Restrictions in the semantic interpretation of English and Spanish compounds

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Abstract

In this paper we claim that the differences between the semantic interpretation of English and Spanish compounds with identical categories (e.g., noun + noun) are determined by their syntactic structure. Assuming the already well-known division between structural semantics (the meaning provided by the syntactic structure) and conceptual semantics (the idiosyncratic meaning with which the construction is stored in the lexicon), we will try to demonstrate that the most productive patterns of compounding in both languages display a systematic contrast: The English constructions (e.g., paperboard, red-haired or dishwasher) have less structural complexity than the Spanish ones (e.g., papel cartón, pelirrojo or lavaplatos). As a result, the number of conceptual meanings that each member of the three compound patterns can receive in the English language is considerably greater than in the Spanish language. This correlation between structures and conceptual meaning will be tested with noun-noun compounds, adjective-noun compounds and, finally, with noun-verb compounds. The differences found in all of them are triggered by the kind of relational structure that links the lexical units inside the compounds.

Keywords: compound, morphology, semantics, word structure

1 Introduction

A compound is traditionally characterized as the merger of two or more lexemes/words (Matthews 1991, Bauer 2003, Lieber & Stekauer 2009: 4). Compounds are, therefore, distinguished from affixed words, where a single lexeme or conceptual unit can be identified. This definition shows that semantics plays a crucial role in identifying compounds. Taking for granted that compounds contain two lexemes, the bibliography focuses on characterizing the way in which these units are combined to create a new conceptual unit whose meaning is largely related

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1This research has been carried out thanks to funds of the Spanish Ministry of Sports, Education and Culture (FPU14/01500).
restrictions in the interpretation of compounds

Bárbara Marqueta Gracia

explicitly to its constituents. The predictability of the meaning of lavaplatos ‘dishwasher’ contrasts with the lack of transparency of matasuegras, lit. kill+mother-in-law, ‘party blower’.

It is clear, however, that we cannot identify compounds following semantic criteria exclusively. New compounds are incorporated in different semantic fields, as any simple word is (professions such as limpiabotas, ‘shoe cleaner’; instruments such as abrecartas, ‘paper knife’; animals such as pez espada, ‘swordfish’, etc.). They can refer to extralinguistic reality metaphorically or metonymically (soplalgaitas, lit. blow+bagpipes, ‘fool’), as simple words do: banco (de peces) ‘fishbank’ or mano (de cartas) ‘hand of cards’. The compositionality of compounds, or the possibility of discovering some aspects of their meaning as a whole through their parts, justifies treating them differently to a simple word.

It is largely correct to characterize a compound as the unit containing two or more words, yet this definition presents some unsolved problems. Firstly, it is naïve to think that it is possible to discover the meaning of transparent words like pelirrojo ‘red-haired’ only through the sum of pelo ‘hair’ and rojo ‘red’, without considering the kind of meaning the structure provides. This fact has been noticed and supported by several empirical studies on compound processing (Gagné & Spalding 2006).

The cognitivist branch known as Construction Grammar (Goldberg 1995) stresses the importance of constructional meaning. The interpretation of compound words is considered to be made analogically (Yoon 2014) through a series of lexical schemes named templates. Our proposal shares the constructivist interest in structures, although it does so from a syntactic point of view: syntactic-like structures, and not lexical-stored schemes copied analogically, restrict the potential meanings of words.

In English, at least, compounds are the kind of object favoring theories provided with a rich conceptual system and their own conceptual combinatory principles. They favor cognitivist models such as the Parallel Tripartite Structure (of Jackendoff 2009) or lexicalist models such as the Generative Lexicon (Pustejovský 1991).

For Jackendoff, the interpretation of refrigerator car as ‘a car that contains a refrigerator’ or ‘a car that functions as a refrigerator’ must be specified in the lexicon (2009: 180). The author proposes a list of semantic functions or relationships, some of which are attested in Spanish too.

In this paper examples that are not English compounds belong to the Spanish language. When the Spanish examples do not appear translated on the right, they have a similar meaning to the English examples below in the same block.
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

(1) a. *pez globo*
   fish globe
   ‘globefish’

b. *ciudad dormitorio*
   town dormitory
   ‘dormitory town’

c. *actriz estrella*
   actress star
   ‘famous actress’

d. *papel cartón*
   paper cardboard
   ‘paperboard’

e. *actor director*
   actor director
   ‘actor and director’

All the exemplified functions, however, can be reduced to just one, which we name *identifying*. We can check in (2) that every single compound can be paraphrased in the Spanish sentential syntax with a single functional category, *como*; a unit able to spell out the identifying relationship.

(2) a. *Ese pez es redondo como un globo.*
   ‘That fish is round like a globe.’

b. *Esa ciudad se usa como dormitorio.*
   ‘That city is used as a dormitory.’

c. *Esa actriz es brillante como una estrella.*
   ‘That actress is as brilliant as a star.’

d. *Ese papel es rugoso como el cartón.*
   ‘That paper is coarse like cardboard.’

e. *Ese actor trabaja también como director.*
   ‘That actor also works as a director.’
In contrast, it is difficult to find noun-noun compounds in Spanish for the other functions Jackendoff proposed (3):

(3) a. véolley playa
    volley beach
    'beach volleyball'

b. zarza mora
    blackberry blackberry
    'blackberry'

c. * baño mañana
    bath morning
    'morning bath'

d. * herida bala
    wound bullet
    'bullet wound'

e. * cavidad nariz
    cavity nose
    'nose cavity'

The locative function (3a, 3b) is mainly attested in English borrowings and ancient words. The temporal in (3c), the causative in (3d), or the constitutive in (3e) require, in Spanish syntax, the presence of functional explicit material, such as the preposition de ‘of’, as in herida de bala. But herida de bala is a phrase, not a compound.

We can check in (4) that none of the constructions in (3) are paraphrased with identifying categories in the sentential syntax. Are these differences between English and Spanish suggesting that word formation (compound formation) is conceptually richer in English than in Spanish? We do not hold this opinion, but Jackendoff’s approach cannot be applied to Spanish.

(4) a. # El fútbol se juega como en la playa.
    'The football is played like at the beach.'

b. # El baño es frío como la mañana.
    'The bath is cold like the morning.'
c. #La herida es **como una bala**.
   ‘The wound is **like** a bullet.’

d. #La cavidad es **como una nariz**.
   ‘The cavity is **like** a nose.’

In Generative Lexicon theory each lexical entry is totally structured with informational levels (lexical structure, event structure, argument structure and Qualia structure). The entry contains a wide range of meanings that are restricted later when the entries are combined. The relevant information is related to the constitution, shape, function or source of the linguistic element. As the four Qualia are available in Spanish compounds (5), this model could be deemed the correct one for explaining the facts; however, it predicts that the availability of relationships should be the same in Spanish and English, contrary to (3).

(5) a. **Constitutive** in papel **cartón** ‘paperboard’
b. **Formal** in pez **espada** ‘swordfish’
c. **Functional** in vagón **restaurante** ‘restaurant car’
d. **Origin** in bebé **probeta** ‘test-tube baby’

There are some additional restrictions. In English, any kind of noun (abstract noun, count noun) can be interpreted as an event modifier (6a), but an event modification reading is only available in Spanish when the nouns denote events (6b).

(6) a. **chain smoker** / *fumador cadena; butterfly swimmer / *nadador mariposa
b. **visita sorpresa** ‘surprise visit’; **noticia bomba** ‘hot news’

Fábregas (2015) argues against these previous approaches with multi-specification of meanings in the lexicon. These approaches predict that the greater the structural complexity of a word, the higher the potential readings it has. The author observes that locative readings in derived words with the suffix -**dor** are excluded when the suffix dominates the more complex structures: words like (7a) never denote a place when there is a causative head in the structure, in contrast with the ‘simpler’ structures in (7b), where there is no causative head and, therefore, the words can denote places.
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

(7) a. pacificador, simplificador, fertilizador
‘peace-maker’, ‘simplifying’, ‘fertilizer’

b. parador, tocador, mirador
‘inn’, ‘dresser’, ‘lookout’

Our proposal offers empirical evidence in a similar direction. We will show that the structural complexity of Spanish compounds, which is greater than in English compounds, imposes stronger restrictions on conceptualization. We will analyze the most productive Spanish compounds: the noun-noun (N+N) type of pez globo ‘globe/fish’, the noun-adjective (N+Adj) type of cuellilargo ‘long-necked’ and the verb-noun (V+N) type of lavaplatos ‘dishwasher’. The working hypothesis is that the different kinds of semantic restrictions that we can find in these Spanish compounds are related to the complexity of their structures. The alleged complexity is accompanied by explicit phonological spell-out for the pelirrojo and lavaplatos types.

In section 2 we will show the way in which a relational head restricts the semantic interpretation in N+N Spanish compounds, as Delfitto et al. (2008) suggest. The Spanish (null) relational head is different from the spelled-out Vowel Markers highlighted in (8), because only the Spanish relational head forces an identifying reading (9). The meaning of compounds in (8) is rather free: herb, music, and Islam are understood as themes, but Europe means place in Eurotúnel.

(8) a. herbívoro, musicoterapia
‘herbivorous’, ‘music therapy’

b. islamofobia, Eurotúnel
‘Islamophobia’, ‘Eurotunnel’

Additionally, the Spanish (null) relational identifying head only appears in compounds where the heads (highlighted) appear in the left-hand position (9), in contrast with the right-headed examples in (8).

(9) a. pez globo
fish globe
‘globefish’

b. ciudad dormitorio
town dormitory
‘dormitory town’
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

c. *actriz estrella
   star    actress
   ‘famous actress’

In section 3 we will explore the semantic restrictions in Spanish adjective-headed compounds (10a). The internal nouns in the Spanish pattern mandatorily establish an inalienable possession relationship with their external subject (niño and toro in the examples below) that is not the case in the English examples (10b). We will relate this restriction in possessive interpretation with the presence of a functional head spelled out by the vowel *i*.

(10) a. niño *pelirrojo,  toro astifino
   boy    haired red bull horned
   ‘red-haired boy’, ‘thin-horned bull’

   b. tax-free,    stone-cold
      *impuestilibre,  *piedrifrío

   The structure of pelirrojo compounds is different (larger) from the structure of typical English attributive compounds such as bad-tempered or kind-hearted. That structure does coexist in Spanish with pelirrojo, as shown in (11). However, Spanish compounds with a bad-tempered structure do not mandatorily codify inalienable relationships, as expected.

(11) efectos sobredimensionados, profesor malhumorado
   effects above    dimensioned, teacher
   ‘over-dimensioned effects’, ‘bad-tempered teacher’

Finally, in section 4 we will explore the semantic restrictions imposed on the noun complements in lavaplatos compounds. In contrast with synthetic compounds in English (in short, those whose head is a derived verb) (12a), whose noun can be interpreted as an agent, patient or instrument of the predicate, the interpretation of Spanish complements is restricted to the semantic role of theme, their interpretation as an agent, a patient or an absolutely prohibited instrument (12b).

(12) a. *expert-tested,  self-denying, handmade


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3 Briefly, inalienable stands for body part/body possession relationships mainly throughout this paper.
According to our hypothesis, this restriction will be due to the presence of a little v causative node, along with the V node, in the verbal projection of lavaplatos. Little v determines the invariably transitive reading of the Spanish compound. On the contrary, in English, the verbal stem only projects V. For that reason, the semantic interpretation of its complements will be accessed later and it will not only depend on the verb itself, but also on the affixes with which the verb merges (-er, -ed or -ing).

The appearance of the vowel e in verbs of the Spanish third conjugation such as cumplir ‘fulfill’ demonstrates that these compounds do not contain a bare stem form (13a). In English, we do not have morphological evidence suggesting that the verbal stems in compounds are different from those appearing in derived words (13b). We consider the spell-out of a form like cumple ‘fulfills’ as proof of the larger amount of structure identified by the Spanish verb in (13a), in comparison with the English form drive in (13b).

(13) a. cumplir ‘fulfill’ and cumplido ‘compliment’ but cumpleaños ‘birthday’
   b. driver or car driver; opener or can opener

Spanish data clearly indicate that semantic multi-specification models are unable to filter the huge amount of non-attested readings, whereas a syntactically restrictive model captures this fact and can also explain the interpretative freedom wherever it exists (e.g., English). This work assumes the late-insertion hypothesis (Halle & Marantz 1993) and the syntax-lexicon interface principles of nanosyntax (Fábregas 2016). We refer to these works because we will not stress theoretical aspects in this paper.

2 Spanish noun-noun compounds

2.1 N+N left-headed compounds

Most specialists on N+N English compounds agree that they display a high promiscuity of meanings. From a transformationalist model (Levi 1978) the meaning of each compound is obtained by deleting one of the seven predicates exemplified in (14). The availability of deletable predicates in Spanish would seem to be severely restricted, however. Levi’s analysis can only predict the meaning of Spanish compounds like niño prodigio (14c) because the other predicates are not needed in this language.

(14) a. Deleted Cause in battle fatigue (*fatiga batalla)
   b. Deleted Have in apple cake (*pastel manzana)
   c. Deleted Make in silk worm (*gusano seda)
d. Deleted Use in stem engine (*motor electricidad)

e. Deleted Be in child prodigy or niño prodigio

f. Deleted In in field mouse (*ratón campo)

g. Deleted For in bird sanctuary (*santuario pájaro)

In a non-transformationalist model (Downing 1977) the semantic interpretation of English compounds is contextually resolved. In (15–17) we have listed the acceptable interpretations, according to the author. Although the readings in (15) are productively attested in Spanish, we can again notice that those in (16) are infrequent and those in (17) are never attested as compounds. The most part of the context-sensitive meanings proposed for Downing are never selected by Spanish speakers.

(15) a. Half-half in giraffe cow and in perro lobo ‘wolfdog’
   b. Comparison in pumpkin bus and in perro salchicha ‘sausage dog’
   c. Occupation in coffee man and in hombre anuncio ‘advert man’

(16) a. Part-whole in duck foot and in balompié ‘football’
   b. Source in vulture shit and in bebé probeta ‘test-tube baby’
   c. Composition in stone furniture and in papel (de) piedra ‘stone paper’
   d. Place in Oregon meal and in jamón (de) York ‘boiled ham’
   e. Time in summer dust and in precios (de) Primavera ‘spring prices’

(17) a. Purpose in hedge hatchet (*fundas gafas)
   b. Product in honey glands (*glándulas miel)
   c. User in flea wheel (*protector mosquito)

Downing’s contextual model correctly predicts the existence of deictic compounds in English (e.g., the famous apple-juice seat). She collects deictic interpretations for newly created compounds such as pumpkin bus (18a). In Spanish, however, the deictic interpretation of a compound is impossible. The natural and first-to-come interpretation for this kind of neologism is that of (18b), which is the mainstream identificative one.

4These compounds are typically the result of an elided preposition or English borrowing. A compound such as pez espada ‘swordfish’ would be included by the author in the part-whole class, but we consider it to be perfectly acceptable in the comparison class.
Restrictions in the interpretation of compounds

Bárbara Marqueta Gracia

(18) a. *pumpkin bus ‘the bus with a pumpkin painted on it’
   b. *autobús calabaza ‘pumpkin-like bus’
      ‘the bus with a pumpkin painted on it’

There are even more compromising restrictions for Levy and Downing’s (multi-specification) models, restrictions that clearly favor a more restrictive approach. These are related to the availability of event-denoting nouns, as shown in (19) and (20).

The English compounds in (19a) are headed by an event-denoting noun whose modifier can be understood as its patient (the door is knocked) or agent (the horse races). The same compounds are impossible in Spanish (19b).

(19) a. door knock, heart massage, horse race
    b. *golpe puerta, *masaje corazón, *carrera caballos

The English compounds in (20a) contain a noun (butterfly) modifying a deverbal noun (swimmer) and the scope of the modification is the already nominalized verb swim. Spanish syntax tolerates event modification of the same kind (20b), but, crucially, it forbids it in compounds. In Spanish compounds, only the individual denoted by the whole nominalization can be modified, as nadador in (20c), not the underlying verb nadar. As we anticipated in the introduction, event modifying nouns are only possible when the modifiers are predicates, such as estrella and sorpresa in (20d, 20e).

(20) a. butterfly swimmer and butterfly swimming
    b. buen cocinero ‘good chef’ or acosador laboral ‘work bully’
    c. nadador mariposa ‘who swims in the butterfly style’
    d. cocinero estrella ‘star chef’ but *cocinar estrella ‘to cook very well’
    e. visita sorpresa ‘surprise’ but *visitart sorpresa ‘to visit by surprise’

Additionally, the contrast between (20a) and (20d, 20e) shows that the event-denoting modifications in English compounds are related to existing verb phrases. The Spanish ones are not.

Summing up, in this section we have shown that the semantic interpretation of compounds cannot be analyzed as the result of contextual adaptation or function-deletion. We need a model where we can obtain the widest amount of semantic interpretations, as in English N+N compounds, but also some more restricted counterparts, as in the Spanish ones.
2.2 Structure and semantic conditioning

All the constructions in section 2.1 contain a noun acting as the modifier of another noun. This construction is traditionally known in Spanish as aposición (apposition). Appositions constitute a heterogeneous group in which only the pez globo ‘globe-fish’ or actriz estrella ‘star actress’ types are our focus.

Compounds like actriz estrella stand out from the other Spanish phrasal compounds because of the transparent nature of the semantics of its head actriz. The non-predictable meaning is found in the modifier position, as in pájaro carpintero ‘woodpecker’, but it is dependent on the head: there is nothing metaphoric regarding carpintero in futbolista carpintero ‘carpenter and footballer’. Benczes (2005) observes the same fact regarding constructions like helicopter father or sandwich generation.

As we expect, padre helicóptero and generación Sandwich mean the same in English and in Spanish because the relational head provided with identifying value is common for both languages, since it is the only relational head available for N+N left-headed compounds in Spanish, such as actriz estrella.

Summing up, actriz estrella compounds possess three meaningful constituents: two nouns and the functional head that intervenes when they merge. A conceptual unit is constructed over this three-membered structure, not merely the result of the accommodation of the conceptual meaning of the nouns. The conceptual unit can survive independently of the structure that built it up, as some historical cases evidence: emperador ‘swordfish’ preserves the conceptual meaning of an old-fashioned compound: pez emperador. The same happens in esmeralda ‘emerald’, old piedra esmeralda. The data simply point out the existence of two kinds of linguistic meaning, the structural meaning and the conceptual one. This partition is today assumed in many morphological theories (Lieber 2004).

We still need to propose the kind of structure that will capture the semantic restrictions in Spanish constructions, because, as we have said before, only the identifying interpretation is available.

Delfitto et al. (2008) offer a solution that considers the requisites a syntactic structure must fulfill to be linearized at the phonetic component. For these authors, the assembly of two members of the same category (e.g., two nouns) causes a symmetry in every language that must be destroyed via movement of one of the constituents. The differences between languages (e.g., Spanish and English)

5 This fact establishes a sharp contrast between N+N compounds and N+P+N compounds like espada de Damocles, lit. the sword of Damocles, ‘dangerous business’, or N+A compounds like piel roja, lit. skin red, ‘red skin’.

6 Outside the compound, it is hard to think of a context in which a noun like emperor would end up metaphorically denoting a fish.

7 These cases are widely attested in Moyna’s (2011) corpus.
Regarding N+N compounds are predicted to be the consequence of differences in the level of syntactic representation where the symmetry break is produced.

Germanic languages like English are said to break the symmetry sooner than Romance languages like Spanish. This difference can be supported by empirical data: the breaking point in Germanic languages is optionally spelled out with a compound marker (21), whereas the breaking point in Romance languages is optionally spelled out with a preposition (22):

(21) Dutch: *boeken kast* ‘bookcase’

(22) *cuello (de) cisne, precios (de) primavera, ciudad (de) Zaragoza* ‘gooseneck sweater’, ‘spring prices’, ‘the city of Zaragoza’

The authors explain the different symmetry-breaking points as follows: In Germanic languages, the nouns possess declension classes, which determine their gender, whereas in Romance languages the nouns only possess word markers, which are said to be unable to determine their gender. Consequently, the locus of assignment of gender has important syntactic and phonological consequences: In Germanic languages it is possible to break the symmetry at the noun level, because nouns already possess a feature (gender) licensing the movement of a noun. In Romance languages we have to wait a little longer because, at the noun level, we cannot find a gender feature able to legitimize the movement and break the symmetry.

The differences regarding the point of movement also explain the semantic differences between languages in that proposal. We do not support the gender-based movement explanation because it presents both theoretical and empirical difficulties.

The first is that the exceptions to the correlation between the masculine gender and a vowel marker like *o* in Spanish are so little that they can be counted, as a famous Spanish idiom says, *con los dedos de una mano*, lit. with the fingers of one hand (hand means *mano* and this word is an exception because it is feminine with a vowel marker *o*). The second is that compounds with Germanic-like properties (such as *bocacalle* ‘side street’) have been documented in Spanish for centuries and are now productively formed. The existence of these compounds, which will be analyzed in section (22), makes it difficult to accept that the different levels for spelling out a compound are parametrizable between linguistic families.

There is a simpler solution that is perfectly compatible with the essentials of the proposal. The appearance of a prepositional-like node in Spanish is only possible in compounds where both nouns qualify as phonological words, namely constructions where both nouns are provided with a primary stress and can inflect
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

gender and number (23). We assume that a prepositional-like relational node is always inserted in a more complex structure than a compound marker. This would explain the predictions made in the previous section.

The larger complexity of the Spanish structure has phonological consequences. The Spanish compound consists of two (phonological word) nouns and the head is linearized to the left, as happens in any Spanish noun phrase with a complement like jugador de fútbol ‘football player’.

(23) entrenadores jugadores, Reyes Magos, actrices estrellas
coaches players kings wizards actresses stars
‘coaches and players’, ‘wise men’, ‘famous actresses’

As we said before, there are N+N compounds in Spanish with English-like properties: the head is linearized to the right, there is a single main stress and they contain a vowel marker (24). The structure of these compounds is simpler than (23): one of the nouns in these compounds is not a phonological word in Spanish because the internal noun has no gender-interpretable vowel marker (24a) and cannot inflect number (24b). We predict that this kind of noun does not legitimize the appearance of a prepositional-like functional node.

(24) a. musicoterapia, bolsilibro
‘music therapy’, ‘pocketbook’

b. *telesbasura, videosaficionados
‘televisions’ junk’, ‘fans of videos’

Summing up, there are two structures for both English and Spanish N+N compounds. In one, the relational head is a compound marker, the non-head does not qualify as a phonological word (it is not stressed) and the head is on the right. This is the less complex structure and, therefore, its meaning is not restricted to the identifying interpretation. In the other, the relational head is a preposition-like category, the head does qualify as a phonological word (it is stressed) and the head is on the left. This is the more complex structure and, therefore, its meaning is restricted to the identifying interpretation.

Having said that, the structure we assume for Spanish constructions of the pez globo ‘globe/fish’ type is (25). The semantic restrictions are related to the presence of a functional head, named identification (Id), because it contains specific semantics (it forces its complement globo to be interpreted as the object the head

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8 A potential problem for our proposal is that the modifier in these compounds rarely appears in the plural.
noun *pez* resembles). This head is prepositional in two senses: its complement is a phonological word and, configurationally, it selects two arguments, Noun Phrases (NP) or Determiner Phrases (DP), one as a complement and the other as a specifier.

(25)

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DP
  Det los
  NP
    IdP
      NP
        peces
        Id.
        0
        globo
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Figure 1. The projection of a Spanish N+N compound (*pez globo*). It contains the relational node IdP introducing two arguments. The one on the left can be expanded as a DP.

We do not consider the semantics of *Id* to be the same as the semantics of one Spanish preposition. This would make us think that the deep structure of *pez globo* is ‘fish like a globe’. To think like that will lead us back to the old transformationalist analysis. It is true that a few constructions like *jamón (de) York* seem to have been created because of the deletion of a preposition. However, compounds created by preposition deletion do not always accept the identifying interpretation (*York* indicates the source of the ham; it does not express any resemblance with ham). They should not receive the structure in (25). We think it is safer to assume that the relational head in (25) cannot be spelled out and that it is preferable to explain the context in which phonetic material is not introduced, as Fábregas (2005) did.

The structure of (25) captures a little part of the Functional Sequence of noun modifiers and complements. It shows the zone occupied by restrictive modifiers, according to the typical cartographic approaches (Cinque 2014). We think English and Spanish languages differ because the expression of causal or temporal relationships between nouns in the latter mandatorily requires the projection and spelling out of prepositions, resulting in the projection of phrases significantly different from (25). It seems that the portion of functional structure that non-heads in English compounds can identify is considerably higher (a Superset) than the one occupied by Spanish modifiers in (25). It would be interesting to develop the cartography further in future to capture that fact.
2.3 N+N right-headed compounds

In Spanish, the *pez globo* structure coexists with the compounding types influenced by English and Classical languages. It is unusual to find any comments on their individual particularities in the bibliography (they are often treated together as right-headed N+N compounds in the same sections). In this brief section, we will focus on the semantic differences between English-influenced and neoclassical compounds. Additionally, we will add several restrictions differentiating the behavior of right-headed Spanish compounds from that of English compounds.

Making compounds in Spanish constitutes a strongly restricted process in general terms (not only for left-headed compounds such as *actriz estrella*, but also for the others).

Firstly, it is difficult to find complex modifiers in a Spanish compound. The examples highlighted in (26b) represent the most typical cases. Similar constructions exist in English (26a), although that language has a much more varied typology of complex modifiers (26c). The compounds in (26b) typically belong to the neoclassical compounding pattern, which is equally productive in both languages (26d). The compounds in (26a) and (26c), however, are typical instances of English (not neoclassical) compounding.

We would like to hypothesize that the Spanish language cannot borrow complex modifiers from English compounding patterns, although it can borrow them from the classic pattern (even through English). The prohibition should be related to the amount of structure (syntactic or phonological) that the modifier position allows in these languages.

(26)  a. *$4\text{-million}$ project, *twelve-year-old* boy
    b. *vehículo* todo*terreno*, *coche* biplaza
        vehicle all terrain car two-seat
        ‘all-terrain vehicle’, ‘two-seater’
    c. *last-minute call*, *big-box store*
        *’llamada minuto último*, *’almacenamiento caja grande*
    d. *covalent*, *preposition*, *subspecies*, *ultrasound*
        *covalente*, *preposición*, *subespecie*, *ultrasonido*

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10 As Fábregas (2005: 262) notices, right-headed N+N compounds in Spanish such as *publireporte* do not behave exactly like English compounds: they are not recursive and their constituents cannot be coordinated (*publi* and *tele reportaje*) or modified (*publitelereportaje*).

11 *Todo, bi, sub or ultra* in the Spanish examples are (unstressed) prefixes and not phonological words like *last* or *big* in the English ones.
Secondly neither neoclassical compounds nor Spanish compounds allow a postposed particle modifying a noun head, although English does (27a). It is easy to notice the influence of English on Spanish constructions with postposed particles in (27b).

(27)  a. hanger-on, passers-by, makers-up

b. Coca-Cola sin, gasolina súper

Coke without gasoline super

‘Coke Zero’, ‘premium gasoline’

In the previous examples of (26d), the neoclassical compounds, but not the English-influenced ones, contain modifiers provided with grammatical meaning making it difficult to distinguish between compounding and prefixation. Buenafuentes (2007) treats these differences as the consequence of grammaticalization and lexicalization processes. Broadly speaking, the semantic differences between tele- in teledirigido ‘remote-controlled’ and tele- in telebasura ‘junk TV’ are explained through the grammaticalization of the older meaning of tele ‘remote’ in the neoclassical structure and the lexicalization of tele- with the new meaning (TV) in the English-influenced one (Buenafuentes de la Mata 2007: 48).

The source and target meanings of the referred processes now coexist in Spanish and are interchangeable. As such, a teledirigido not only denotes the kind of objects that can be remote-controlled, but also, in examples like debate teledirigido, a kind of TV debate. In the same way, telebasura, which denotes low-quality programs, in servicio de telebasura can name a kind of garbage collection service. These polysemies of constructive kind are not uncommon in compound words.

Although we will not delve into the historical source of meanings, we believe that the origin of meanings is not useful enough to characterize their synchronic and coexistent distribution. We need to access the category signature of tele as an adverb or noun to predict the meaning of the compounds above, in other words, we need the syntactic structure to restrict the two possible interpretations.

Regarding the semantic interpretation of N+N English-influenced compounds, we would like to make some final theoretical notes. The cartographic models allow a great deal of syntactic refinement, which would make it possible to reflect contrasts like these in (28). Compounds with modifiers like Euro do not show any formal distinction specifying the kind of noun modification they perform. However, we have found semantic differences inside Euro compounds that probably cannot be entirely explained resorting to the extralinguistic context or the conceptual specifications of each word.
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

(28)  a. *Eurozona, Eurogrupo, Euromillón*
    'Eurozone', 'Eurogroup', 'Euromillion'

b. *Europarlamento, EuroDisney, Eurotúnel*
    'European parliament', 'Euro Disney', 'Eurotunnel'

    (the same *Euro* as in Eurasian or Eurafrican)

c. *Euroescéptico, Euroconector, Eurocomunista*
    'Eurosceptic', 'Euroconnex', 'Eurocommunist'

The *Euro* in (28a) is understood as a proper name. In phrasal syntax, this *Euro* would modify its head in constructions such as ‘millions of Euros’. The *Euro* in (28b) is not understood as a proper name, but as a relational one. In phrasal syntax, it will modify its head in constructions like *European Union*.

In (28a) the denotation of words like *Eurozona* accesses the strict proper noun interpretation and, therefore, the *Eurozone* has no political representatives from the UK as the country does not use the Euro. In contrast, words like *Europarlamento* in (28b) access the wider relational interpretation: the *European parliament* includes British representation because the UK is a member of the *European Union*. To capture this difference, we need to access the relational *Euro* in the latter and not the proper name. We suggest that the meaning contrasts between modifiers in (28a) and (28b) rely on the position of attachment of the modifier *Euro*.

The *Euro* in (28b) also differs from the others in (28a) or (28c) because it is the only one qualified to appear in coordination contexts. The restriction is not trivial: Why is it not possible to coordinate the other *Euros*? Can we reflect on this knowledge in the conceptual meaning of *Euro* or restrict the distribution of these *Euros* pragmatically? We do not think so.

Finally, the *Euro* in (28c) is understood as a kind of adjunct that is more external than the previously seen modifiers. There are subtle differences in meaning between the members of (28b) and (28c), because the latter *Euro* does not necessarily express that something ‘belongs to Europe’, in contrast with the first one. Consequently, there are Eurosceptic people in Turkey and Eurocommunism in Russia, but there is no *European Parliament* in Asia or *Eurotunnel* in America.

2.4 Interim summary

Throughout this quite long section, we have shown a wide range of data to support the hypothesis that English and Spanish compounds are strikingly different regarding aspects such as their semantic complexity, their phonological spell-out and the availability of modifiers. We offer a summary of these differences in (29). We believe that so many heterogeneous dissimilarities can only be handled from the syntactic component. In the next (and much shorter) sections, we will
add empirical evidence coming from other compounding patterns to support this idea.

<table>
<thead>
<tr>
<th></th>
<th>English compounds</th>
<th>Spanish right-headed compounds</th>
<th>Spanish right-headed compounds (English-influenced)</th>
<th>Spanish left-headed compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-identifying relationships</td>
<td>Yes summer dust</td>
<td>Yes public es ta</td>
<td>Yes dermaterapia</td>
<td>No</td>
</tr>
<tr>
<td>Deictic interpretation</td>
<td>Yes pumpkin bus</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Argument modifiers</td>
<td>Yes horse race</td>
<td>Yes radioyente</td>
<td>Yes jurisprudencia</td>
<td>No</td>
</tr>
<tr>
<td>Event noun modifiers</td>
<td>Yes chain smoker</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Complex modifiers</td>
<td>Yes last-minute call</td>
<td>No</td>
<td>No</td>
<td>No* chaleco antibalas</td>
</tr>
<tr>
<td>Particle modifiers</td>
<td>Yes passers-by</td>
<td>No</td>
<td>No</td>
<td>No* Coca-Cola sin</td>
</tr>
</tbody>
</table>

Table 1. Summary of the differentiating properties of noun-noun compounding patterns.

*Despite being left-headed, contains neoclassical or English-borrowed elements.

### 3 Attributive compounds

In the previous section we have revealed the strict restrictions characterizing the semantics of N+N compounds in Spanish. Regarding attributive compounds, *pelirrojo* does not look any different in its semantics from its counterpart *red-haired*: both words denote the same kind of individual via the same lexemes. There are morphological differences between them, however. In the inner position
of the English compound we find a typical word of this language, red. In contrast, in the same position we find in Spanish a form such as peli, which it is not a Spanish word. In English’s external position, there appears a suffix -ed, which transforms the construction into an adjective. In Spanish, however, the external position is occupied by non-derived adjectives, such as rojo.

In this section we argue that, despite their conceptual resemblance, red-haired and pelirrojo spell out different structures. We propose that pelirrojo stands out from the other attributive compounds, both in Spanish and English, because it mandatorily codifies inalienable possession relationships.

A detailed presentation on the semantics of inalienability would exceed the aims of this paper. Briefly, inalienable possession relationships, according to Langacker (1999) constitute a specialization on possessive constructions because they require a point of reference to identify the possessee. Consequently, the denotation of certain kinds of nouns, typically parts of the body or kinship objects, implies the existence of their possessor; broadly speaking, a nose implies the existence of an animate being, a nephew the existence of his uncle/aunt, and so on. The existence of a car, on the contrary, does not imply the existence of its owner. This means the possession relationship between a car and an owner is not inalienable.

In Spanish, there are different kinds of compounds headed by adjectives. We refer to them as attributive compounds. The first distinction to be made is between compounds headed by simple adjectives (30) and compounds headed by derived adjectives of participial (31) or non-participial (32) origin. The compounds in (30a) exemplify the main topic: the inalienable Spanish constructions, whereas we refer to the non-inalienable examples of (30b) as neoclassical compounds.

(30) a. pelirrojo ‘red-haired’, manilargo, lit. long-handed, ‘thief’
    b. puntiforme ‘tip-shaped’, canceriforme ‘canceriform’

(31) maniobrado ‘maneuvered’, manufacturado ‘handmade’
    radioguiado ‘radio-guided’, drogodependiente ‘drug addict’

(32) videoaficionado ‘video fan’, hidroeléctrico ‘hydroelectric’

12Constructions in (32) can be grouped together with (31). They include terms of scientific register such as hidroeléctrico ‘hydroelectric’ (a back-formation of hydroelectricity). It is usual to find instruments and manners (not themes) in an inner position and to characterize the internal element as a non-nominal adjunct, as in guantes dieléctricos (gloves that protect hands from electric shocks).
Next we enumerate the similarities and differences between these compounds, focusing on the particularities of (30a). (30a) shares with (30b) or (31) the closing vowel 𝑖. Consequently, mani appears both in (30a) and (31). However, in (31), but not in (30), we can find different closing vowels like 𝑜 or 𝑢.

The nouns in (30) can only be interpreted semantically as themes, whereas those in (31) can display other semantic roles, e.g., the instrument role: made by hand, guided by radio.

The inner nouns in (30) share a closing vowel 𝑖 and a theme interpretation, but only the compounds in (30b) are similar to (31, 32) regarding an important property: the noun in (30b) can be replaced by other categories (non-nominal modifiers), as shown in (33). (30a) cannot: it is the compound that only tolerates the presence of a noun in an inner position.

(33) canceriforme ‘canceriform’ → uniforme ‘uniform’
drogodependiente ‘drug dependent’ → interdependiente ‘interdependent’

Summing up, although all the examples in (30–32) contain a noun in an inner position, only (31a) forbids the presence of other categories. This observation has been unnoticed by previous works, but it constitutes a structural restriction that is relevant enough because of its semantic and morphological consequences. Regarding the latter, in a Spanish attributive compound, whenever we find a non-nominal category in an inner position, the head must be derived (34):

(34) quinceañero ‘fifteen-year-old’, tridimensional ‘three-dimensional’

The Spanish constructions in (34), but not those in (30–32), parallel the typical attributive compounds in English (35). The modifier is in an inner position and the head is also derived.

(35) left-handed, kind-hearted, well-intentioned

We must keep in mind that the English attributive constructions in (35) also coexist in English with a pelirrojo-like construction, in other words constructions with a noun in an inner position headed by a simple adjective (36a). But we should notice that these particular compounds are never attested in the Spanish pelirrojo type (see the ill-formed glosses below). Strikingly, they are acceptable in the canceriforme pattern (36b):

(36) a. air sick, tree-free
   *airienfermo, *arborilibre
   b. aeriforme, arboriforme
The conclusions from (30–36) are as follows: both English and Spanish construct attributive compounds following two structural patterns, the modifier-head and the complement-head. The modifier-head pattern only differs between languages because of its productivity. In contrast, the complement-head pattern differs structurally between languages, and this fact leads to semantic differences: some compounds are necessarily inalienable, others are not. The modifier-head structure is exemplified in (37a); the complement-head one, in (37b):

(37) a. [mal humor]ado]; [kind heart]ed]

In (37a) the nouns *humor* and *heart* are modified before merging with the affixes -ado and -ed and are then recategorized as adjectives. We refer to this as the modifier-head structure. In (37b) the nouns *cuelli*, *cancer* and *sea* complement the adjectives *largo*, *forme* and *sick*, with the head as an adjective. We refer to this as the complement-head structure.

Regarding the semantics of the patterns, *kind-hearted* in (37a) exemplifies a prototypical case in which the noun (*heart*) maintains an inalienable possession relationship with the subject of the attribution. We should not forget, however, that (37a) does not impose inalienability either in Spanish or in English. We can attribute the property of being red-carpeted to a floor, or the property of being *sietemesino* (lit. seven-month-ed, ‘born two months early’) to a newborn, but we do not necessarily understand that there is an inalienable relationship between a carpet and a floor or a baby and its gestation time.

The most relevant semantic contrast between these languages occurs in complement-head structures (38). We remember that English (or neoclassical compounds) allow any kind of noun in an inner position. The glosses show that the parallel constructions in Spanish are ill-formed.

(38) color blind, air sick, tax-free, stone-cold
     * coloriciego, * aerienfermo, * impuestilibre, * piedrifrío

We can quickly check in (39) that Spanish’s restrictions can in no way be related to a hypothetical lack of productivity (García-Lozano 1974).

(39) wing: alicaído, aliquebrado
     beard: barbicano, barbilampiño
     mouth: boquiancho, boquifruncido
     sourcil: cejijunto
     neck: cuellicorto, cuellilargo
     horn: corniapretado, cornigacho,
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

skirt: faldicorto
hand: manilargo, manirroto
eye: ojialegre, ojinegro
leg: paticojo, patihendido
chest: pechiblanco, pechirrojo
hair: peliagudo, pelinegro
peak: piquituerto
tail: rabcorto, rabilargo
face: rostritorcido

The list in (39) is only a short example. The boldface nouns denote body parts of humans or animals, occasionally kinship terms (e.g., chica faldicorta ‘short-skirted lady’). The following question arises: How can we limit the appearance in the compound to these such semantically-specific nouns? Why are nouns like color, air, tax or stone prohibited in pelirrojo compounds and not in the other attributive compounds?

A possible solution is to list every noun in (39) in the lexicon and to consider that the new words are formed analogically over preexisting words. This solution cannot explain why neologisms such as ombliguiverde ‘green-naveled’ or rodillijunto ‘with joined knees’ now appear in some varieties of Spanish, such as Colombian Spanish (Ponce de León 2015). The reason why it is difficult to accept the analogical explanation is that the nouns rodilla and ombligo were previously unattested in the pattern of (39) and break the default phonological pattern: ombligo and rodilla cannot be analogous to many previous words, because they are three-syllabled.

Another possibility is to think that each noun traditionally considered as an inalienable possession noun (IPN) constitutes a special lexical entry (e.g., the hair entry contains information predicting participation in pelirrojo compounds). This solution cannot explain why inalienable possession nouns vary between languages and display different behavior. Words like son or hair are presumably included in the lexicon of a lot of languages, those codifying them as inalienable possession terms and those that do not.

The contrasts we offer in (40) favor a structural approach to the distinction between alienable and inalienable possession. They allow us to observe a clear connection between the behavior of phrasal syntax and word syntax in the languages we are analyzing.

Some authors (Guéron 1983) have linked the mandatorily inalienable interpretation in Romance constructions of (40a) to the appearance of the definite article. In these constructions, the possession relationship between the subjects/pronouns and the highlighted definite phrase is mandatorily inalienable. That does not happen in (40b), where the inalienable interpretation is optional; finally,
the inalienable interpretation is impossible in the English examples of (40c).

We have noticed that the same nouns treated as mandatorily inalienable in (40a) are also mandatorily inalienable in the compounds of (39). In a surprisingly coherent way, there are no mandatorily inalienable terms in the English examples of (40c) and, therefore, there are no attributive compounds in this language mandatorily codifying inalienable relationships.

(40) a. *Juan se cortó las venas. Pluto se perseguía el rabo. María se manchó la falda.
   ‘John cut his veins.’ ‘Pluto went after its tail.’ ‘Mary dirtied her skirt.’

b. Juan se llevó al sobrino.
   ‘John took his/other people’s nephew.’

   María se trajo el coche.
   ‘Mary brought her/other people’s car.’

c. *He cut the veins (his veins). *Pluto went after the tail (its tail). *Mary
dirtied the skirt (her skirt).

In (41) nouns like venas, rabo and falda are not mandatorily inalienable in all the constructions. We expect the inalienable interpretation to be obligatory in certain syntactic constructions of each language, but not in all of them. In other words, we predict that it is possible to find both inalienable structures, like pelirrojo, and non-inalienable ones, like sietemesino, in Spanish.

(41) a. Me da mucho asco comer esos fideos que parecen venas. (#my veins)
   ‘I hate eating that pasta that looks like veins.’

b. El torero finalizó la temporada ganando tres orejas y un rabo. (#his tail)
   ‘The bullfighter ended up winning three ears and a tail.’

c. Otra vez se ponen de moda las faldas escocesas. (*Scottish’s skirts)
   ‘Kilt-like skirts are fashionable again.’

Having said that, we claim that color blind, canceriforme and pelirrojo spell out different complement-head structures, and the Spanish one is the most complex. The larger complexity of pelirrojo causes the more restricted nature of its meaning, as was the case of N+N left-headed compounds in the previous section. The structures of complement-head compounds are represented in (42). They support the general hypothesis of this work: once again, the more complex the structure is, the more restricted the possible meanings are.
Figure 2. Projection of N+Adj English compounds (color blind), neoclassical compounds (canceriforme) and Spanish compounds (pelirrojo). In the latter case, the structure also includes the subject Juan, because the relational category possession (poss.) which introduces pelo is the only one coindexed with its subject, thus restricting the interpretation of their relationship.

We propose that color in color blind is a noun phrase. It has the typical structure of N+N compounds, such as heart massage, because the semantic interpretation of the complement color is quite free.

We propose that canceri in canceriforme is also a noun phrase, although, in this case, the old case-marker vowel i causes the semantic interpretation of cancer to be less free than the English color; forme acts as a transitive predicate which forces the noun to be interpreted as a theme.

Finally, the peli in pelirrojo is structurally like a prepositional phrase. The vowel i is a relational morpheme (synchronically active, as Gil-Laforga 2014 demonstrates) mediating the relationship between the head rojo and its complement pelo. The semantic interpretation of pelo is mandatorily inalienable in pelirrojo. We blame the relational head spelled out as i for that. We represent the inalienable possession relationship between the noun inside the compound and the subject outside it by co-indexing them. We name the relational node possession (poss.) to characterize its semantic contribution.

Summing up, throughout this section we have analyzed different kinds of compounds headed by adjectives. As we did for noun-noun compounds in section 2, we have tested their distributional, semantic and morphological characteristics, trying to demonstrate that more exhaustive and refined analyses of compound characteristics are welcome to classify them properly. We have demonstrated that two kinds of grammatical relationships, the modifier-head of red-haired and the complement-head of pelirrojo, can easily be identified in both English and Spanish. The Spanish construction, however, is semantically restricted to the expression of inalienable constructions. As the structure of pelirrojo is the most complex among them, its behavior contributes to proving the general hypothesis of this paper.
We have defended that the relational prepositional-like node spelled out as * is responsible for restricting the semantic interpretation of *pelirrojo* compounds to inalienable relationships. In the previous section, we also blamed a prepositional-like head for the semantic restriction of *pez globo* compounds to identify relationships. We would like to point out that, although the spell-out of the relational morpheme *i* is optional for *pelirrojo* compounds in the majority of Romance languages, e.g., Catalan (Padrosa 2010), the relational head was not spelled out in *pez globo* compounds either. It should be clear that, in our approach, while the spell-out of a relational head proves its existence, the absence of spell-out does not prove its absence.

In the next section on verbal compounds, we focus on the role of spell-out to reveal structural differences between compounds.

### 4 Compounds with a verbal head

The aim of this section is to demonstrate that the semantic restrictions displayed by compounds like *lavaplatos* ‘dishwasher’ are determined by their structure.

In the first place, the noun appearing as the non-head in the Spanish verbal compounds can only be interpreted as an argument (provided with a themed semantic role). The noun complement cannot receive a locative, temporal, agentive or instrument role. In (43–46) we illustrate the meaning contrasts in Spanish and English verbal compounds; all the adjunct interpretations are attested in English, but none of them is in Spanish (see the glosses below the English examples).

(43) Nouns as agents:

- **expert-tested, self-denying**
  - *pruebaexpertos, *niegapropio
  - *robamaridos* ‘woman who steals other women’s husbands’ (husband as theme)
  - *woman stolen by the other women’s husbands’ (husband as agent)

(44) Nouns as places:

- **church-goer, home-brewed**
  - *acudeiglesias, *cocinacasa

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*It is possible to find a place denotation when the complement of the verb constitutes an incremental theme, in other words, the event of passing finishes when every street has been passed by, as in *pasacalles*, lit. ‘pass*streets’.*
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

(45) Nouns as times:

\textit{Sunday driver}
*conduce\textit{Domingos}
\textit{Cantamañanas} ‘boaster’ (morning as theme)
*‘morning singer’ (morning as time)

(46) Nouns as instruments:

\textit{handwritten}
*\textit{escritomano}
\textit{Escribanos} ‘Pen which writes in hand’s skin’. (hands as theme)
*‘Pen in which hands write’. (hands as instrument)

\textbf{Lieber (1983)} already notices that compounds with a verb in an inner position or ‘First Stem Argument Taking’, such as \textit{pickpocket}, only allow an argument interpretation of \textit{pocket}. In that sense, they differ from compounds with the verb in an external position (\textit{caretaker}), which are usually known as synthetic compounds (they possess a deverbal head), because synthetic compounds allow both argument and non-argument interpretation in the non-head position.

Additionally, Lieber predicts that structural differences give rise to two kinds of synthetic compounds: In the first kind, the noun receives an adjunct interpretation and a verb stem such as \textit{test}, \textit{brew} or \textit{write} has been previously suffixed (\textit{tested}, \textit{brewed}, \textit{writing}). In the second kind, the noun receives an argument interpretation and the suffixation process takes place afterwards. Romance compounds, such as \textit{robamaridos} ‘husband thief’, \textit{pasacalles} ‘parade’ and \textit{cantamañanas} ‘boaster’, can only project as the latter, because there is no suffix interrupting the direct \textit{merge} between verb and noun.

\begin{figure}[h]
\centering
\begin{tikzpicture}
  \node (v) {NP};
  \node (n) [below of=v] {NP};
  \node (e) [left of=n] {NP};
  \node (p) [left of=e] {VP};
  \node (v1) [below of=v] {VP};
  \node (v2) [below of=n] {VP};
  \node (v3) [below of=e] {VP};
  \node (v4) [below of=p] {VP};
  \draw (v) -- (v1);
  \draw (v) -- (v2);
  \draw (v) -- (v3);
  \draw (v) -- (v4);
  \node at (v1) {N};
  \node at (v2) {N};
  \node at (v3) {N};
  \node at (v4) {N};
  \node at (v1) {V};
  \node at (v2) {V};
  \node at (v3) {V};
  \node at (v4) {V};
  \node at (v1) {ed};
  \node at (v2) {er};
  \node at (v3) {0};
  \node at (v4) {roba maridos};
  \node at (v1) {test};
  \node at (v2) {drive};
  \node at (v3) {car};
  \node at (v4) {maridos};
\end{tikzpicture}
\caption{We have simplified the kind of structure offered by Lieber (1983: 269) and adapted it to the Spanish language. The figures show that the verbal Spanish compounds (\textit{robamaridos}) only project like \textit{car driver} and never like \textit{expert-tested}. This explains the ill-formed Spanish examples in (13–46).}
\end{figure}
Secondly, English allows the productive appearance of non-nominal adjuncts and even of complex modifiers (48a). In Spanish, however, there are only a few unproductive exceptional cases (48b).

(48) a. odd-sounding name, ill-educated person
   *nombre suénararo, *persona educadamal
b. mandamás ‘big boss’, cataléjo ‘telescope’

Lieber’s work offers an explanation for the compulsory argument interpretation of nouns in the lavaplatos structure. Her explanation is based on the hardly reliable criterion of a head position. Lieber links the mandatory selection of arguments to the complement position of the verbal stem lava. In this section we will argue that it is not the position lava occupies but its appearance in a more complex structure than wash that is the key to explaining the absence of the adjunct semantic reading.

Unlike Lieber, subsequent approaches to the Romance compound make it difficult to explain the restriction of the adjuncts. These approaches consider lava-platos to be a synthetic compound whose affix has no phonological spell-out. The zero affix nominalizes the verbal stem [canta-0N mañanas] or the whole structure [cantamañanas-0N].

In Spanish there are examples, like those in (49), supporting the null affix idea. The constructions in (49), however, are hardly productive. We cannot even identify a coherent set of suffixes to characterize the value of the null affix: -ia and -ista derive significantly different kinds of words.

(49) paracaidista, portavocía
    stops fallist carries voicery
    ‘parachute’, ‘office of spokesperson’

Traditionally, the null affix approaches attribute to the null affix the semantics of the English suffix -er. The affix is in charge of absorbing the semantic role of the external argument (Varela & Feliú 2003).

The absorption of the external argument role would explain why cuchillo ‘knife’ in (50a) cannot receive the instrument role in afilacuchillos, as afila, which is supposed to mean ‘sharpener’, already absorbs the (external) instrument role. The same explanation is suitable for explaining why sanos ‘safe’ is not the agent in (50b) (the agent has been absorbed by the null-affixed mata ‘killer’) or why

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They might be derived phrases such as librecambrista ‘free trader’ or altoaragonés ‘person who lives in the north of Aragon’.
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

olas 'waves' is not the location in (50c) (the location has been absorbed by rompe 'breaker').

(50)  a. afilacuchillos: 'knife-sharpener' (knife as theme)
    *'knife-like sharpener' (knife as instrument)
  b. matasanos: 'doctor who kills healthy people' (healthy people as theme)
    *'doctor who kills with the help of the healthy people' (healthy people as agents)
  c. rompeolas: 'place where the waves break'(waves as theme)
    *'place which breaks in the waves' (waves as place)

The absorption theory has some problems with unexpected ill-formations, however. *Conducedomingos 'Sunday Driver' is not attested in Spanish. As no compound ever absorbs a time external argument, the construction should be well-formed. The same is applicable to *acudeiglesias 'church-goer': as no compound ever absorbs a goal external argument, this compound should be acceptable.

Similarly, the absorption theory cannot explain why an agent cannot be understood when the external argument means an instrument in the noun complement position (51).

(51)  matasuegras *'tool with which mothers-in-law kill their relatives' (mothers-in-law as agents)

Summing up, we can safely conclude that the mandatory argument interpretation of the noun complement in Spanish compounds is completely unrelated to the semantic denotation of the absorbed external argument. The prohibition of adjuncts should be handled differently.

The reason why rompe in rompeolas was identified as 'breaker' in previous approaches is understandable: compounds like cuentakilómetros 'speedometer' and phrases like contador de la luz 'meter box' have a similar denotation. Despite that correspondence, it should have been taken into consideration that the external argument in phrases like contador de la luz holds a much wider semantic range than in compounds like cuentakilómetros.

Firstly, the external arguments which are spelled out by the affix -dor can receive an experiencer semantic role (52a). English synthetic compounds, which are suffixed with -er, can also denote experiencers (52b). Spanish compounds, however, cannot receive an experiencer role, as the glosses reveal. It seems to be clear that the possibility to denote experiencers is tied to the presence of an affix. As the Spanish compound does not have one, it cannot do so.
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

(52) a. vividor ‘scrounger’, oidor ‘judge’
   *vivevidas, *oyefujios

b. radio hater, tv viewer
   *odiarradios, *veteles

Secondly, English compounds tolerate either intransitive or unaccusative verbs without changes in their usual meaning (53a). The appearance of unaccusative verbs, such as crecer ‘grow’, arder ‘burn’ or esbarizar ‘slip’ in Spanish compounds, however, requires semantic changes to arrive at a causative interpretation because the true unaccusative reading is not allowed in the compounds of (53b). An old causative meaning can be found in a now unaccusative verb, such as arder ‘burn’.

(53) a. ice melter, Earth warming
   *derritehielo, *calientaTierra

b. crecepelo, ardeviejas, esbarizaculos
   grow+hair, burn+old women slip+buttocks
   ‘hair restorer’, ‘gorse’, ‘toboggan’

Our explanation of the contrasts of (52, 53), and of the ones in (50, 51), is as follows. Synthetic compounds in English and derived words with -dor in Spanish are made up of a non-inflected (non-finite) verb form. The affixes in both constructions take (absorb) the semantics of a characterizing subject. The most acceptable interpretation of that subject (as an agent, place, instrument, experiencer, etc.) is selected pragmatically or conceptually.

Compounds in Spanish, however, are made up of an inflected form of the verb, a form which spells out by itself (without the contribution of affixes) the functional structure corresponding to an agentive or causative projection (little v). Consequently, non-agentive or non-causative verbs are prohibited (54a). Experiencer subjects can appear in the compounds, but only if they are provided with a causative structure (54b).

(54) a. *observateles, *dependedrogas
   ‘telespectator’, ‘drug addict’

b. crecepelo ‘it makes your hair grow’
   esbarizaculos ‘it makes your buttocks slip’

We have proposed that the verbal form in the English compounds is a non-finite one, compared with the present-inflected one in Spanish compounds. This would explain why the aspectual interpretation in lavaplatos compounds can only
be active and not progressive: to obtain a compound meaning that is the same as *dishwashing*, in Spanish we would need an infinitive form (*el lavar los platos*). But, as we are going to demonstrate next, the verb form in *lavaplatos* is not an infinitive form.

It is relatively easy to find evidence for the non-infinitive nature of the verbs inside the Spanish compounds: *i* is the infinitive vowel in the third conjugation of Spanish verbs, but in Spanish compounds the vowel appearing with verbs of the third conjugation is *e*, not *i* (55a). Consequently, it makes sense to find pairs like those in (55b) in English, but not in Spanish, because active and progressive constructions derive from the same verb form only in the former.

(55)  

a. *cubrir*, *cubridor*, but *cubrestetera* ‘tea cosy’
   *cumplir*, *cumplido*, but *cumpleaños* ‘birthday’

b. *dishwashing/dishwasher*

The table in (56) summarizes all the differential properties that have been observed throughout this chapter. They are significant enough to demonstrate that the consideration of the Spanish compound as the zero-derived version of the English one is totally wrong. Additionally, the revealed contrasts seem to support the overall hypothesis of this paper: we have hypothesized that the verb form in *lavaplatos* spells out a more complex structure than the verb forms in *lavadora* or *dishwasher*; consequently, the number of possible conceptual meanings available for the Spanish compounds is truly small in comparison with their English counterparts. We will develop the structural analysis below the table.

(56)  

<table>
<thead>
<tr>
<th>Adjunct interpretation for complements</th>
<th>Yes</th>
<th><em>home-brewed</em></th>
<th>Yes</th>
<th><em>odd-sounding (name)</em></th>
<th>Yes</th>
<th><em>radio heater</em></th>
<th>Yes</th>
<th><em>Earth warming</em></th>
<th>Yes</th>
<th><em>Dishwashing</em></th>
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<tbody>
<tr>
<td>Non-nominal modifiers</td>
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<td>Experiencer interpretation for subjects</td>
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<td>Unaccusative meaning for verbs</td>
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<td>Progressive meaning</td>
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</tbody>
</table>

Table 2. Summary of the differential properties of verbal compounding patterns.

*These examples are unproductive and perhaps lexicalized phrases.
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

The structure for the Romance compounds is offered in (57). The structure contains a \( V \) node, which selects the inner noun as its complement and assigns the semantic role of theme to it. It also contains a little \( v \) node, which selects a null or absorbed subject and assigns the agentive/causative role to it. This last node restricts the possible denotations of the compounds as agents, instruments or causes (never experiencers or patients). The figure also represents the nominalization process through internal merge or \textit{remerge}.

(57)

\[
\begin{align*}
\text{DP} & \quad \text{D} \quad \ldots N_{\text{LAVAPLATOS}} \\
 & \quad \text{el} \\
 & \quad \text{vP} \\
 & \quad \text{N} \\
 & \quad 0 \\
 & \quad \text{v} \\
 & \quad \text{VP} \\
 & \quad \text{lava} \\
 & \quad \text{V} \\
 & \quad \text{NP} \\
 & \quad \text{platos}
\end{align*}
\]

Figure 4. Projection of a verbal compound in Spanish. There are two verbal nodes. \( V \) can be identified by a lexical unit provided with a theme vowel (\textit{lava}). It usually takes a number phrase (\textit{platos}) as its argument. Little \( v \) can be identified only by verbs with agentive or causative subjects (\textit{lava}), which restricts the possible conceptual meaning of the compound.

All the English examples analyzed in this section contain a verbal \textit{stem} that identifies the \( V \) node. This allows the argument interpretation of a noun such as \textit{taxi} in \textit{taxi driver}. Nevertheless, the identification of the little \( v \) node is linked to the introduction of the affix and, therefore, the active, passive or progressive nature of \( v \) relies on the selection of the affixes (-\textit{er}, -\textit{ed} or -\textit{ing}). Our prediction is similar to Lieber’s: the argument interpretation (\textit{taxi driver}), which is established at the \( V \) level, coexists with the adjunct interpretation (\textit{butterfly swimmer}), which is established above the \( V \) level, at the affix level. As this last kind of nominalization does not exist in Spanish verbal compounds, the ill-formedness of “\textit{nadador mariposa}” (which we presented in section 2) is now predicted.

Finally, our observations lead us to the conclusion that there are compounds headed by a verb in English (e.g., \textit{odd-sounding name}) that qualify as \textit{root compounds} from the point of view of their semantic interpretations. We do not consider the distinction between root and synthetic compounds to be superfluous (in
Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia

fact, the difference between verbal and non-verbal headed compounds is quite noticeable in Spanish. We consider that root and synthetic name different ways of assembling the constituents of a compound.

We would like to finish this section by reviewing some of Borer’s (2013’) conclusions regarding the argument structure of synthetic compounds. The author offers convincing empirical evidence to prove that the nouns inside compounds, such as car driver or car driving, lack the characteristic properties of the true participants of events. This is not the case of nouns inside nominalizations, such as salt crystallization or bank referral. Her opinion is that the semantic interpretation of nouns inside compounds depends on semantic functions introduced by affixes like -er or -ing (Borer 2013: 599). For her, the conceptualization of agents or patients does not imply the existence of a true syntactic event, because it is only a semantic implicature (Borer 2013: 610). Borer concludes that ‘there is little reason to differentiate syn-compounds from root compounds (...) Syn-compounds, just like root compounds exhibit no evidence for functional syntactic complexity of any sort’ (Borer 2013: 622).

In Spanish compounds we cannot dissociate the thematic role assignment from argument structure, although it is also true that nouns inside compounds lack the properties of true event arguments in Borer’s sense. Compounds of the lava-platos kind always belong to the group of R or referential nominalizations. These compounds exceptionally denote events such as pasacalles ‘parade’, and even in that case they fail each and every one of the proofs in eventivity tests. Borer’s predictions prove to be correct regarding the fact that, in the absence of a nominalizing affix like -ción, we cannot find event properties in a morphological construction.

However, against her predictions, we do not find an affix in Spanish compounds that can determine the thematic interpretation of the nouns inside them; despite this fact, we invariably obtain the phenomenon known as transitivity effect, which she links explicitly to the presence of affixes like –er. We try to avoid this problem by suggesting that lavaplatos compounds, and not the taxi driver type, contain event structure (a causative little v). The structure loses its event properties later in the nominalization process, which invariably results in R-nominalizations.

As little v is a phase-head for Borer, the complement of little v—the VP in lavaplatos—is predicted to be the domain of semantic idiosyncrasies, as happens in many cases, e.g., matasuegras ‘party blower’. However, phase theory predicts that the meaning of the specifier of little v is interpreted compositionally, and, in fact always is (the meaning of the specifiers of compounds is roughly ‘X who/which…VP’). Lavaplatos can denote an individual in charge of cleaning dishes or a product used for that purpose. An ambiguity of this kind does not reveal a non-compositional or non-predictable character of the specifier’s meaning, but the fact that X specific value is resolved non-grammatically/pragmatically.
5 Conclusions

In this work, we have shown a considerable amount of data to support or rule out several previous assumptions concerning the construction of meanings in general and the interpretation of compounds in particular. The analyzed data support a distinction between structural and conceptual meaning, as well as the late-insertion hypothesis; in other words, we believe that our observations favor the neoconstructionist models. These allow us to explain the structurally restricted and highly documented variation between English and Spanish compounds, locating it in the syntax-lexicon interface and not earlier. If the meanings of the compounds were already specified in the lexicon of each language, and if they were obtained because of the mere combination of conceptual units, we would not have been able to obtain such a great deal of systematizable variation.

The data also seem to favor models maintaining that morphological constructions follow the same principles and are formed with the same rules as syntactic ones. We have proposed that compound constituents do not merge directly as lexical units, but are merged through functional categories of a very specific kind: relational categories. We have linked the smaller number of semantic readings available in compounds to the larger structural complexity of their functional structure. And we have shown that this correlation can be tested by comparing every kind of productive Spanish compound with its English correlate.

A deeper analysis of each compound structure and a larger token of languages will be required to test this hypothesis in forthcoming studies.

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Restrictions in the interpretation of compounds
Bárbara Marqueta Gracia


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Received: 2017/07/05
Revised: 2017/09/07
Accepted: 2017/09/29

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