

# Spanish morphology and the architecture of grammar

## *(Morfología del español y arquitectura de la gramática)*

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### 1. Introduction

This chapter deals with the nature of morphology and its position within the architecture of grammar—i.e., its relation with the other components of grammar: syntax and phonology. While this issue is by now a widely studied one, the aim of the chapter is to show how it is illuminated by evidence furnished from word-related phenomena particular to Spanish, like stem alternations or the position of the head in compounds. A secondary aim is to serve as an introduction to this part of the handbook, devoted to interface phenomena. First, the major theories of morphology are presented and classified according to whether they commit to the idea of morphology as a grammatical component independent of syntax or not (section 2). The rest of the chapter examines two phenomena showcasing the tension between syntactically vs morphologically oriented theories (section 3), and between morphological vs phonological approaches (section 4). Section 5 concludes.

**Keywords:** architecture of grammar; linguistic interface; phonology; Spanish morphology; syntax; phonology

Este capítulo trata de la naturaleza de la morfología y del lugar que ocupa en la arquitectura gramatical —es decir, de su relación con los otros componentes de la gramática: la sintaxis y la fonología. Si bien es cierto que este asunto ha sido ya ampliamente estudiado, el objetivo del capítulo es mostrar cómo arroja luz sobre él la evidencia proporcionada por fenómenos relacionados con la palabra que son particulares del español, como las alternancias de radical o la posición del núcleo en los compuestos. Un objetivo secundario es el de servir de introducción a esta parte del manual, dedicada a fenómenos de interfaz. Primero presento las teorías morfológicas más importantes, y las clasifico de acuerdo con si asumen la idea de que la morfología es un componente gramatical independiente de la sintaxis o no (sección 2). En el resto del capítulo examino dos fenómenos que muestran la tensión entre teorías orientadas a la sintaxis vs teorías orientadas a la morfología (sección 3) y entre abordajes morfológicos vs fonológicos (sección 4). Presento conclusiones en la sección 5.

**Palabras clave:** arquitectura gramatical; fonología; interfaz lingüística; morfología del español; sintaxis

## 2. Theories and families of theories

It is pretty uncontroversial that morphology deals with words, however defined, and that the word is the maximal unit of morphological analysis (Piera and Varela Ortega 1999; see Felú, this volume). However, it is still quite controversial how much of what we have to explain about words can be accounted for in terms of what we know about sentences (syntax) or what we know about the grammar of sounds (phonology). Relatedly, it is also debated whether we need some notion of morpheme or, on the contrary, we ought to actually abandon the morpheme as a theoretical tool of any utility.

Sentences and, at least apparently, words show an internal structure composed of units endowed with meaning. Dependency relations found within the word are analogous to those found among words in the sentence, and some words, for instance, deverbal nouns like *demonstración* ‘demonstration’, select other words by virtue of their internal structure. Having these facts in mind and applying Ockham’s razor, it is natural to consider, as many scholars have done, the possibility that morphological phenomena be explained away via syntactic rules and principles. Whether that is possible or not is, without doubt, the most prominent debate in relation to the place of morphology within grammar. From that perspective we can classify the theories of (Spanish) morphology primarily in those in which morphology is a grammatical component of its own, independent of syntax, and those that reduce all or almost all of morphology to syntax. I will refer to models of the former kind as Autonomous-Morphology (AM) models, and to those of the latter kind as Morphology-is-Syntax (MiS) models, although, as we will see, in some cases it is not straightforward to establish the distinction—see Bosque (1983), Varela (2009).

### 2.1. Autonomous-Morphology models

Traditional studies in Spanish morphology are, either explicitly or implicitly, of the AM type. For instance, Alemany Bolufer’s (1920) pioneering treaty on derivation and compounding just takes it for granted that the units and processes leading to the creation of new lexemes are to be described in isolation, as a system in itself. Similarly, Alarcos Llorach’s (1949) analysis of the Spanish verbal inflexion simply treats forms as signs that enter oppositions, with no connection with syntax. Moreover, at this moment the drive towards the formulation of universal principles underlying all languages was still timid, so the morphemic analyses developed by the American distributionalists for the languages of North America, already staggeringly blurring the distinction between morphology and syntax, did not, in general, reach languages like Spanish.

Architectural matters raised by morphological phenomena begin appearing in the literature as important theoretical questions with the advent of generative grammar (Chomsky 1965ff.). Indeed, epistemological pre-eminence is given in this framework to explanatory adequacy, i.e., the fact that the theory not only describes a closed corpus, but is able to anticipate the right state of affairs beyond that corpus, within the same language and, as far as possible, across languages. Since explanatory adequacy goes hand in hand with a parsimony of the theoretical tools, the research question was justified as to whether one same mechanism could be posited giving rise to both sentences and words. After a brief period in which full syntactic derivations were assumed to be able to yield words, it is received knowledge that Chomsky (1970) settled matters by establishing that at least word formation, riddled with idiosyncrasies, takes place in the lexicon, a component of grammar first introduced in Chomsky (1965). Otero (1976), basing on evidence from Spanish, supported a strong version of this so-called Lexicalist Hypothesis, in which morphology, including

inflection, constitutes a *paradigmatic* subsystem, contrasting with the *syntagmatic* subsystem of syntax. In short, AM models reigned during the 1970's and the early 1980's. I follow Martín García (1998) in making a distinction between two kinds of AM theories.

### 2.1.1. *Strict Autonomous-Morphology models*

On the one hand, Halle's (1973), Aronoff's (1976), or Anderson's (1992) are theories in which morphology uses rules different from those generating sentences: Word Formation Rules (WFRs). In Halle (1973), WFRs have access to either lists of bound morphemes or lists of already coined lexemes (the dictionary). The other three mentioned authors have WFRs take an existing, i.e., lexically recorded, lexeme as input and produce an output, a newly coined lexeme. There is, therefore, no storage of bound morphemes and these theories are said to be *a-morphous*, or, in Hockett's (1954) famous classification of morphological models, item-and-process models. Varela (1990) subscribes to an AM model, justifying the existence of a differentiated morphological component on the basis of a distinction that is allegedly possible with words but not with sentences: that between *possible words*, created by WFRs, and *existing words*, which after having been created are stored in the lexicon. To provide an example, when we apply the following WFR to the lexeme ESCRIBIR 'write', we obtain the new lexeme ESCRITOR 'writer' (Varela 1990, 40; see Resnik, this volume, for nominalizations):

- (1) Insert *-tor* in the context [V \_\_\_]<sub>N</sub>

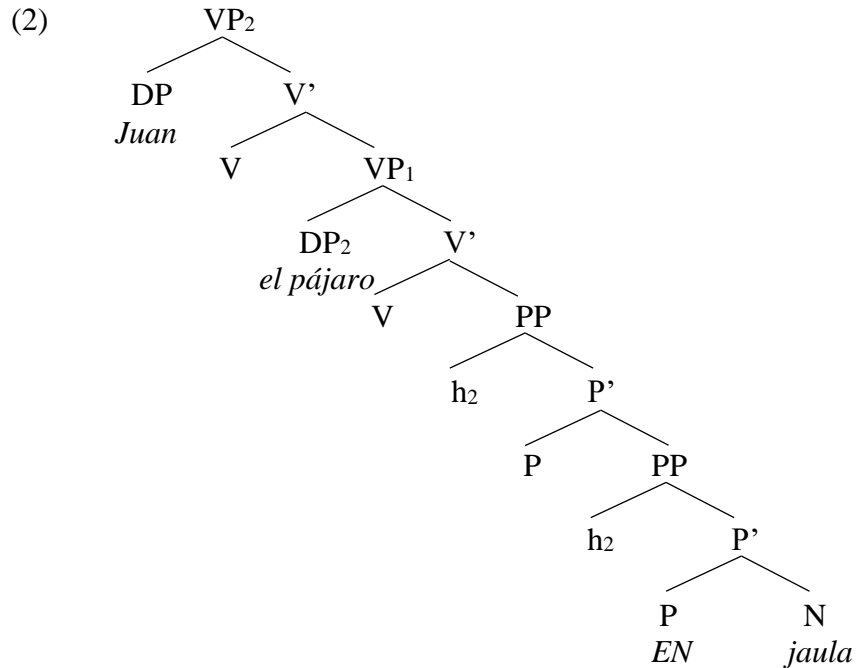
Another influential fully modular AM theory is Kiparsky's (1982) theory of Lexical Phonology and Morphology, where phonological and morphological rules are interspersed and ordered in different strata in the lexicon. García Bellido (1987) applies Kiparsky's theory to analyze the coronal fricative – velar morphophonological alternation in Spanish, as in *cocer* 'boil' / *cocí* 'I boiled' / *cuezo* 'I boil' / *cocción* 'act of boiling' (see Colina, this volume, and Armstrong, this volume, for discussion of the interaction between phonology and morphology).

Also strictly AM are the so-called word-and-paradigm models, like Matthews (1972) and Stump (2001), mostly dedicated to inflection. In these frameworks, the inflectional paradigm, rather than the word form, is "the primary object of analysis" (Stump 2001, 28). These models have developed the concept of *morphome* (Aronoff 1994), an inflectional pattern, like certain cases of syncretism, that cannot be explained via syntactic-semantic or phonological features, but corresponds to a random collection of morphological features and thus constitutes a hallmark of morphology as an independent module. Burdette (2005) and O'Neill (2014), the latter featuring in the discussion in section 4, have applied this model to inflectional patterns in the verbal system of Spanish. Word-and-paradigm and item-and-process theories are *realizational* or *separationist*, in that the morphosyntactic features are separated from their phonological realization.

### 2.1.2. *Autonomous Morphology models endowed with syntactic rules*

Other AM theories like Selkirk's (1982) or Di Sciullo and Williams's (1987), admit the principles of sentential syntax, while still placing Morphology as an autonomous component. In Hockett's (1954) words, these are item-and-arrangement models, because they contemplate the existence of morphemes as lexical items that can be combined. Several

studies in Spanish use this “encapsulated syntax” model, specifically applying Hale and Keyser’s (1993) theory of lexical syntax to understand word formation: Martín García’s (1998) on the prefix *re-*, Haouet’s (2000) on parasynthetic verbs like *afinar* ‘refine’, or Gil Laforga’s (2014) on compound (*pelirrojo* ‘red-haired’) and denominal (*barbudo* ‘bearded’) adjectives. In Haouet’s (2000, 448) study, for instance, the derivation of a location verb like *enjaular* ‘cage’ as used in the sentence *Juan enjauló el pájaro* ‘Juan caged the bird’, which takes place at lexical syntax, shows all the features of a full-fledged syntactic configuration:



## 2.2. Morphology-is-Syntax models

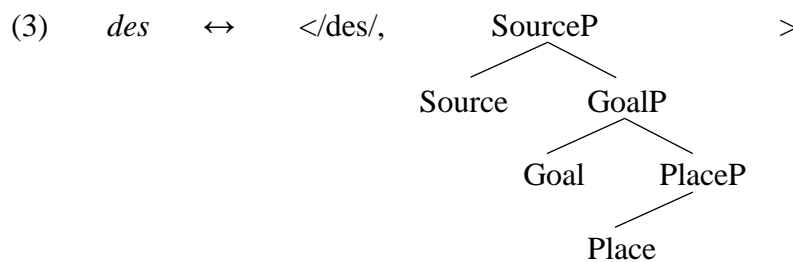
Factors like Baker’s (1985) empirical findings about the parallelism between morpheme order and syntactic operations (his Mirror Principle) and Hale and Keyser’s (1993) work on the constraints imposed on lexical items by the syntactic configuration raised suspicions about hermetically modular visions of the syntax-morphology interaction. In parallel, Piera (1985) tried to deal with the challenges posed by words that syntactically and semantically correspond to full phrases, like the Spanish series of pronouns incorporating the preposition *con* ‘with’ and the extension *-go*: *conmigo* ‘with me’, *contigo* ‘with you’, *consigo* ‘with himself/herself/themselves’. He thus anticipated major hallmarks of D(istributed) M(orphology) (the role of Elsewhere Principle in lexical insertion) and Nanosyntax (Phrasal Spell-Out). These findings and theoretical explorations, alongside a second push towards explanatory adequacy, to wit, the advent of the Minimalist Programme (Chomsky 1993ff.), heralded theories where the difference between syntax and morphology simply vanishes. An early example is Lieber’s (1992), which, however, is a lexicalist theory as regards its subscription to the existence of a unitary lexicon, a repository also comprising morphemes—see Acedo-Matellán (2018) for the different senses of *lexicalism*.

DM, a morphemic and realizational theory, was first introduced in Halle and Marantz (1993), although earlier work had already been carried out in the framework, like Bonet’s (1991) analysis of the so-called spurious *se* in Spanish.<sup>1</sup> The construction of inflected words, both simple or complex, is primarily a task of syntax, there being in principle no distinction between the mechanisms underlying the building of sentences and that of words. As Moyna

(2004, 620), referring to Marantz (1997), puts it “[t]he difference between morphology and syntax has to do with the categories combined rather than the nature of the combination itself”. The syntactic configuration, however, with morphemes as terminal items, can be modified postsyntactically through a series of operations before the terminals are linearized and phonologically interpreted via Vocabulary Items (so-called *Late Insertion*). All these phases constitute the component properly called Morphology.

DM has been applied in quite a few studies to morphological phenomena in Spanish: zero derivation, relational adjectives, and appositions like *pez globo* ‘globefish’ in Fábregas (2005), theme vowels and stress patterns in verbs in Oltra-Massuet and Arregi (2005), verbal inflection in Pomino (2008), etc. Particular versions of the theory can be found in López’s (2015) Parallel Computation model, based on nominalizations, or Acedo-Matellán and Real-Puigdollers’s (2019) theory of roots as Vocabulary Items inserted into functional nodes, applied to gender-induced polysemy of the *leño* ‘log’ – *leña* ‘firewood’ type.

A more recent, but by now well-known MiS theory is Nanosyntax, developed for Spanish primarily by Antonio Fábregas (see Fábregas 2007, among many other studies).<sup>2</sup> In this realizational and morphology-less theory, syntax delivers a representation where each terminal node corresponds to a feature, rather than, as in DM, a bundle thereof. The abstract representation is lexicalized at the interface via morpheme-sized lexical entries, which, by virtue of the tenet of Phrasal Spell-Out, can be assigned to whole stretches of terminal nodes. Consider as an example Gibert Sotelo’s (2017, 111) proposal of a lexical entry for the prefix *des-* ‘dis-, un-’ (*desterrar* ‘exile’, *desigual* ‘uneven’, etc.) in Spanish:



This specification allows *des-* to lexicalize the stretch of nodes Source, Goal, and Place, in that order—a purportedly universal order of spatial relations. The fact that *des-* can combine with the prefixes *a-* or *en-* only to their left (*des-en-terrar* ‘unearth’ vs \**en-des-terrar*, *des-a-tornillar* ‘unscrew’ vs \**a-des-tornillar*) is explained syntactically: *a-* and *en-* lexicalize Place, which is embedded under Goal, while *des-* is left to lexicalize Source and Goal (it needn’t lexicalize Place if there is another lexical item, like *a-* or *en-*, to do the task).

Finally, we could consider Mendivil Giró’s (2019) recent contribution to the debate as a kind of tweak of the nanosyntactic model and also a bridge between MiS and AM models. He too considers that lexical items correspond to whole syntactic configurations, but the stored items are always full-fledged words, rather than morphemes. For instance, *zapatero* ‘shoemaker, cobbler’ is a conventionalized way to refer, in Spanish, to a syntactic configuration with the semantic import of “person who repairs shoes”, and does not correspond, morphologically, to *zapat-er-o*. Thus, as the author puts it, his theory is non-lexicalist but it is also a-morphous, in that words do not have a grammatically relevant structure and are fashioned via analogy.

### 3. Endocentric compounds and the Autonomous-Morphology vs Morphology-is-Syntax debate

If there is a word-formation phenomenon mirroring sentential syntax, that is compounding (see Buenafuentes, this volume). Telling is, for instance, Rainer and Varela's (1992, 117) hesitation, in their overview of compounds in Spanish, when determining that so-called phrasal compounds (*dulce de leche* 'milk candy' 'caramel spread') are actually lexicalized phrases, and not compounds, "in order to avoid the duplication of syntactic rules in the lexicon". Even from a strictly modular, AM perspective, based on Zwicky (1985ff.), where morphology involves idiosyncratic rules and principles, Clements (1992) observes how headedness in Spanish compounds fits with its typological word order features (VO order, prepositions, etc.). And, in fact, headedness in Spanish compounds is one of the issues that serves well to illustrate the tension between AM and MiS models, since they do not follow the famous AM Right-Hand Head rule (Williams 1981).

After examining the types of compounds according to the categories of the two members, Clements (1992) proposes the following two rules, idiosyncratic to the morphological component in Spanish:

(4) [+N] Head Rule

"In a compound, if its members are [+N] <i.e., either nouns or adjectives: VA> and of different lexical categories, syntactic headedness is determined according to the hierarchy 1:N > 2:A; otherwise the lefthand member will be the syntactic head".

(Clements 1992, 158)

(5) Righthand Head Rule

"For any compound not consisting of two [+N] members, the righthand member will be the syntactic head". (Clements 1992, 159)

Beside the two rules, Clements invokes two principles, also idiosyncratic to Zwicky's SHAPE (i.e., word formation) component: the principle of Lexical Blocking, whereby compounds with properties lexically specified (like *drogadicto* 'drug addict' or *fotocopia* 'photocopy') do not obey the rules, and Panini's Elsewhere Principle, whereby the [+N] rule overrides the more general Righthand Head Rule.

This constellation of assumptions does churn out the facts, as described by Clements. In particular, he accounts for the right-headedness of compounds involving prepositions, as *antesala* 'anteroom' (feminine, based on feminine *sala* 'room') and *sinsabor* "without-flavour" 'trouble' (masculine, based on masculine *sabor* 'flavour'), on the basis of the Righthand Head Rule. On the other hand, in such a strongly modular approach it is difficult to naturally establish a connection between headedness in compounds and the word order facts in Spanish that Clements himself points out. Another important question is why these and not other rules determine the behaviour of compounds in Spanish. Finally, we are left with no explanation, beyond purely lexical marking, for the *drogadicto* 'drug addict' and *fotocopia* 'photocopy' type, which according to the [+N] Head Rule should be left-headed, contrary to fact.

Moyna's (2004) MiS, DM approach to compounding in Spanish provides answers to all these questions, in that she explores a connection between headedness in compounds, the morphological properties of the non-head, and universal, rather than Spanish-specific principles of syntax. Contrary to AM assumptions, Moyna assumes that compounding involves formation of phrases and what distinguishes it from standard syntactic products is the absence of functional categories.

The focus is on endocentric compounds with nominal non-heads, like *pelirrojo* ‘red-haired’ or *maniatar* ‘hand-tie’ ‘tie someone’s hands’. Moyna’s core empirical observation is that the nominal non-head appears as the right-hand member of the compound when it is endowed with an inflectional marker, as *coche cama* ‘sleeping car’ or *dulce de leche* ‘caramel spread’, and to the left when it lacks any inflectional marker, as in *drog-adicto* ‘drug addict’ or *al-i-caído* ‘wing-fallen’ ‘down in the dumps’. She derives this state of affairs in a strictly MiS fashion and without any resort to properties specific to Spanish. First, non-heads start out as complements of the head. It must be remarked that this is a semantically controversial claim, since the standard, textbook analysis of, e.g., *de leche* ‘of milk’ in *dulce de leche* treats it as an adjunct, rather than as a complement. Leaving this aside, under Kayne’s (1994) framework, which Moyna adopts, complements linearize to the right of the head universally. Thus, for endocentric compounds and *pace* Clements’s (1992) and others’ AM approaches, Moyna assumes left-headedness across the board at the first representation of the construction: *coche cama, adicto drog-*. Assuming, furthermore, that the inflectional marker projects syntactically as ClassP and that it is this projection that case features must be checked against, she proposes that nominal non-heads may stay in situ, i.e., to the right of the head, only when endowed with case—morphologically marked with *de* ‘of’ or null—by virtue of their projecting ClassP, as in *coche cama* or *dulce de leche*. When they fail to project ClassP, however, the head must raise and left-adjoin to the head of the construction in order to circumvent the visibility condition on case: *drog-adicto*.

Moyna explores the explanatory power of her theory by extending the analysis of left-adjoined non-heads to the cases of learned compounds of the *fotocopia* ‘photocopy’ type, which were left as lexical exceptions in Clements’ account. Furthermore, a natural analysis of compounds involving blending, like *servi-centro* ‘service station’ or *chori-pán* ‘chorizo sandwich’, naturally suggests itself. In all these cases, we witness a nominal non-head that is in effect devoid of its inflectional markers, and that is at most an NP, with a phonological aid added: e.g., /i/ in *pel-i-rrojo* ‘red-haired’ or /o/ in *drog-o-dependiente* ‘drug-dependent’.

While the explanatory power of this and other MiS theories makes them most attractive from an Occam’s razor perspective, several issues are left unexplained. For instance, as regards the *antesala* ‘anteroom’ and *sinsabor* ‘without-flavour’ ‘trouble’ type of compounds, from a strictly MiS approach to compounding, the combination of the preposition and the noun should yield a PP, rather than a nominal category, which, furthermore, shows the same inflectional features as the embedded noun. One could assume that *ante* ‘before’ and *sin* ‘without’ may be adverbs, in addition to prepositions; but then the questions begged are how they can combine with nouns and why they are adverbs only when used in compounding. Another problem is that, if the non-head is a complement, as Moyna assumes, it is not clear why N+V verbal compounds, where the N is really like an incorporated N, still admit and even require an overt phrasal complement:

- (6) Ricky mani-ató \*(a Marina).  
 Ricky hand-tied ACC Marina  
 ‘Ricky tied Marina’s hands.’

#### 4. Morphological vs phonological approaches: the treatment of stem alternations

The extent to which certain word-level phenomena in Spanish can be explained via morphological or phonological devices is also revealing of different conceptions of the architecture of grammar. One of the debates illustrating this tension in Spanish morphology is the one on the nature of stem alternations, as in *moler* ‘grind’ – *muelo* ‘I grind’ or *servir*

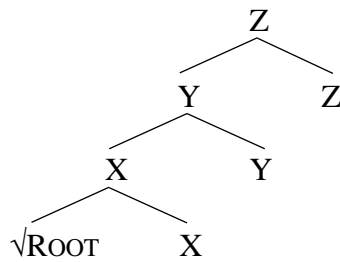
‘serve’ – *sirvo* ‘I serve’. Since these alternations are item-specific, i.e., there are non-alternating stems, as in *coser* ‘sew’ and *tensar* ‘stretch’, scholars have either approached them as the result of the conditioned selection of one of two stored stems (e.g.: *mol-*, *muel-*) or as the result of a kind of phonological rule applying on a more basic, underspecified underlying form (/mOl/ → /muel/). These two approaches involve different characterizations of the grammar, and, hence, impinge on its architecture. The former approach enriches either the lexicon or the morphology, but certainly not the phonology. The latter allows an encroaching of phonology (albeit of a special kind) onto the morphological realm.

O’Neill (2014), assuming the model of morphology in Maiden (2005) and, ultimately, in Aronoff (1994), argues that the stem alternation involving a monophthong versus a diphthong is a morpheme (see section 2.1.1). Thus, for the affected verbs, the allomorph containing a diphthong is said to occur in the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> singular and 3<sup>rd</sup> plural cells of both the present indicative and the present subjunctive paradigms. The morpheme turns out to be a template of sorts, something that is psychologically real for speakers as a quasi-pictorial entity, as based on the shapes created on the paradigms once one imagines only the allomorphic cells. It is evident, on the other hand, that the diphthong – monophthong alternation correlates with rhizotonicity and lack thereof, respectively: *muelo* ‘I grind’, *mueles* ‘you (sg.) grind’, etc., vs. *molemos* ‘we grind’, *moléis* ‘you (pl.) grind’, etc. O’Neill does acknowledge this, but not that the correlation occurs even outside the pattern of the present paradigms themselves, as shown by non-personal forms (*moler* ‘grind’, *moliendo* ‘grinding’, *molido* ‘ground’), future and conditional (*moleré* ‘I will grind’, *molería* ‘I would grind’), and even non-verbal lexemes sharing the same root (*muelo* ‘pile of grain’, *muela* ‘millstone’ vs *molienda* ‘act of grinding’, *moledura* ‘act of grinding’, *molendero* ‘grinder’). Nevertheless, O’Neill insists that, in spite of its robustness, the correlation is a historical residue, and that the allomorphy is best analyzed as morphomic. In sum, this model does not need the assistance of any phonological rules to account for stem alternation, but must resort to lexical storage, disregarding the correlation with phonological facts as merely coincidental or historical.

Embick (2012) represents a radical departure from this model. In his DM approach to stem alternations, paradigms and, by all means, morphemes, are epiphenomenal. Verbal forms are created in the syntax out of combinations of morphemes, by default, the postsyntactic component operating on syntactic representations to produce the final arrangement. Embick hastens to point out that the *moler* – *muelo* type of alternation is certainly not a case of regular phonology, since it does not affect all stems. However, the two alternants share most of their phonological material, which makes an approach in terms of suppletion suspicious.

That stem alternations involve morphophonology rather than suppletion is argued for on the basis of an examination of the locality conditions governing such alternations. Embick’s claim is that stem alternations are not triggered locally, i.e., via information retrievable in a local context, as in unquestionable cases of suppletion like that of English plurals (e.g., *box-es* – *ox-en*). The locality argument is, of course, based on the DM assumption that morphology is indeed morpheme-based. Moreover, DM being an MiS framework, the morphemes are combined, first, by syntax, in a stepwise fashion, and are assigned a phonological representation, via Vocabulary Insertion, also in a strictly stepwise fashion. In particular, given the configuration assumed for verbs, where the root is the most deeply embedded node, Vocabulary Insertion should start at the root, and then proceed upwards, node by node (Embick 2012, 26):

(7) Complex head



Linearization:  $\sqrt{\text{ROOT}} - X - Y - Z$

If stem alternation boils down to a choice of Vocabulary Items competing for the same root position, i.e., two stems for the same root, then that choice could be determined by the morphosyntactic features of the immediately adjacent node—the theme vowel or the TAM morpheme, depending on analysis. Crucially, it could not be determined by either the phonological properties of the immediately adjacent node, since Vocabulary Insertion has still not taken place at it, nor by any phonological property of the whole word, since the word is still not fully assembled. Since, as argued by Embick, stem alternations of the *moler* – *muelo* type are indeed affected by a phonological property of the whole word, namely the position of stress, it follows that they cannot constitute a case of contextual, suppletive allomorphy, handled via two competing Vocabulary Items. Embick must resort then to Readjustment Rules (Embick and Halle 2005), phonological rules of sorts that operate once the word is fully assembled and linearized. These rules affect collections of roots and may refer to either morphosyntactic information that is not local to the root or phonological properties of the word. In the case at hand, such rules would have the following format:<sup>3</sup>

(8) Readjustment Rules for the monophthong – diphthong stem alternation in Spanish

$o \rightarrow ue / \_\_ [+stress]$   
< $\sqrt{\text{MOL}}$ ,  $\sqrt{\text{CONT}}$ ,  $\sqrt{\text{POD}}$ ...>

$e \rightarrow ie / \_\_ [+stress]$   
< $\sqrt{\text{PENS}}$ ,  $\sqrt{\text{REG}}$ ,  $\sqrt{\text{PLEG}}$ ...>

Bermúdez Otero (2013), among other authors, has levelled criticism against Readjustment Rules, on the basis that they “carry out arbitrary string transformations, have free access to morphosyntactic structure, and refer to lists of lexical items in their structural descriptions” (Bermúdez Otero 2013, 80). He strongly claims, with O’Neill (2014), that stem alternations involve the storage of two different stems for the verbs affected. However, unlike O’Neill (2014), he admits that the choice of alternant is phonologically driven. Rather than having rules, he applies an Optimality-Theory algorithm to determine the right choice in each case: “low-ranking markedness constraints, otherwise inactive owing to their subordination to faithfulness, kick into action, so that there emerges a preference for diphthongs in tonic syllables and for monophthongs in nontonic syllables” (Bermúdez Otero 2013, 55–56). This author does away with O’Neill’s disregard for a phonological explanation and also with the pitfalls inherent to Readjustment Rules. At the same time, his approach is compatible with Embick’s observation that stem alternation is non-locally triggered. However, the feasibility of his proposal rests on the universal validity of the markedness constraints posited. Additionally, he introduces a complexification of the selection of exponents for morphological positions: certain positions would carry two exponents along until they reach the level of phonology, where one of them is filtered out.

In sum, these three models of stem alternation could be set in a scale as regards the importance they bestow to either morphological or phonological conditions, in turn revealing different views as to the interaction of the two components. O'Neill's model neglects phonology altogether and regards the alternation as strictly morphologically driven. Embick proposes phonological rules that are however strongly linked to morphological and lexical conditions, thus creating a level between morphology and phonology proper. Finally, Bermúdez-Otero claims that the two alternants should be lexically stored, the choice between them being regulated by universal, hence totally regular, phonological constraints. The reader is referred to sections 3.3 and 3.4 of Armstrong, this volume, for related discussion.

## 5. Conclusions

The central position of morphology within grammar, showing syntax- and phonology-like properties, probably accounts for its uneven presence in the history of the field. Indeed, within the same century it has gone from featuring as the star of the show in the distributionalist analyses of the 40's to warranting Marantz's (1997, 202) remark that "when morphologists talk, linguists nap".

The major theories of morphology and its location in the architecture of grammar have benefitted from analyses of Spanish word-level phenomena. Studies on Spanish morphology have sometimes anticipated features of these theories—like Piera's (1985) for DM and Nanosyntax—or played a major role in their shaping, like Bonet's (1991) for DM.

The analyses of endocentric compounding, on the one hand, and of stem alternations, on the other, have been brought to provide specific illustrations of the syntax-morphology tension and the phonology-morphology tension, respectively. In general, theories favouring morphology as an independent module fare well descriptively, but sometimes fail to capture certain cross-modular generalizations. Conversely, theories favouring syntactic or phonological explanations for morphological phenomena may overgenerate, and miss what seems to be idiosyncratic to morphology. The debate is certainly still very much alive.

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<sup>1</sup> See an overview of DM in Embick and Noyer (2007).

<sup>2</sup> Find an updated overview of the theory in Baunaz and Lander (2018).

<sup>3</sup> Embick (2012) actually does not provide the rules himself, so I have laid them out basing on his Readjustment Rule for the raising alternation (e.g., *pedir* 'request' – *pido* 'I request'). The two diphthongization rules could perhaps be subsumed in one producing /e/-headed diphthongs with a non-syllabic vowel agreeing in the value for [back] with the underlying vowel: i.e., /ie/ for underlying [-back] /e/ and /ue/ for underlying [+back] /o/. Furthermore, maybe additional rules or further refinements are needed, in light of the fact that the alternation may also involve the pairs /u/ – /ue/ (e.g., *jugar* 'play' – *juego* 'I play') and /i/ – /ie/ (e.g., *adquirir* 'acquire' – *adquiero* 'I acquire'), as Bermúdez Otero (2013, 55) rightly recalls.

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