable to the assignment of stress in monosyllabic forms (e.g., *va,"he goes"). Rule (6), in effect, assigns "verb stress in fixed positions, without regard for the 'strong' and 'weak' syllables in terms of which stress is assigned by the LSR." (121).

Harris (1975) argues that the correct analysis of Spanish verb stress is dependent upon the morphological "theme vowel" of verbs. In his analysis, given in (7) in this paper, Harris posits the verbal stem as consisting of [root + theme vowel] to which both finite and non-finite endings are added:

(7)

\[
\begin{align*}
&+[\text{Ending}] \\
&[a] + [\text{Root}] + [\text{Theme Vowel}] \\
&[b] + [\text{Tense-}] + [\text{Person-}] \\
&[\text{Mood-}] + [\text{Number}] + [\text{Aspect}] \\
&+ [\text{Verb}]
\end{align*}
\]

(The internal brackets in the above rule are used to identify morphological constituents, not to imply the cyclical application of stress.)

Case (a) of (7) applies to the non-finite forms of verbs—the infinitive, past participle, and gerund; case (b) applies to those forms marked for person, number, and tense.

A root like *habl-,"speak,"* has the theme vowel *a* to which verbal inflections are added. Harris (1975:64) makes the following assumptions:

(a) Roots are listed in the Lexicon, where the appropriate semantic, syntactic, morphological (e.g.,"
conjugational class affiliation), and phonological information is given.

(b) Theme vowels are supplied by morphological rule: /a/, /e/, /i/ for first, second, and third conjugation roots, respectively.

(c) Tense-Mood-Aspect and Person-Number morphemes consist of bundles of syntactic features assigned by syntactic rules.

(d) The arrangements of morphemes represented schematically in (9) [(6) above] are governed by "word-formation rules" of the morphological component of the grammar, and morpho-syntactic representations of the sort mentioned in (c) are converted into phonological (phonemic) representations by other rules of the morphological component.

Verb stress is analyzed, then, as being penultimate in most cases (or ultimate in the case of stressed monosyllables), and (3.b) is slightly revised to cover penultimate/ultimate verbal stress:

(8) \[ V \rightarrow [+\text{stress}] / _{\text{-s}}C_{o}(-s)\# \]

The addition of the symbol \( \text{\#} \) extends the rule's coverage to all categories covered by \( \text{\#} \), as well as verb forms.

Antepenultimately stressed verb forms, such as in (9), are said to be stressed according to the theme vowel:

(9) a. imperfect: \( \text{habl} + \acute{a} + \text{ba} + \text{mos} \)
b. past subjunctive: \( \text{habl} + \acute{a} + \text{ra} + \text{mos} \)
c. preterite: \( \text{habl} + \acute{a} + \text{steis} \)

Harris' rule (15), (1975: 15), accounts for stress in such forms; his rule is given in (10):
Rule (10) is disjunctively applied before rule (8).

Verb forms which do not appear to abide by rules (10) and (8) in their surface representations are posited by Harris as having underlying structures that account for the surface stress assignment. Infinitives, for one group, are stressed on the last syllable in their surface forms. Harris postulates an underlying, terminal /e/ which is present until after stress assignment, as per rule (8), and is then deleted by rules of apocope, as in the derivation of papel above.

Another group of surface exceptions includes the regular preterite first and third person singular forms, such as hablé, "I spoke;" habló, "he spoke;" viví, "I lived;" and vivió, "he lived." Harris concludes that the person/number surface phenomena e in hablé and i in viví are actually underlain by a + i and i + i, respectively; the a and the first i of the series represent the theme vowels, the final i's the person/number markers. These series of vowels then merge to yield the surface phenomena in hablé and viví. The third person plural forms are similarly derived from the theme vowels, plus the third person plural marker u; a + u = o as in habló, and i + u = io as in vivió. Irregular preterites such as pudo, "he was able to," are underlain simply by the verb root rather than [root + theme vowel].
Harris (1975) does not give a derivation for the second
conjugation. Looking back to Spanish Phonology (84-85),
however, one sees that he postulates the theme vowel for comer,
for example, as e; and, then, the e is raised to i by such
a rule as (11):

\[(11) \ [V_{\text{low}}] \rightarrow [+\text{high}] / \_{\text{+past}}\]

The i gained by (11) is then combined with the preterite
markers in the same manner as in the third conjugation.
The final class of verb exceptions to the antepenultimate-
penultimate stress rules, the future forms, also appears to
Harris to be the result of some distinctive underlying compo-
sition. Examples from this category carry ultimate stress
in polysyllabic forms such as hablaré, "I will speak;"
viviré, "I will live;" hablará, "he will speak;" and vivirá,
"he will live." To Harris, however, the verb "stems" in these
cases are actually the infinitives, and the "endings" are the
idiosyncratic forms of the auxiliary verb haber, making such
surface representations as hablaré composites as in (12):

\[(12) \ [\text{[hablar]} \ \ \text{[he]}]\]

The final stress, thus, is fixed by the rule which assigns
stress to monosyllabic verb forms, rule (8); and, since the
brackets in (12) impose cyclical stress assignment, the
rightmost constituent of the brackets is the stressed
component in the surface future form.

Harris' conclusion is that stress in all verb forms is
determined by rules (10) and (8), disjunctively. His rules
can now be reordered and summarized in (13) and (14):
(13) \[ V \rightarrow + \text{stress} / \overline{\text{ThV}} \text{ST} \overline{\text{VC}_0\text{VC}_0\#} \text{Verb} \]

(14) \[ V \rightarrow + \text{stress} / \begin{cases} \overline{\text{V}} & \text{Case (14.a) applies only to non-verb forms (á)}, \\ \overline{-\text{V}} & \text{Case (14.b) applies to both verb forms (á) and non-verb forms (á).} \end{cases} \]

Rule (14) is specifically different from Harris (1969) in that it will correctly assign stress to the preterite of the vosotros (second person plural, familiar) form. Since Spanish Phonology was concerned with Mexico City Spanish, a dialect that does not include vosotros, the imperfection in the earlier rule (rule (6) of this paper) was not noticed.

Problems in the Harris Theories

Harris' theories in both Spanish Phonology and the 1975 article effectively describe the assignment of stress. However, in many ways the feature \([X]\) which Harris used to trigger the aberrant occurrences of stress is not any more predictive than the textbook rule quoted at the opening of Chapter I. It seems plausible that some feature is being disguised by the artificial symbol \([X]\), some feature that could reveal data relating exceptional forms to more general statements that can be made about Spanish.

An example of data that Harris apparently obscures with his \([X]\) is the extension of the feature to "every vowel that appears unstressed in the penultimate syllable of the phonetic
representation of any form" (1975:59). Then, he gives examples of the operation of [X], citing the words teléfono, "telephone; telefónico, "telephonic;" and telefonista, "telephone operator." It does not seem important to Harris at all that these words have undergone affixation and that their stress and his [X] might somehow be related to processes or circumstances of affixation.

Moreover, Harris has assumed too quickly that verbs and non-verbs are assigned stress by different rules. He had not considered that the set of examples that he gives as conclusive evidence of the operation of separate rules is a rather special class of words. On the surface level, certainly, the placement of stress is the distinction separating such minimal pairs as ánimo and anímo. However, the verbs of this set of examples are verbs that have been back-formed by the addition of the first conjugation ending -ar to the stem of the non-verb. Conceivably, in the process of creating a verb from a non-verb, different sorts of affix boundaries might be introduced into the underlying representation of the word. That such a boundary marker might play some role in the assignment of stress Harris does not consider.

The necessity of formulating a rule such as (11) to raise the theme vowel of the verbs of the second conjugation in order to achieve the correct combination of vowels (i + u; i + i) to arrive at io and i for the surface representations of the preterite endings is questionable.
The rule seems *ad hoc* since it has no other purpose than to account for the preterite endings of the second conjugation.4

The Theory of Hooper and Terrell

Hooper and Terrell (1976) contend that their theories are more in line with current movement toward "a more constrained" grammar (64). Before presenting their formulations, their explanation of natural generative phonology, as opposed to transformational generative phonology, is reviewed.

NGP differs from TGP in that NGP has stronger constraints on abstractness. In particular, the rules of the grammar are not extrinsically ordered, rather a rule applies each and every time its structural description is met... A further constraint is that underlying phonological contrasts are limited to direct manifestations of surface contrasts... The result is a grammar in which all the rules express true generalizations about surface forms. Thus the stress rules we present differ from the stress rules of TGP in that our rules all describe the stress just as it is on the surface (65).

Hooper and Terrell, like Harris, contend that verbs are assigned stress by different rules from non-verbs; they cite the same list (67) of minimal pairs as Harris: ánimo, anímo; fábrica, fabrícá, etc.

Stress in Non-Verb Forms

Hooper and Terrell begin analysis of stress in non-verb forms as being on the last vowel of the stem:

4Brame and Bordelois (1973: 109-168) criticize this aspect of Harris' formulations as well as his adoption of the u as the third person singular marker and his subsequent rule of lowering (160).
The diacritic, appearing on the last syllable of the stem, which would otherwise be stressed, reverts the stress to the preceding syllable. The diacritic [X] is also used to account for the penultimately stressed words which end in consonants (album, "album; azúcar, "sugar;" fácil, "easy;" lápiz, "pencil"). This class of words is postulated according to the following examples:

(16) facil]
     X St  Adjective

album]
     X St  Noun

Stress, then, is assigned according to (15).

For the words ending in stressed vowels, e.g., rubí, "ruby;" menú, "menu;" hindú, "Hindu," the authors simply postulate the entire surface form of the word as the stem, making (15) still applicable as the mode of stress assignment:

(17) menu]
     St  Noun

rubí] St  Noun

Hooper and Terrell cite the variant assignment of stress on the surface level as reflecting a "morphological difference between words such as moreño, cabeza, bikini, tribo on the one hand, and dominó, mamá, colibrí, menú on the other" (74). This morphological difference lies in the way Hooper and

---

The authors acknowledge their compliance with the Harris (1975) theory on this point.
Terrell diagnose the word stems. The "moreno" series is postulated as consisting of [stem + class vowel], and the "domino" series as only [stem]. "In other words, the end of the stem is identified by where the stress falls" (76).

Hence, stress is regularly assigned to the stem-final syllable, according to the Hooper and Terrell analysis. The class of exceptions, stress on the penultimate syllable of the stem, is marked with a diacritic.

**Stress in Verb Forms**

The stress rule that Hooper and Terrell give for verbs is included in (18):

\[
V \rightarrow +\text{stress} / \begin{cases} 
\text{stem} / [+\text{present}] & \quad (a) \\
\text{stem} / [+\text{past}] & \quad (b) \\
\text{stem} \ V \ C \ / [+\text{subsequent}] & \quad (c) \\
\text{stem} / [x] & \quad \text{stem(d)} 
\end{cases}
\]

exceptions: [+present] use (b)
[-singular] [-3rd person]

This rule summarizes the assumptions made about non-verbs and explicitly claims the following about the rules of stress assignment for verb forms: "(a) stress has a morphological function, i.e., is directly related to tense and mood, (b) the position of stress is determined in relation to the stem, and (c) stress is regular in all forms except the first and second plural of the present tense" (81).
Problems with the Hooper-Terrell Theory

Indeed Hooper and Terrell do adhere to their pledge that "our rules all describe the stress just as it is on the surface" (65). However, the rules given in (15) and (18) are not much help in predicting stress. The stem can never be readily identified without knowledge of where stress occurs; conversely, the occurrence of stress cannot be predicted without knowledge of where the stem ends. Hooper and Terrell ascribe the definition of the "stem" to morphological differences in the words themselves, with *mören* being *moren* + o and *domino* being *domino* + ņ. Yet the reader is given no other morphological information that would allow him to recognize such differences without prior knowledge of the location of stress. Their argument, therefore, seems difficult to ascertain. This unsatisfactory state of affairs is due, in my opinion, to the lack of completeness and explicitness with which they deal with the observations, for they do not make clear precisely how this "morphological information" is to be presented in the lexicon nor how it effects the application of the rules they formulate. In short, the very skimpiness of their presentation makes a careful evaluation next to impossible.

In their analysis of the stress shifts brought on by pluralization, Hooper and Terrell assume that their internal stem-boundary rule has been ignored as in (19).
In stressing the singular, only the stem is considered. For the plural, where a vowel has been added, the stress applies as usual, ignoring the internal stem boundary" (77).

According to the analysis of Hooper and Terrell, stressed affixes must undoubtably be lexically marked, although they never really make a statement to that effect. "Diminutives may be formed by adding -(c)ito to a noun or an adjective (and even an adverb) form. . . . Notice that the suffixation is not obviously dependent upon stress, since stress is assigned to the suffix, not the base stem" (74). One must assume from the quotation that they meant for the entry of the diminutive suffix to be marked for stress. But, once again, stress that must be listed lexically is descriptive, not predictive, and begs further refinement.

Certainly within the self-imposed "constraints" of NGP, a predictive grammar is not completely possible. Their restriction to the surface representations of the language will not permit them to capture the over-all regularities of Spanish.

The strategy employed by Hooper and Terrell was slightly parodied by Harris (1975: 77): "Stress is assigned . . . on the X, where X is defined by unstated and apparently unconstrained morphological principles to be whatever element
stress happens to fall on." Harris goes on to state,"... it is not clear to me what is gained if everything that is excluded. ... from the domain of phonology is allowed to reappear in nebulous morphological guise."

The Impetus for an Alternative Theory

Both the Harris theory and the theory proposed by Hooper and Terrell can be made to work in describing Spanish stress assignment. Both theories, however, leave a sizeable residue of exceptions. While exceptions are to be expected in any grammar, seemingly aberrant forms should be screened very carefully for evidence that might relate them to the more general properties of the language. To describe a grammar is, in effect, to partition the data provided by the surface forms of the language and to make generalizations according to the relatedness of the various parts. It is dangerous, however, to forget that the partitioning is artificial and, even at best, arbitrary. What has been regarded as an exception may actually contain the features pertinent to the most general assumptions that can be made about the language. I believe that Hooper and Terrell, as well as Harris, have partitioned the data of Spanish phonology in such a way as to omit such relevant observations.
AN ALTERNATIVE THEORY OF SPANISH STRESS ASSIGNMENT

In attempt to arrive at a viable theory of stress assignment in Spanish—a theory that admits the least possible number of exceptions—a review of the obvious data is in order. First of all, stress may appear on any of the last three syllables of a Spanish word; but under no circumstances does stress appear more than three syllables from the end of a word that contains no occurrences of #.¹ Tables I and II provide examples of the various occurrences of stress assignment in non-verb and verb forms, respectively.

The frequency of appearance for the various stress assignments in Table II are, from least systematic to most systematic, as follows:

(a) Final stress on a word ending in a vowel.
(b) Antepenultimate stress.
(c) Penultimate stress on a word ending in a consonant.
(d) Final stress on a word ending in a [consonant other than] /s/.
(e) Penultimate stress on a word ending in a vowel or /s/.²

¹That is to say, only in forms including pronouns such as dandonoslos, "giving them to us," #dando#nos#los##.

²These data are taken from Hooper and Terrell (67). The original of case (d) read, surprisingly, "Final stress on a word ending in a vowel or /s/." Since as Hooper and Terrell state (d) it repeats the context of (a) as well as fails to account for stress in words ending with consonants other than /s/, it is obviously an error.
Table I  EXAMPLES OF STRESS IN VERB FORMS

A. Final Stress

<table>
<thead>
<tr>
<th>Future Forms</th>
<th>Preterite Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>tomaré</td>
<td>tomé</td>
</tr>
<tr>
<td>comeré</td>
<td>comió</td>
</tr>
<tr>
<td>viviré</td>
<td>vivió</td>
</tr>
<tr>
<td>&quot;I will take&quot;</td>
<td>&quot;I took&quot;</td>
</tr>
<tr>
<td>&quot;I will eat&quot;</td>
<td>&quot;I ate&quot;</td>
</tr>
<tr>
<td>&quot;I will live&quot;</td>
<td>&quot;I lived&quot;</td>
</tr>
</tbody>
</table>

B. Penultimate Stress

<table>
<thead>
<tr>
<th>Indicative Forms</th>
<th>Subjunctive Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>tómo</td>
<td>tómo</td>
</tr>
<tr>
<td>como</td>
<td>como</td>
</tr>
<tr>
<td>vivo</td>
<td>viva</td>
</tr>
<tr>
<td>&quot;I take&quot;</td>
<td>&quot;I might take&quot;</td>
</tr>
<tr>
<td>&quot;I eat&quot;</td>
<td>&quot;I might eat&quot;</td>
</tr>
<tr>
<td>&quot;I live&quot;</td>
<td>&quot;I might live&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Imperative Forms</th>
<th>Conditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>tóma!</td>
<td>tomaría</td>
</tr>
<tr>
<td>cómas!</td>
<td>comería</td>
</tr>
<tr>
<td>viva(n)!</td>
<td>viviría</td>
</tr>
<tr>
<td>&quot;take!&quot; (familiar)</td>
<td>&quot;I would take&quot;</td>
</tr>
<tr>
<td>&quot;eat!&quot; (negative)</td>
<td>&quot;I would eat&quot;</td>
</tr>
<tr>
<td>&quot;live!&quot; (formal: plural)</td>
<td>&quot;I would live&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Imperfect</th>
<th>Imperfect Subjunctive</th>
</tr>
</thead>
<tbody>
<tr>
<td>tomaba</td>
<td>tomará</td>
</tr>
<tr>
<td>comia</td>
<td>comiéra</td>
</tr>
<tr>
<td>vivia</td>
<td>viviéra</td>
</tr>
<tr>
<td>&quot;I used to take&quot;</td>
<td>&quot;(if) I took&quot;</td>
</tr>
<tr>
<td>&quot;I used to eat&quot;</td>
<td>&quot;(if) I ate&quot;</td>
</tr>
<tr>
<td>&quot;I used to live&quot;</td>
<td>&quot;(if) I lived&quot;</td>
</tr>
</tbody>
</table>

C. Antepenultimate Stress

<table>
<thead>
<tr>
<th>Conditional</th>
<th>Preterite</th>
</tr>
</thead>
<tbody>
<tr>
<td>tomaríamos</td>
<td>tomásteis</td>
</tr>
<tr>
<td>comeríais</td>
<td>(familiar; plural)</td>
</tr>
<tr>
<td>&quot;we would take&quot;</td>
<td>&quot;you took&quot;</td>
</tr>
<tr>
<td>&quot;you would eat&quot;</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Imperfect Indicative</th>
<th>Preterite</th>
</tr>
</thead>
<tbody>
<tr>
<td>tomábais</td>
<td></td>
</tr>
<tr>
<td>(familiar; plural)</td>
<td></td>
</tr>
<tr>
<td>tomábamos</td>
<td></td>
</tr>
<tr>
<td>&quot;you used to take&quot;</td>
<td></td>
</tr>
<tr>
<td>(familiar; plural)</td>
<td></td>
</tr>
<tr>
<td>comíais</td>
<td></td>
</tr>
<tr>
<td>&quot;you used to eat&quot;</td>
<td></td>
</tr>
<tr>
<td>(familiar; plural)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Imperfect Subjunctive</th>
</tr>
</thead>
<tbody>
<tr>
<td>tomásemos</td>
</tr>
<tr>
<td>tomáremos</td>
</tr>
<tr>
<td>comiésemos</td>
</tr>
<tr>
<td>vivésemos</td>
</tr>
<tr>
<td>&quot;(if) we took&quot;</td>
</tr>
<tr>
<td>&quot;(if) we lived&quot;</td>
</tr>
<tr>
<td>&quot;(if) you lived&quot;</td>
</tr>
<tr>
<td>&quot;(if) you ate&quot;</td>
</tr>
</tbody>
</table>
Table II  EXAMPLES OF STRESS IN NON-VERB FORMS

A. Final Stress

<table>
<thead>
<tr>
<th>Ending in a Consonant</th>
<th>Ending in a Vowel</th>
</tr>
</thead>
<tbody>
<tr>
<td>barril &quot;barrel&quot;</td>
<td>rubi &quot;ruby&quot;</td>
</tr>
<tr>
<td>cancion &quot;song&quot;</td>
<td>frenesi &quot;frenzy&quot;</td>
</tr>
<tr>
<td>compas &quot;compas&quot;</td>
<td>menu &quot;menu&quot;</td>
</tr>
<tr>
<td>rapaz &quot;thievish&quot;</td>
<td>cafe &quot;coffee&quot;</td>
</tr>
<tr>
<td>matador &quot;matador&quot;</td>
<td>mama &quot;mama&quot;</td>
</tr>
<tr>
<td>virtud &quot;virtue&quot;</td>
<td>domino &quot;domino&quot;</td>
</tr>
</tbody>
</table>

B. Penultimate Stress

|album "album"  | zapatero "cobbler"       |
azucar "sugar" | abuela "grandmother"     |
facil "easy"   | moreno "brown"           |
caracter "character" | cabeza "head"      |
lapiz "pencil" | estudiante "student"    |
cesped "lawn"  | tribu "tribe"           |
tesis "thesis" | bikini "bikini"         |

C. Antepenultimate Stress

| regimen "regime" | zoológico "zoological" |
isosceles "isosceles" | lastima "shame" |
especimen "specimen" | último "last"    |
jupiter "jupiter"  | triángulo "triangle"  |
                     | timido "timid"        |
                     | tecnica "technical"   |

3The examples in this Table are those used by Hooper and Terrell (66-67).
Should one, then, conclude that cases (d) and (e) are the "rules" of stress assignment while cases (a)-(c) are the exceptions? Hooper and Terrell (1976: 67) draw this conclusion: "of words in the text ending in vowels or /s/, 95% has penultimate stress; of the words that ended in consonants other than /s/, 95% had final stress." They do not say, however, what the ratio of words falling in (d)-(e) categories was to words falling in the (a)-(c) categories. Although the (d)-(e) words most likely outnumber the (a)-(c) words, such partitioning omits what seems to be a sizeable number of "predictable" irregularities. If they are indeed predictable, then they are not irregularities at all. The problem now becomes what the words whose stress assignment is described by (a)-(c) have in common with one another and perhaps even with the words from cases (d) and (e). If a common feature—or features—can be found, then even the view of so-called "rule-governed" cases may have to be altered accordingly. I believe that there is such a feature: [tense]. Before rules referring to the feature [tense] can be formulated, some attention must be given to the various discussions of that feature in the literature.

The Feature [Tense]

Harris (1969:116) holds out the prospect of a feature [KD] (diphthongization) which corresponds to [-a.tense], with [+D] vowels being historically "short" or "lax" and [-D] vowels historically "long" or "tense". "For example, the
vowels that diphthongize when stressed are reflexes of Latin lax vowels, and it is the reflex of lax e that is deleted word-finally after a single dental consonant. However, I have not yet taken the step of identifying [+D] as [-tense] and [-D] as [+tense] in the synchronic grammar...

Harris (118) goes on to say that

there is also no correlation between the specification with respect to the feature [D] of vowels in systematic phonemic representations and tenseness and laxness of vowels in phonetic representations. Consider, for example, poder, "to be able," puedo, "I can," and podemos, "we can." As has already been argued at many points, the systematic phonemic representations of these forms must be, ignoring irrelevant details, /pōder/, /pōdo/, and /pōðemos/, respectively. The phonetic forms are, however, [pɔ̃Er], [pwe̞o], and [pɔ̃emos], where /o/, appears as [o], [we̞], and /e/ appears as [E], [é]. Therefore, the identification of [D]—in terms of which distinctions are made that are necessary to capture generalizations about the language—is wholly arbitrary unless general theoretical constraints can be found to justify a decision.

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4 Harris uses the symbols 0 and E to represent the vowels subject to diphthongization. The majuscule will be used similarly throughout this paper.

5 Harris gives the phonetic representation of /p0der/ as [pɔ̃Er]. He uses this majuscule symbol to indicate the feature [+D]; phonetically, the last syllable of poder is certainly [-D]. It has not been "clearly demonstrated" how he has arrived at [E] that is also [-D], or why the final vowel of the infinitive marker must be postulated as /E/ in the first place.
In the formulation of rules throughout Spanish Phonology, Harris, however, makes use of the distinction [-\(\lambda\)-tense]. The LSR, revised as rule (24) of Chapter 4 (121), includes the specification \(\nabla\), i.e., a [-tense] vowel. Harris remarks that in the LSR (118) "the most cogent theroretical argument can be adduced for the synchronic identification of [\(\pi\)D] as [-\(\lambda\)-tense] since 'vowel quantity', i.e., the tense-lax distinction, and the derivative notions 'strong' and 'weak' syllable figure crucially in the rule."

The feature [+tense] is obviously relevant to [\(\pi\)D] in Harris' formulation (1969:161) of

\[
\begin{align*}
(1) \ & \ \{e\} \quad \rightarrow \quad \{ye\} / \quad \{we\} \\
+\text{Stress} +\text{Tense} & \quad +S = +\text{Special}
\end{align*}
\]

Harris, even though he does not clarify his position on [+D] = [-\(\lambda\)-tense] in Spanish Phonology, formulates six rules in rules in Chapter 4 that are related to the feature [-\(\lambda\)-tense]. (C.f., Table III)

The rules in Table III are instrumental in predicting the surface forms of verbs, according to Harris' derivations

---

6This distinction is replaced by the non-phonological diacritic \(\chi\) in Harris (1975).
Table III  HARRIS' RULES INCLUDING THE FEATURE TENSE

<table>
<thead>
<tr>
<th>Rule</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. V [ +low ] ---- [ +high ] [ +tense ] / { [ +past ] [ 3 conj ] COV Verb }</td>
<td>(i)</td>
</tr>
<tr>
<td>B. V ---+Ø / [+irreg]</td>
<td>(i)</td>
</tr>
<tr>
<td>C. e [ -tense ] ---+Ø / V [+ant] O [ cons ] [ -voc ]</td>
<td>(ii)</td>
</tr>
<tr>
<td>D. V [ +stress ] ---+ [ -high ] / [ +cons ] [ -voc ]</td>
<td>(ii)</td>
</tr>
<tr>
<td>E. V ---+ [ -high ] / { [ +tense ] [ +ant ] }</td>
<td>(i)</td>
</tr>
</tbody>
</table>

7These rules are from Harris (1969: 130-131) and represent a summation of his theories on the Spanish verb system.
in his Chapter 4. His use of the feature is criticized by Brame and Bordelois: "When one considers to what use the feature of tenseness is put in the rules... it becomes apparent that the feature is, at least in two cases, no more that an ad hoc coding device designed to salvage other following rules in the system" (162). To illustrate their point, Brame and Bordelois cite case (e) of Table III:

In Harris' framework, we expect to find some third conjugation verbs with stem vowels in u or i which might further more be expected to undergo [case (e.i) of Table III] ... For example, one might expect one such example as s[u]bir 'to ascend,' s[u]bo 'I ascend' to become *s[o]bir, *s[o]bo, etc. That such is not the case would normally be taken as evidence refuting such a rule ..., but Harris salvages the rule by incorporating the feature [+tense] in the structural change of [Table III, (a)].

That Harris uses the feature [tense] to write off counter-examples of the changes accounted for by his verb rules leads Brame and Bordelois to the conclusion that "the feature of tenseness in this instance is no more than a device utilized to salvage an analysis that is suspect from the beginning" (162). It is important to note that the critics here are dismissing the tense-lax distinction of Harris, not the possibility of a tense-lax distinction itself. They admit that the feature could be "natural in some universal sense" (162), but insist that the "only really convincing argument at this stage in our knowledge of phonological systems must emanate from the situation specific to Spanish" (161).
Mario Saltarelli (1970: 94) contends that it is "tempting to formulate a stress rule based on vowel length (or tenseness)" since such a formulation would produce in Spanish a stress pattern situation similar to that of Classical Latin. Saltarelli assumes that such a formulation is captured by the following: "stress the rightmost long vowel."

However, as noted in Chapter II above, Harris (1975: 62) rejects his earlier suggestion, now claiming explicitly that the feature needed for diphthongization is not the same as the feature needed for stress assignment, as discussed in Chapter II (13) of this paper. The later work, however, makes no mention of the feature [tense] as employed in the verb derivations of Chapter 4 in Spanish Phonology, nor does Harris mention whether the conclusion [D] ≠ [X] negates the possibility of a feature [tense] that is not equal to [κD].

From the literature amassed concerning the feature [tense], one can readily see that there is too much evidence that such a feature exists in Spanish to dismiss it entirely, yet not enough evidence to delineate its properties in a manner that will relate [tense] to the rules of the synchronic grammar. In the following section of this chapter, an attempt will be made to clarify the nature of [tense].

The Stress Assignment Rule

If one can assume momentarily that enough evidence exists to acknowledge an underlying system of tense and lax vowels in Spanish, at this time distinguished according to Harris'
earlier approximation [-tense] = [±D] (1969:116), one might conclude along with Saltarelli (94) that such a vowel system plays some part in stress assignment. The first formulation of the stress assignment rule would then be Saltarelli's

(2) Stress the rightmost [+tense] vowel.

Such a rule as (2) looks very important to the assignment of stress in non-verbs with finally stressed vowels. Rule (2) also could account for the occurrences of finally-stressed endings in the preterite and future verb forms: amé, "I loved;" comió, "he ate;" escribi, "I wrote;" amaré, "I will love;" comerá, "he will eat;" escribiré, "I will write." The underlying forms of both the non-verbs and verbs with finally-stressed vowels in their phonetic forms could have their final vowels postulated as [+tense] and have stress assigned according to (2). There are non-verbs as well as verb forms that end with unstressed vowels:

(3)

<table>
<thead>
<tr>
<th>Non-Verbs</th>
<th>Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>pelotari &quot;jai lai player&quot;</td>
<td>tómo &quot;I take&quot;</td>
</tr>
<tr>
<td>base &quot;base&quot;</td>
<td>coma &quot;He might eat&quot;</td>
</tr>
<tr>
<td>bikini &quot;bikini&quot;</td>
<td>vino &quot;He came&quot;</td>
</tr>
<tr>
<td>cursi &quot;in bad taste&quot;</td>
<td>dije &quot;I said&quot;</td>
</tr>
<tr>
<td>casa &quot;house&quot;</td>
<td>supo &quot;He found out&quot;</td>
</tr>
<tr>
<td>impetu &quot;impetus&quot;</td>
<td>vivé! &quot;Live!&quot;</td>
</tr>
<tr>
<td>mono &quot;monkey&quot;</td>
<td>hablára &quot;(if) I talked&quot;</td>
</tr>
<tr>
<td>espíritu &quot;spirit&quot;</td>
<td></td>
</tr>
</tbody>
</table>

The words in (3) obviously contain vowels that in their underlying forms are [-tense] at the derivational level at which stress is assigned.
Rule (2), alone, however, is not expansive enough to be very meaningful. The set of words in Spanish ending with a [+stress] vowel is relatively small. Rules are needed that account for internal stress, and there are plenty of words in Spanish with [+D] vowels that are [+stress]: fuérte, "strong;" Venezúela, "Venezuela;" majuélo, "white hawthorne;" sosiégo, "calmness, quiet," etc. Closer examination of the words with [+D] syllables reveals, however, that in every case such a syllable is penultimate. This observation has two meaningful implications: first, there must be some very powerful motivation for penultimate stress in Spanish; and second, that for the antepenultimate syllable to be stressed it must be [-D]. Since we have accepted--albeit temporarily--Harris' formulation of [xD] = [-αtense], we can conclude that the antepenultimate syllable must be [+tense] in order to be [+stress]. These observations would force the replacement of (2) by (4):

(4)

(a) Stress the last vowel in a word if it is [+tense].

(b) Stress the antepenultimate vowel in a word if it is [+tense].

(c) Stress the penultimate vowel of a word.

(d) Stress the vowel of a monosyllable.

Let us assume temporarily, for the sake of argument, that this formulation (4) is the correct rule for stress assignment in Spanish and test its efficacy in accounting for the observations. Since its very complexity makes it suspect vis à vis
the more elegant formulations of Harris and Saltarelli, evidence to disconfirm it should be easily found if it is indeed false.

**Stress in Non-Verbs**

This section tests rule (4) as the principle of stress assignment in Spanish non-verbs. Specifically, attention is restricted to representative forms listed in Table II. Consider first the partial derivations in (5) of three forms which represent Spanish non-verbs with final stress ending in either vowel or consonant—-that is, case (a) of (4):

(5) A. **barril**, "barrel"  

\[ \text{baRil} \]  

\[ \text{baril} \]  

**Lexical Representation**  

**Stress Assignment (4.a)**

B. **canción**, "song"  

\[ \text{kan + si\'on} \]  

\[ \text{kansión} \]  

**Lexical Representation**  

**Stress Assignment (4.a)**

C. **mamá**, "mama"  

\[ \text{mama} \]  

\[ \text{mama} / \]  

**Lexical Representation**  

**Stress Assignment (4.a)**

---

8 Only those details pertinent to the discussion at hand will be considered in the derivations outlined in this paper. The feature [+tense] will be noted with a macron (') in the lexical representations, as in /baRil/.
Penultimate stress (case (c) of (4)), by far the most prevalent assignment in any class of Spanish words, is achieved when there are no [+tense] vowels in either the antepenultimate or final syllables:

(6) A. lápiz, "pencil"
   lápiz
   lápiz
   Stress Assignment (4.c)

B. abuela, "grandmother"
   ab01 + a
   ab0la
   abwela
   Diphthongization

The vowel of the penultimate syllable may be either [+tense], but that feature is not the determining factor in stress assignment. It is the penultimate position, rather, that determines the stress placement. Consider (7), for example:

(7) barriles, "barrels"
   baRT1 + es
   baríles
   Stress Assignment (4.c)

Reference to (5.A) will show that the stress in the singular barril was assigned by (4.a), whereas the stress in the plural is assigned by (4.c). Such a distinction does indeed seem vacuous for a pair like barril/barriles. However, a familiar stress shift is explained according to (4.c):

(8) carácter, "character"
   karakter
   karákter
   Stress Assignment (4.c)
The reader has probably noticed by now that I have not been adhering completely to Harris' designation of \( \alpha-D \) = \([-\alpha\text{-tense}] \). In fact, the feature \([D]\) is relevant only to the segments /e, o, u/.\(^{10}\) Other \([-\text{tense}]\) vowels, /i, a, u/, most likely become \([+\text{tense}]\) when they become \([+\text{stress}]\). The underlying vowel system of Spanish, then, would contain the segments /\(\ddot{a}\), \(\ddot{e}\), \(\ddot{i}\), \(\ddot{o}\), \(\ddot{u}\)/, /a, e, i, o, u/, and /\(\ddot{a}\), \(\ddot{e}\), \(\ddot{u}\)/, with the majuscule segments being those that are \([+D]\). More is said to support the postulation of the underlying vowels as soon as more examples are given of the stress rule's effectiveness in predicting the placement of stress in Spanish.

The penultimate syllable is stressed routinely, regardless of the features of the vowel. What, then is the surface distinction between a \([+\text{tense}]\) vowel and a \([-\text{tense}]\) vowel if it is not the feature \([+D]\)? The answer to this question--aside from the assignment of stress--is indeed difficult to ascertain.

\(^{9}\)In the singular form, it was irrelevant that the /\(\ddot{a}\)/ of \(\text{lápiz}\) (6.A), for example, is \([+\text{tense}]\) since it is in penultimate position; however, /\(\ddot{a}\)/ is indeed \([+\text{tense}]\) because in the plural \(\text{lápices}\) there is no stress shift as in (8) with stress assigned in the correct position by (4.b).

\(^{10}\)The /\(u\)/ has been included here because of the alternation in \(\text{jugar}, \text{"to play,"} \text{jugó, "I play."}\)
Since vowel reduction in Spanish is phonetic, not phonological, vowels that are not stressed, whether [+tense] or [-tense], appear identically in the surface representation.

One recalls Harris' (1969: 118) statement that the identification of the underlying nature of vowels "in terms of which distinctions are made that are necessary to capture generalizations about the language—is wholly arbitrary unless general theoretical constraints can be found to justify a decision." It has been shown that stress can be successfully predicted by assuming the existence of underlying tense and lax vowels. Not only the most regular occurrences of stress are determined by the stress assignment rule in (4), but also the notable occurrences of stress shifts, making (4) the most comprehensive stress rule to date. The feature [tense], then, seems a "distinction" that is "necessary to capture generalizations about the language." Further evidence supporting the distinction of [tense] in stress assignment is given in the remainder of this paper.

While I am convinced that [+D] ≠ [-tense], this conviction must not be taken as a rejection of the existence of the feature [D]. In fact, both [D] and [tense] are independently motivated in Spanish, as the following evidence makes clear. The only occurrences of [we] and [ye] from [+D] vowels are in penultimate position. Some clarification about the surface-level occurrences of the diphthongs [we] and [ye], however, does need to be made. First of all, there are numerous examples of [we]
that do not have /0, U/ as underlying forms. Bilingüe, "bilingual," is more than likely /bilingwe/, with stress assigned by (4.c). The rounded consonant /gW/ yields the diphthong on the surface level, even though unstressed. Mono-syllables, of course, must be stressed: /p0s/ --- [pwes], pues, "well." Also, there are forms which result from the cyclical application of stress: duende, "fairy," and duendecillo, "little fairy," ([d0nde] [cillo]): the brackets here assign stress to the stem first (and, thereby, diphthongizing /0/), then to the ending. (All stress except the right-most is subsequently erased.) The same sort of process is responsible for destreza, "skill;" diestro, "skillful;" and adiestrar, "to make skillful."

Harris (1969) convincingly solves the problem of unstressed diphthongs by assuming the cyclical application of the stress assignment rule to be in effect in the diestro series as well as in viejo, "old;" aviejar, "to make old;" vejéz, "old age" and mueble, "furniture;" amueblar, "to furnish;" moblaje, "a set of furniture." He explains (125-126) the forms as follows:

The verbs... clearly have the same stem as the corresponding nouns and adjectives. Thus, the unstressed diphthongs of the verbs must be derived from systematic phonemic lax vowels. By making use of cyclical application of rules, in particular, cyclical stress assignment, we may derive the correct phonetic representations of the forms of adiestrar...
Adiestrár is handled, then, as in (9):

(9)  \[
\left[ v^\#a \left[ A E \right] A a + \text{mos}^\# \right] V
\]

First Cycle
Stress Assignment (4.d)

Second Cycle
Stress Assignment (4.c)
Diphthongization
Erase all stress except the rightmost

adyestrámos

Phonetic Representation

The other forms with unstressed diphthongs mentioned may be handled in the same way.

It has been shown, then, how final stress is accounted for by the stress assignment rule in (4); also, penultimate stress is the result of [-tense] vowels in either the last syllable or the antepenultimate syllable. Now, attention will be given to antepenultimate stress and some interesting achievements of the stress assignment rule in this domain.

Antepenultimate stress (case (b) of (4)) is accounted for in the following derivation:

(10) A. régimen, "regime"  
\[
\text{rèximen}
\]  
Lexical Representation
\[
\text{rèximen}
\]  
Stress Assignment (4.b)

B. regímenes, "regimes"  
\[
\text{rèximen +es}
\]  
Lexical Representation
\[
\text{rèximenes}
\]  
Stress Assignment

Also, (4) further accounts for the seemingly exceptional stress shifts that occur with pluralization of the same nature as carácter/caractéres. Other relevant examples--espécimen/
especimenes, "specimen(s);" interin/interines, "intern(s);" and junior/junióres, "junior(s);" can be accounted for in a similar manner. Especimenes and interines are derived like regímenes with two tense vowels in their underlying forms: /especimen/ and Interin/. Junióres is somewhat different and is given in (11):

(11) A. Junior, "junior"

\[x\hat{u}n\hat{e}r\]

Lexical Representation

\[x\hat{u}n\hat{e}r\]

Stress Assignment (4.b)

B. Juniores, "juniors"

\[x\hat{u}n\hat{e}r + es\]

Lexical Representation

\[x\hat{u}n\hat{i}o\hat{e}r\]

Stress Assignment (4.c)

Therefore, surface forms that look very different from the average have yielded data important to the assignment of stress in the majority of Spanish words.

Álbum, azúcar, fácil, and lápiz are all listed by Hooper and Terrell as being exceptional forms to their rule of stem-final stress. Each of these forms is accounted for by (4.c). Debil, "weak;" frágil, "fragile;" fácil, "easy;" and difícil, "difficult," are regularly stressed by (4.c). Gentil, "gentle," is also regularly stressed, but by (4.a). The same difference in application of stress rules accounts for the difference in the stress assignments in crímen, "crime;" exámen, "exam;" desorden, "disorder;" imagen, "image;" and such words as henequén, "hemp;" and desdén, "disdain." Hence, non-verb stress---in all its occurrences---is effectively predicted by the Stress Assignment Rule given in (4).
Stress in Verb Forms

So far, it has been shown primarily how the Stress Assignment Rule works in non-verb forms. It was briefly mentioned that (4.a) is well-motivated in accounting for final stress in most verb preterite and future forms. In Table IV, there is a complete paradigm, with the exception of the imperfect forms, for a regular -ar conjugation. Each form in Table IV is followed by a notation indicating the operative portion of the Stress Assignment Rule and its underlying representation.

Obviously, if one accepts Harris' postulation of the future and conditional surface forms as being composites consisting of the infinitive followed by a form of the auxiliary verb *haber*, there will be a problem in assigning the stress. The infinitive *tomar* must be underlain by /tom=ar/ in order to achieve [tomar], but *tomaramos* cannot be underlain by /tom=ar+emos/ or the surface representation would be *tomaremos*, according to (4.b) (likewise, /tom=ar+a/ --* tomaría*). There are two possibilities for solutions: first, one could postulate a laxing rule for tense vowels, followed by a sequence of consonant followed by formative boundary; second, one could postulate the future and conditional forms as /tom=aremos/ --* [tomarémos] (4.c) and /tom=aríamos/ --* tomaríamos (4.b), using the same stem as all the other forms in the verb paradigm. The second alternative is especially attractive for two reasons: (1) it does away with the necessity
Table IV  
TOMAR, "TO TAKE"11

<table>
<thead>
<tr>
<th>Present Tenses</th>
<th>Subjunctive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicative</td>
<td></td>
</tr>
<tr>
<td>a. tomo (c)</td>
<td>tôme (c)</td>
</tr>
<tr>
<td>b. tomas (c)</td>
<td>tômes (c)</td>
</tr>
<tr>
<td>c. toma (c)</td>
<td>tôme (c)</td>
</tr>
<tr>
<td>d. tomamos (c)</td>
<td>tômêmos (c)</td>
</tr>
<tr>
<td>e. tomatis (c)</td>
<td>tomeis (c)</td>
</tr>
<tr>
<td>f. toman (c)</td>
<td>tômen (c)</td>
</tr>
<tr>
<td>Imperative</td>
<td></td>
</tr>
<tr>
<td>b. toma (c)</td>
<td>/tom = a/</td>
</tr>
<tr>
<td>tômes (c)</td>
<td>/tom = es/</td>
</tr>
<tr>
<td>tôme (c)</td>
<td>/tom = e/</td>
</tr>
<tr>
<td>f. tomen (c)</td>
<td>/tom = en/</td>
</tr>
<tr>
<td>Subsequent Tenses</td>
<td></td>
</tr>
<tr>
<td>Future</td>
<td></td>
</tr>
<tr>
<td>a. tomarere (a)</td>
<td>/tom = are/</td>
</tr>
<tr>
<td>b. tomarás (a)</td>
<td>/tom = arás/</td>
</tr>
<tr>
<td>c. tomará (a)</td>
<td>/tom = ará/</td>
</tr>
<tr>
<td>d. tomarámos (c)</td>
<td>/tom = arêmos/tomaríamos(b)</td>
</tr>
<tr>
<td>e. tomaráenis (c)</td>
<td>/tom = aréis/tomaríais (b)</td>
</tr>
<tr>
<td>f. tomarán (a)</td>
<td>/tom = arân/</td>
</tr>
<tr>
<td>Conditional</td>
<td></td>
</tr>
<tr>
<td>Past and Non-finite Tenses</td>
<td></td>
</tr>
<tr>
<td>Infinitive:</td>
<td>tomáre</td>
</tr>
<tr>
<td>Gerund:</td>
<td>tomándo</td>
</tr>
<tr>
<td>Participle:</td>
<td>tomado</td>
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<tr>
<td>Preterite</td>
<td></td>
</tr>
<tr>
<td>a. tomé (a)</td>
<td>/tom = ê/</td>
</tr>
<tr>
<td>b. tomaste (c)</td>
<td>/tom = ëste/</td>
</tr>
<tr>
<td>c. tomo (a)</td>
<td>/tom = ô/</td>
</tr>
<tr>
<td>d. tomanos (c)</td>
<td>/tom = ëmos/</td>
</tr>
<tr>
<td>e. tomanes (b)</td>
<td>/tom = ësteis/</td>
</tr>
<tr>
<td>f. tomaron (c)</td>
<td>/tom = ëron/</td>
</tr>
</tbody>
</table>

11In the interest of space the forms are arranged as follows:
  a. First Person Singular
  b. Second Person Singular, Informal
  c. Second Person Singular, Formal; Third Person Singular
  d. First Person Plural
  e. Second Person Plural, Informal
  f. Second Person Plural, Formal; Third Person Plural
Also, only the stem boundaries have been marked. The postulation of formative boundaries between tense markers and person-number markers is well-motivated but irrelevant here.
here for the extra cycle in stress assignment (c.f., Harris 1975: 68); and (2) it eliminates postulation of a special future/conditional stem.

As evidence that the stress cycle is in operation in the future forms, Harris cites the verb oírè, "I will hear." Its surface form is [oire] not [oyrè]; Harris attributes the failure of /i/ to become [y] after [o] to the fact that /i/ was at one stage in the derivation [+stress]. But Harris (1969: 27n) says "there are also instances of VV [vowel/vowel] versus GV [glide/vowel]. For example, the contrast between trisyllabic duoeto [dueto], 'duet,' and disyllabic duelo [dwelo], 'mourning,' can presumably be accounted for by the underlying representations /du = eto/ and /dOlo/, respectively." Harris used the boundary = to prevent the glide-formation in duoeto; the lack of glide-formation in oírè /o = ir+è/ can be accounted for similarly.

The verbs of the -er/-ir conjugations have their stress assigned in every instance in the same manner as the forms of the -ar conjugation. Some interesting observations do result, however. Consider the gerund, for instance: for tomar the underlying form was /tom = ando/ with the penultimate vowel being [-tense]; for escribir, the lexical representation is /escrib = Endo/ and for comer, /kom = Endo/. Since the penultimate vowels are [±tense] in the underlying forms of the gerunds for all conjugations, diphthongization occurs in the -er/-ir verbs to yield the surface representations [escribyendo] and [komyendo], after stress is regularly assigned to each by (4.c).
The imperfect forms were omitted from Table IV because they contain data that require refinement of the stress assignment rules of Spanish. The imperfect subjunctive in Spanish has two sets of endings used synonymously: "I wish I had eaten" is manifested either as comiera or comiese; "I wish I had written" as escribiiera or escribiiese. In order for the diphthongization to occur, the penultimate vowel of the words above must be underlain by /E/, as in the following derivation:

(12) 
comiera, "I wish I had eaten"  
escribiiese, "I wish I had written"

\[
\begin{align*}
\text{kom} &= \text{Era} \\
\text{kom}E\text{ra} &= \text{escribE}\text{se} \\
\text{komy}E\text{ra} &= \text{escriby}E\text{se}
\end{align*}
\]

The derivations in (12) are routine. However, when one looks at the first person plural of the past subjunctive, there seems to be a deviation from the Stress Assignment Rule: comieramos, "We wish we had eaten;" escribiésemos, "we wish we had written." In these forms, a [+D] vowel has been stressed in antepenultimate position. Without explanation, such data could totally refute rule (4). However, I believe that an explanation exists; further, that explanation is not simply a remedy for the forms in the imperfect subjunctive, but a rule of Spanish phonology that is operative in the grammar as a whole.

Menéndez Pidal (1973: 276) makes note of an historical stress shift in the Spanish verbs, changing such forms as trabajamos to the present-day pronunciation trabajábamos, "we used to work." In Latin the penultimate a of the verb ending was long,
or [+tense]. Harris (1969: 76n) makes note of this historical retraction of stress but adds that he "can find no motivation for believing that this stress shift is to be accounted for by an unexplained laxing of the penultimate a rather than by an equally unexplained change in the stress rule itself."

Elsewhere (122n) Harris states

\begin{quote}
Amábamos and amarámos . . . became amábamos and amáramos, thus destroying the last vestige of the relationship between verb stress and etymological vowel quantity. These are the facts, not an explanation of the facts, which still remains to be found and which would be an accomplishment of the highest order in historical linguistics.
\end{quote}

Apparently then, sometime during the thirteenth century a change took place in the synchronic grammar of Spanish. Vowels that were etymologically tense became [-tense], and in the process a stress shift occurred. Harris could find no motivation for such "laxing" because he had not formalized his theories about the nature of the feature [tense] and did not know the role of that feature in stress assignment. However, the stress shift in these verb forms cannot be fully explained by simply marking the penultimate vowel [-tense]. According to (4), the antepenultimate vowel would then have to be marked [+tense] for the correct stress assignment to be made—which is highly unlikely. The solution lies in the concept of boundary markers.

\footnote{A similar shift in non-verb stress is dealt with later.}
Chomsky and Halle (1968:66-67) delineate three kinds of boundary markers: the word boundary, [#]; the formative boundary, [+] ; and a boundary that is different from either the word or formative boundary, [=]. As one can recall, Harris used the boundary [=] to account for the lack of glide formation in due to. Chomsky and Halle use the concept of boundaries in accounting for some otherwise aberrant occurrences of stress in words that have undergone affixation (100-110). As was mentioned earlier, the postulation of formative boundaries between tense markers and person-number endings is well-motivated; Harris uses formative boundaries throughout his analysis of verbs in Spanish Phonology. He postulates the imperfect subjunctive form comieras as com + e + ra + s (78). Harris does not, however, assume that these boundaries play any part in stress assignment. There must, however, be a rule like (13) in the synchronic grammar of Spanish:

(13)
\[ V --> [+stress] /X_{\text{seg}} C_o [\pm \text{stres} S] C_o V^\# \]

Rule (13) would be operative in the grammar after rule (4); the effect of (13) would follow the conventions established by Chomsky and Halle in that it would de-stress the vowel that has already been stressed:

(14) comieramos, "we wish we had eaten:

<table>
<thead>
<tr>
<th>Lexical Representation</th>
<th>Stress assignment (4.c)</th>
<th>Stress Adjustment (13)</th>
<th>Diphthongization</th>
</tr>
</thead>
<tbody>
<tr>
<td>kom = Er + amos</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>komEr + ámos</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>komyéramos</td>
<td></td>
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</tbody>
</table>
Reference to Table IV will show that the verbs are postulated with the boundary $[=]$ separating the stem and the various mood-tense, person-number markers. Such a postulation prevents a form like *tomamos* from becoming $*$tomamos.$^{13}$ Table IV can now be completed with the imperfect subjunctive and the imperfect indicative forms:

(15)

Imperfect Indicative

<p>| | | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>tomaba</td>
<td>(c)</td>
</tr>
<tr>
<td>b.</td>
<td>tomabas</td>
<td>(c)</td>
</tr>
<tr>
<td>c.</td>
<td>tomaba</td>
<td>(c)</td>
</tr>
<tr>
<td>d.</td>
<td>tomabamos</td>
<td>(c: 13)</td>
</tr>
<tr>
<td>e.</td>
<td>tomabais</td>
<td>(c: 13)</td>
</tr>
<tr>
<td>f.</td>
<td>tomaban</td>
<td>(c)</td>
</tr>
</tbody>
</table>

Imperfect Subjunctives

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<table>
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<tr>
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<tbody>
<tr>
<td>a.</td>
<td>tomara</td>
<td>(c)</td>
</tr>
<tr>
<td>b.</td>
<td>tomaras</td>
<td>(c)</td>
</tr>
<tr>
<td>c.</td>
<td>tomara</td>
<td>(c)</td>
</tr>
<tr>
<td>d.</td>
<td>tomaramos</td>
<td>(c: 13)</td>
</tr>
<tr>
<td>e.</td>
<td>tomaris</td>
<td>(c)</td>
</tr>
<tr>
<td>f.</td>
<td>tomaran</td>
<td>(c)</td>
</tr>
</tbody>
</table>

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<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td>a.</td>
<td>tomase</td>
<td>(c)</td>
</tr>
<tr>
<td>b.</td>
<td>tomases</td>
<td>(c)</td>
</tr>
<tr>
<td>c.</td>
<td>tomase</td>
<td>(c)</td>
</tr>
<tr>
<td>d.</td>
<td>tomasemos</td>
<td>(c: 13)</td>
</tr>
<tr>
<td>e.</td>
<td>tomaseis</td>
<td>(c: 13)</td>
</tr>
<tr>
<td>f.</td>
<td>tomasesen</td>
<td>(c)</td>
</tr>
</tbody>
</table>

---

$^{13}$Hooper and Terrell (79-80) note that "In a number of dialects of Spanish (notably Andalusian . . . and Chicano . . .) stress has been retracted on (4) and (5) first and second person plural of the present subjunctive . . ." The forms resulting are listed as cömamos and trabajemos. These aberrations may be readily explained as a substitution of $[+]$ for $[=]$ as the boundary in these forms.
It was not immediately obvious that the vowel in penultimate position in *tomába* was not [+tense] throughout its paradigm. Stress would then have been correctly assigned to all forms except the *nosotros* and *vosotros* endings by (4.c); the endings for *nosotros* and *vosotros* would have been correctly stressed by (4.b). In view of the diphthongization that occurs in the imperfect subjunctive, however, I am postulating the vowel in question as [-tense] and relying on the stress adjustment rule in (13) to achieve the desired results. Throughout the imperfect paradigm for -ar infinitives, then, the vowel immediately following the stem in [-tense]. For the -er and -ir infinitives, however, the theme vowel must be [+tense] in the imperfect indicative since this vowel retains its stress in all forms:

(16)
Imperfect Indicative

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>a.</td>
<td>comía</td>
<td>(c)</td>
</tr>
<tr>
<td>b.</td>
<td>comías</td>
<td>(c)</td>
</tr>
<tr>
<td>c.</td>
<td>comía</td>
<td>(c)</td>
</tr>
<tr>
<td>d.</td>
<td>comíamos</td>
<td>(b)</td>
</tr>
<tr>
<td>e.</td>
<td>comíais</td>
<td>(b)</td>
</tr>
<tr>
<td>f.</td>
<td>comían</td>
<td>(c)</td>
</tr>
</tbody>
</table>

/kom = Ía/
/kom = Ías/
/kom = Ía/
/kom = Tamos/
/kom = Tais/
/kom = Ían/

Further Applications of the Stress Adjustment Rule

The domain of the rule in (13) is not limited to verb forms. It can also be used to account for some puzzling occurrences of stress in non-verbs. Harris (1975: 58-59) notes some problematic forms in the following:

Take *teléfono*; we cannot say that the second *e* is inherently or lexically stressed, for the simple reason that it occurs unstressed in *telefónico*, *telefonista*, *telegráma*, etc. Suppose one
denies that the tele- of teléfono is the same morpheme as the tele- of telefónico, telefonista, etc. (or, more extremely denies that the telefon- or teléfono is the same as the telefon- of telefónico or the telefon- of telefonista). or claims instead that 'words' rather than morphemes are lexically marked for stress. The first of these claims is patently ludicrous, I would say; and the second is forced to miss the generalization that all words ending in the suffix -ico 'ic' receive stress on the syllable immediately preceding this suffix, the generalization that all words ending in the suffix -ista '-ist' are penultimately stressed, and in fact every other generalization about stress placement in Spanish.

Since the forms teléfono, telefónico, and telefonista involve suffixation, it is a well-motivated assumption that rule (13) could be in operation here, too. The forms in (17) demonstrate the effectiveness of the Stress Adjustment Rule in accounting for such problematic forms as those noted by Harris:

(17)

A. período, "period"
peri + odio Lexical Representation
peri + ódodo Stress Assignment (4.c)
periodo Stress Adjustment (13)

B. periodista, "journalist"
peri + od + ñsta Lexical Representation
periodística Stress Assignment (4.c)

C. periódico, "newspaper"
peri + od + ik + o Lexical Representation
peri + od + įk + o Stress Assignment (4.c)
periódiko Stress Adjustment (13)

D. periodístico, "journalistic"
peri + od + ñst + ik + o Lexical Representation
peri + od + ñst + ik + o Stress Assignment (4.b)
The penultimate vowel in (17.a) is lax, the environment for stress adjustment as per (13). The penultimate vowel in (17.b) is [+tense]; hence, stress does not retract. From (17.c), it becomes clear that the vowel in /ik/ is [-tense], causing the generalization in Spanish that the vowel before /ik/ is always [+stress]. Case (d) of (17) could be accounted for by either (4.b)--as shown--or (4.c) and (13); I have chosen the former possibility because the rules are disjunctively ordered.

Turning back to tele-, one sees that the same regularity of rule application that was demonstrated in (17) is in effect:

(18)

A. teléfono, "telephone"
   tele + fon + o      Lexical Representation
   tele + fón + o     Stress Assignment (4.c)
   tele + fon + o     Stress Adjustment (13)

B. telefónico, "telephonic"
   tele + fon + ik + o Lexical Representation
   tele + fon + ik + o Stress Assignment (4.c)
   tele + fón + ik + o Stress Adjustment (13)

C. telefonista, "telephone operator"
   tele + fon + ísta  Lexical Representation
   tele + fon + ísta  Stress Assignment (4.c)

Other variations with tele-, telefotó, "telephoto;" telegráma, "telegram;" telesilla, "chair lift;" teletipo, "teletype;" and teletubo, "television tube" must have either [+tense] penultimate vowels or have different boundaries. I believe the latter is the correct assumption for two reasons: (1) all the words in the above list contain a free morpheme as well as the bound morpheme tele-; (2) other occurrences of
stress in the free morphemes are not needlessly complicated
by the postulation of a [-tense] penultimate vowel, Telefóto, then, would be #tele#fot#o# as opposed to #teléfono, #tele + fon + o#.

Realizing that the boundaries in such forms as telefóto/ teléfono are different and that the variance in stress assignment is directly related to the type of boundary present, one can account for multitude of stress occurrences in words including affixes in Spanish. Countless forms can be found with (a) stress on the antepenultimate and (b) some sort of suffixation; in each of these forms the penultimate vowel of the suffix is [+tense], making (13) applicable to retract the stress. Some representative suffixes and words are given in (19):

(19)

<table>
<thead>
<tr>
<th>SUFFIX</th>
<th>MEANING</th>
<th>WORD</th>
<th>MEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td>-metro</td>
<td>&quot;-meter&quot;</td>
<td>velocímetro</td>
<td>&quot;speedometer&quot;</td>
</tr>
<tr>
<td>-filo</td>
<td>&quot;-phyle&quot;</td>
<td>bibliófilo</td>
<td>&quot;lover of books&quot;</td>
</tr>
<tr>
<td>-foro</td>
<td>&quot;-fous&quot;</td>
<td>negróforo</td>
<td>&quot;sexton beetle&quot;</td>
</tr>
<tr>
<td>-fto</td>
<td>&quot;-phyte&quot;</td>
<td>neófito</td>
<td>&quot;neophyte&quot;</td>
</tr>
<tr>
<td>-grafo</td>
<td>&quot;-graph&quot;</td>
<td>boligrafo</td>
<td>&quot;ball point pen&quot;</td>
</tr>
<tr>
<td>-fero</td>
<td>&quot;-ferous&quot;</td>
<td>nubífero</td>
<td>&quot;cloud-gringing&quot;</td>
</tr>
<tr>
<td>-ulo</td>
<td>&quot;-al&quot;</td>
<td>vestíbulo</td>
<td>&quot;entry hall&quot;</td>
</tr>
<tr>
<td>-ido</td>
<td>&quot;-id&quot;</td>
<td>morbido</td>
<td>&quot;morbid&quot;</td>
</tr>
</tbody>
</table>

Rule (13), then, correctly adjusts stress in verb and non-verb forms alike.

Other Problems in Stress Occurrence

Before rule (4) can be accepted unquestionably as the rule of stress placement in Spanish, there is one other major class of occurrences that must be examined. The reader will
recall that Harris (1969: 56-57), as well as Hooper and Terrell (66), thought it necessary to assign stress to verbs by different rules from non-verbs because of a series of verbs and non-verbs with stress alternations in otherwise identical surface forms. ánimo, "spirit," and anímo, "I instill spirit," were among the numerous examples given. Also, there would seem to be some problem in assigning the correct stress to certain words with affixes. For instance, corazón, "heart," must have a [+tense] vowel in the ultimate position in order to have its stress assigned by (4,a); however, to predict the stress in acorazonado, "heart-shaped," the antepenultimate vowel cannot be [+tense] at the time of stress placement. Since both of these situations involve (a) moving stress one syllable to the right and (b) affixation, it seems reasonable that the process involved in achieving their stress placement might be the same.

Attention is first given to the contrasting stress in verb/non-verb pairs. The verbs in each of these cases have been back-formed by the addition of the -ar infinitive ending to the stem of a non-verb. Harris (1969: 150) makes note of this procedure in the following:

For example, the verb cantar, "to sing," in said to be derived from the noun canto, which consists of the root can plus the noun-forming -to (actually -t + o since the final vowel is o in masculine nouns and a in feminine nouns.

It is obvious, then, that the o in ánimo is different from the o in anímo in that the former is a non-verb gender marker,
while the latter is a person-number marker of the present tense. It is reasonable, also, to assume a different boundary before the final segments of each of these words; and it is further reasonable to assume that these boundaries function somehow in the variance of stress placement. The lexical representation for the non-verb form would be /anim + o/ and for the verb form would be /anim # o/. The word boundary has been assumed for the verb form because it is the form that has undergone affixation outside its original form class. Now a rule of vowel laxing can be formulated to be placed in the grammar before rule (4), the rule of stress assignment.

(20) V --> [-tense] /C₀(V) # [+seg]

The effect of (20) would be to lax the [+tense] penultimate vowel of /anim-/ when it occurs in its verb form with the word boundary [#]. Rule (20) also correctly predicts the stress in acorazonado.

(21) acorazonado, "heart-shaped"
    a + korason # adó     Lexical Representation
    a + korason # adó     Laxing (20)
    a + korason # adó     Stress Assignment (4.c)

As one can see, the stress is assigned routinely after laxing as per (20) has taken place. In support of his distinction between the rules that assign stress to verbs and those that assign stress to non-verbs, Harris (1975: 57) makes the following comment:

Thus either (a), at the stage of derivation at which stress is assigned, the segmental composition of the forms of one or both sets differs in some relevant respect from the
segmental composition of the corresponding surface representations, or (b) different stress rules are involved. Since no evidence for (a) is known—that is, since stress is assigned to representations that are identical in all relevant respects to surface representations—it follows that the stress rules for verbs are not identical to those for non-verbs (1975: 57).

Since (20) occurs in the grammar before stress assignment, there is evidence for Harris' first assumption. Stress is routinely assigned to verbs and non-verbs alike.

Historical data provide very reassuring evidence for rule (20). At the same time that rule (13)—the Stress Adjustment Rule—entered the grammar, rule (20) was introduced. Menéndez Pidal (1973: 27) makes note of this change:

> los verbos cultos dislocaron el acento latino para hacer llanas las formas latinas esdrújulas, así: recupéro, colóco, vigíla y otros muchos; comparense las formas españolas de supplico, imagino, de-término, hábito, arrego, agrego, álevo, intimo, fructí-, amplí-, notí- fico. --El cambio del acento latino no la hacían aun los cultismos del siglo XIII.

Rules (13) and (20) account for the only kinds of exceptions to rule (4), the Stress Assignment Rule. The over-all effectiveness of (4) in predicting the assignment of stress in Spanish—coupled with the fact that the only two kinds of exceptions to (4) can be predicted by synchronic rules that complement the historical processes—seems very strong evidence that (4) is indeed the rule of stress assignment in the language.
CHAPTER IV

CONCLUSIONS ON SPANISH STRESS ASSIGNMENT

What is explicitly claimed in this thesis is the following: (1) stress is assigned to non-verbs and verbs by the same rule; (2) the feature [tense] figures crucially in the stress assignment rule of Spanish; and (3) historical changes occurring around the thirteenth century introduced phonological boundaries into the language--these boundaries play a role in the prediction of stress.

Summary or Rules

The rules postulated in Chapter III have been reordered and given in (1):

(1)

a. Laxing Rule Chapter III, (20)
\[ V \rightarrow [-\text{tense}] /\text{Co}(V)\# [+\text{seg}] \]

b. Stress Assignment Rule Chapter III, (4)
\[ V \rightarrow [+\text{stress}] /\text{X} \]

\[
\begin{align*}
&\{ \text{[tense]} \#\# \} \text{ (i)} \\
&\{ \text{[tense]} \text{CoVCoVCo} \#\# \} \text{ (ii)} \\
&\{ \text{Co Co} \#\# \} \text{ (iii)} \\
&\{ \text{Co Co} \#\# \} \text{ (iv)}
\end{align*}
\]

c. Stress Adjustment Rule Chapter III, (13)
\[ V \rightarrow [+\text{stress}] /\text{X} \text{Co} \]

\[
\begin{align*}
&\{ \text{-seg} \} \text{Co} \{ \text{Vowel} \} \text{CoVCo} \#\# \\
&\{ \text{+FB} \} \text{Co} \{ [+\text{stress}] \} \text{Co V} \#\#
\end{align*}
\]
The interaction of the three rules given in (1) account for stress in practically every word in Spanish—which seems strong evidence for the acceptance of these rules as valid.

The Abstract Nature of [tense]

In order to accept the stress assignment rule proposed in this paper, one must accept the concept of [tense] as operative in Spanish. The tense-lax distinction is an abstract one, with no surface phonetic expression. Such natural generative phonologists as Hooper and Terrell immediately dismiss [tense] as mythological since there is no surface-level residue. Harris, as a transformational generative phonologist makes reference to [-tense], but, only as Brame and Bordelois point out (1973:159-163), as a remedial tool when his other rules seem to be producing unwanted occurrences. His earlier attempt to identify the feature [+D] as [-tense] is recanted in (1975).

Can, then, a feature which has been so repeatedly rejected in the synchronic grammar of Spanish indeed be the motivating abstraction for the assignment of stress in the language? Rules given in (1) make that possibility highly attractive. To accept the feature [tense] in Spanish, one must begin by abandoning any attempt to find surface level artifacts of [tense] outside of stress assignment and by admitting that the feature is ENTIRELY AD HOC. Now that those dreaded words have not only been pronounced over the feature but emphasized about it, one is free to investigate the possibility of an
ad hoc entity being valid. In our incomplete knowledge of synchronic grammar, there are many undetermined motivations for processes about which linguists have had to make some assumptions that are to one degree or another "bridges" between the known, observable data and linguistic universals. These kinds of assumptions must be made if knowledge of individual language grammars is to expand. The issue with ad hoc assumptions, then, is not that they should not be made, but rather how well the resulting generalizations reflect the over-all functioning of the synchronic grammar. If a feature that begins as an ad hoc assumption ends up as the most efficient way of predicting a particular phenomenon within the language grammar--without detracting from the knowledge of Spanish phonology as already established--the label ad hoc should be removed.

By formulating a rule like (1.b), there are only two kinds of exceptions--the retraction of stress in such forms as telefonico and the shift of stress one syllable to the right, as in animo. I do not believe that it is coincidental that the changes reflected in these examples are also found in the historical grammar of Spanish at a time when the various phonological boundary features causing such changes entered the synchronic grammar.

In view of the evidence presented in this thesis, rule (1.b), together with rules (1.a) and (1.c), is the method of

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1 The diacritic [X], for instance, employed by Harris as well as Hooper and Terrell is, in effect, such a bridge.
accounting for stress in Spanish that captures the greatest generalities that can be made about stress assignment in the language. While the basic feature of the rule is an abstraction, the regularity of its operation cannot be denied. Moreover, the assumption of the stress rules based on [tense] in no way diminishes the existing knowledge of Spanish phonology. Indeed, such an assumption aids in the validation of the current theoretical data.

The problems connected with the formulation of stress rules based on the feature [tense] are obvious: since there is no correlation between the underlying tense-lax distinction, and the surface representations of Spanish words, the facts about such a distinction are not clear. Further, there is no current knowledge of independently motivated support for the tense-lax distinction, although one would hope for the discovery of such information outside the realm of stress assignment. Also, to assume an underlying vowel system of thirteen distinct vowels (five [+tense], five [-tense], and three [+D-tense]) would force such distinctions to be made in lexical representations of all Spanish morphemes when, in fact, evidence for making this distinction is not always at hand. However, the gains in simplicity in the rules of stress assignment in Spanish that are achieved in the recognition of the underlying tense/lax distinction in vowels are so great that they serve as a positive spur to further investigations that would meet the objections just noted.
BIBLIOGRAPHY


