

# PUTTING ORDER INTO LITERAL AND FIGURATIVE USES OF VERBS: *romper* AS A CASE STUDY\*

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## Abstract

This paper argues in favour of the hypothesis that the so-called figurative and literal meanings of verbs share a common core meaning that constitutes the semantic base of verbs across contexts. I argue for an underspecification model of the lexicon and take the Spanish change of state verb *romper* ‘break’ as a case study. Context-dependent meaning variation is understood as a feature of underspecification of *romper*-VPs and is correlated with the semantics of the theme in two ways: 1) whether and how exactly the theme is affected by the change and 2) whether the theme has a simple or a complex mereological structure. The study is taken as precursor for the analysis of lexical entailments of change of state verbs in composition and aims at showing that what has often been denominated metaphoric extensions or non-regular polysemy can be analyzed alike through an underspecification approach. The present paper represents a view of lexicon that goes against a trivial and static conception of lexical meaning.

**Keywords:** polysemy; change-of-state verbs; underspecification; scalar change

Este trabajo explora la hipótesis de que los llamados sentidos figurados y literales de los verbos comparten un único significado nuclear. El presente artículo defiende un modelo léxico subespecificado y utiliza el verbo de cambio de estado *romper* como estudio de caso. Se argumenta que un aspecto de la subespecificación son los resultados semánticamente diversos que recibe la combinación del verbo con distintos objetos. Se muestra que la variación semántica de *romper* está relacionada con la semántica del tema de dos formas. Por un lado, depende de que el tema esté afectado por el cambio y de qué manera lo esté. Por otro, depende de la complejidad estructural del argumento tema. Se considera que el presente estudio de caso puede extenderse a otros verbos de cambio de estado, y se propone que lo que tradicionalmente se ha denominado extensiones metafóricas, polisemia irregular o idiosincrasia léxica puede recibir un análisis común en el marco de la teoría de la subespecificación. El presente artículo contribuye en contra de una visión estática del léxico.

**Palabras clave:** polisemia; verbos de cambio de estado; subespecificación; cambio escalar

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## 1 Introduction

The Spanish verb *romper* as well as its equivalents in English or French, *break* and *rompre*, are mainly described as verbs that refer to an action that brings about a change in the physical state of an entity. Achard (2006), for example, describes French *rompre* as a verb of ‘destruction’, while Rappaport Hovav and Levin (2005) take English *break* as a verb that lexicalizes a particular ‘change in the material integrity’ of an entity; ‘lexicalized meaning’ is understood to be represented by those components of a verb meaning that are entailed in all of the uses of the verb, regardless of context (Rappaport Hovav & Levin 2005). Such a definition of *break* does felicitously account for the uses of the Spanish equivalent *romper*, where the verb does in fact describe a change in the physical make-up of the theme object, as in (1).

- (1) Juan rompió el jarrón.  
 Juan broke the vase.  
 ‘Juan broke the vase.’

Nonetheless, a look at corpus data reveals that *romper* takes a whole range of theme arguments that lack material properties. These changes in the semantic type of the theme argument contribute very decisively to influence a change in the meaning of the overall result of a *romper*-VP, a fact that has received little attention in the literature as a phenomenon of its own. Thus *romper*-events can come to describe a ‘disappearing’ or ‘lack of continuity’ with respect to a certain property, development or function as in (2) to (4), or even the initiation of an event (5).

- (2) El cortejo llegó hasta el cementerio y en ningún momento se  
 The procession arrived until the cemetery and in no moment REFL  
 rompió el silencio. [*El País Corpus*]  
 broke the silence.  
 ‘The procession reached the cemetery and at no time was the silence broken.’
- (3) Con tres medallas la RDA rompió el dominio norteamericano en  
 With three medals the GDR broke the dominance North American in  
 natación. [*El País Corpus*]  
 swimming.  
 ‘With three medals the German Democratic Republic broke the North American superiority in swimming.’
- (4) Se me ha roto el ordenador. [*El País Corpus*]  
 REFL to me has broken the computer.  
 ‘My computer broke.’
- (5) La mañana rompe ya. [*El País Corpus*]  
 The morning breaks already.  
 ‘The morning breaks.’

Another semantic question that opens up in dependence of the theme arguments of *romper* concerns its gradability. Distinct theme arguments seem to have different effects on the gradability of *romper*-VPs, which can appear in non-gradable (6) as well as in gradable event descriptions (7) and thus allow for partial modification (7) or lack it (6). In some cases it is even the same theme argument that allows for gradable (7) and non-gradable *romper*-VPs (8).

- (6) # La amistad con Bojan se rompió parcialmente.  
The friendship with Bojan REFL broke partially.  
The friendship with Bojan broke (off) partially.
- (7) El ligamento anterior de Bojan se rompió parcialmente. [*El País Corpus*]  
The ligament anterior of Bojan REFL broke partially.  
The anterior ligament of Bojan tore partially.
- (8) El ligamento anterior de Bojan se rompió completamente.  
The ligament anterior of Bojan REFL broke completely.  
The anterior ligament of Bojan tore completely.

These data, which are not at all marginal, raise the question of how the arguments of a verb contribute to the overall meaning of a verb phrase. In particular examples (2) to (5) challenge the understanding of the verb *romper* as a verb that describes the affectedness of ‘material integrity’ of the object undergoing the change and call into question whether there is a common base to all uses of *romper*. This challenge becomes yet more crucial if we take into account that such kind of uses of the verb *romper* are really systematic and frequent as corpus demonstrates.

These facts open up two options: 1) the lexicon has at least five different homonymous entries for *romper*, one for each of the above examples (*romper*<sub>1</sub>, *romper*<sub>2</sub>, *romper*<sub>3</sub>, etc.) and therefore semantic composition is working with one of the entities each time, or, 2), if we want to keep the lexicon limited, the illustrated uses for *romper* belong to one lexical unit and it is necessary to pin at the underspecified lexical-semantic potential of *romper* and show how it interacts in composition with its arguments.

In favour of an underspecified meaning of *romper* cross-linguistic experiments on breaking and cutting events involving physical objects have also called into question the understanding of *romper* as a verb that describes a ‘change in material integrity’. Crucially what these experiments show is that one of the main features of physical breaking is not in fact the disintegration result, but rather the lack of a defined locus of separation (Majid et al. 2008). That is, what is at play for physical breaking-events is that they describe a separation event with an imprecise point of separation. The focus is thus not on the intuitively expected result of being broken into a particular amount of pieces, but on the fact that the breaking is not predictable.

This paper contributes to the discussion about lexical meaning and argues, based on insights collected from a considerable amount of corpus data, for an underspecified meaning of *romper* that allows for a variable completion of the result by the semantics of the theme argument. I propose that, despite the great semantic variation in the theme arguments, *romper* can be assigned a unified meaning, which is underspecified and lacks explicitness about the characteristics of the result state brought about by a *romper*-event.

The paper is structured as follows. Section 2 offers an overview of the empirical generalisations over the attested data taking into account both the syntactic alternations as well as the range of possible theme arguments. Section 3 compares two possible accounts for combinatorial flexibility of *romper* and argues for an underspecified view of the lexicon as an account for a unified meaning. Section 4 points at the variable result meaning as well as variable gradability of *romper*-VPs as two crucial factors of underspecification. In section 5 the scalar properties of the verb are explored and the variable gradability of *romper*-VPs is formalized. This section illustrates that the variable gradability of *romper*-VPs is related to the mereological structure of the theme. Section 6 concludes with a short summary.

## 2 Empirical generalisations

In the following two subsections I summarise and discuss some generalisations that have emerged from a corpus study based on a 250 million word Spanish press corpus, the *El País Corpus*.<sup>1</sup> In section 2.1 I describe and discuss the syntactic alternations *romper* usually appears in and correlate them with the semantics of the theme arguments as well as possible meaning variations in the overall meaning of a *romper*-VP. In section 2.2 I illustrate what the effects of breaking are over distinct theme arguments of *romper*. Both kinds of observations will provide evidence for the need of a stronger involvement of the theme in the process of composition of a verb phrase.

### 2.1 Syntactico-semantic alternations with *romper*

The data reveals three syntactic patterns for *romper*: 1) an intransitive pattern, 2) a causative pattern, which does not allow for an unaccusative alternation, and 3) a transitive pattern with an anticausative alternation. These three patterns are correlated with the semantic alternation of theme arguments and provide slightly distinct overall meanings of *romper*-VPs. Syntactic variation as well as alternations in the semantics of the themes are thus one source for the underspecification of *romper* and the results it brings about, which nevertheless do allow for a unified account, as will be shown throughout this study.

#### 2.1.1 The non-alternating intransitive pattern

In Spanish *romper* can appear in two different constructions with a single argument. In the first place *romper* can be used in an intransitive construction, which unlike the alternating unaccusative pattern, is not morphologically marked with the addition of the reflexive clitic *se*. Contrary to French where the intransitive pattern without reflexive morphology is productive (Labelle & Doron, 2012), in Spanish this pattern is restricted to arguments from the domain of nature and natural phenomena, as the corpus data illustrates. Events described by this pattern have been called ‘internally caused change’ events (Levin & Rapoport Hovav 1995), due to the fact that the event is caused by the argument’s internal properties, and thus disallows for external causation.

- (9) a. Me gusta relajarme cerca de la playa, viendo como las olas rompen  
 To me like relaxing near of the beach, watching how the waves break  
 en las rocas. [*El País Corpus*]  
 in the rocks  
 ‘I enjoy relaxing next to the beach, watching the waves break against the rocks.’
- b. Los capullos del rosal rompen cuando reciben suficientemente sol.  
 The buds of the rose break when receive sufficiently sun  
 [*El País Corpus*]

‘The buds of the rose break, when they receive sufficiently sun.’

This pattern describes the initiation of a process or the bringing about of a new state.<sup>2</sup> In comparison to the alternating anticausative pattern, which focuses on the attainment of

<sup>1</sup>The *El País Corpus* consists of all the *El País* newspaper issues from 1976 to 2007 and is hosted at the Institut Universitari de Lingüística Aplicada (IULA) at the University Pompeu Fabra.

<sup>2</sup>It seems plausible that the bringing about of a new state or process associated with this use of *romper* is related to the use of this verb as an inceptive auxiliary followed by an obligatory infinitive: ‘romper a + infinitive’ (*romper a llorar/ correr/ gritar* ‘break to cry/ run/ scream’). The detailed investigation of this pattern as well as its relation to the non-alternating intransitive pattern, however, must be left for future research.

a specific final state, the present syntactic pattern of *romper* seems to be more dynamic and less centred on the result. Nevertheless it still passes affectedness diagnostics, which identify the obtainment of a new state due to undergoing the event (see Beavers 2011 for more details on the affectedness diagnostic):

- (10) a. La ola rompió en la roca. [*El País Corpus*]  
The wave broke in the rock.  
'The wave broke in the rock.'
- b. Lo que le pasó a la ola es que rompió en la roca.  
That what to it happened to the wave is that broke in the rock  
'What happened to the wave is that it broke in the rock.'
- (11) a. Los capullos del rosal rompieron. [*El País Corpus*]  
The buds of the rose broke  
'The buds of the rose broke.'
- b. Lo que le pasó a los capullos es que rompieron.  
That what to it happened to the buds is that broke  
'What happened to the buds is that they broke.'

Thus against other proposals that analyze such kind of patterns as only dynamic activity events, which lack a change of state component (Labelle & Doron 2012), I take this pattern in Spanish to convey a change of state meaning.

### 2.1.2 The causative-anticausative alternation

As a prototypical member of the change of state verb class, *romper* turns up in the causative pattern, which regularly alternates with the anticausative form by an operation resulting from the addition of the reflexive clitic *se* (12). For the causative-anticausative alternation *romper* can take as theme arguments a vast variety of physical objects independent of the material quality (*hard* versus *soft*) or the kind of material (*glass, wood, paper, fabric, skin* etc.) (12). In these cases it entails affectedness of the theme argument.

- (12) a. Juan rompió la ventana/ un juguete/ el papel/ la camisa.  
Juan broke the window/ a toy/ the paper/ the shirt  
'Juan broke the window/ the toy/ tore the paper/ the shirt.'
- b. La ventana/ el juguete/ el papel/ la camisa se rompió.  
The window/ the toy/ the paper/ the shirt REFL broke  
'The window/ the toy/ the paper/ the shirt broke/ tore.'

The causative-anticausative alternation of *romper* is also regular for many kinds of abstract-object-theme-arguments, which I subsume here under the denomination of 'states and processes', as in (13) through (15).

- (13) a. Juan rompió la amistad (con María). [*El País Corpus*]  
Juan broke the friendship with María  
'John broke off the friendship with Mary.'
- b. La amistad con María se rompió.  
The friendship with María REFL broke  
'The friendship with Mary broke off.'
- (14) a. La abstención del PSOE rompe la tradicional unanimidad en la  
The abstention of the PSOE breaks the traditional unanimity in the  
aprobación del programa de fiestas. [*El País Corpus*]  
approval of the program of parties.

- ‘The abstention of the Spanish Socialist Party breaks the traditional unanimity in the approval of the program of the festival.’
- b. La unanimidad se rompió.  
The unanimity REFL broke.  
‘The unanimity broke.’
- (15) a. La crisis inmobiliaria rompió el desarrollo económico de España.  
The crisis property.ADJ broke the development economic of Spain  
‘The housing crisis broke the economic development of Spain.’ [*El País Cor-pus*]
- b. El desarrollo económico de España se rompió.  
The development economic of Spain REFL broke  
‘Spain’s economic growth broke.’

In the context of these theme arguments *romper* describes the ceasing of a holding state or process. Not all transitive constructions with *romper*, however, can alternate, as will be shown in the following subsection.

### 2.1.3 The non-alternating transitive pattern

(16) and (17) illustrate examples where the verb *romper* cannot undergo an anticausative alternation.<sup>3</sup>

- (16) a. Juan rompió la ley/ la norma (al aparcar en el vado del hospital).  
Juan broke the law/ the norm (when parking in the entrance of the hospital).  
‘Juan broke the law/ the norm (by parking in the entrance of the hospital).’
- b. #La ley/ la norma se rompió por sí sola.  
The law/ the norm REFL broke by self alone  
‘The law/ the norm broke by itself.’
- (17) a. Juan rompió la huelga/ el ayuno, pero por suerte también fue el único.  
Juan broke the strike/ the fast, but for luck also was the unique  
‘Juan broke the strike/ the fast, but luckily he also was the only one.’
- b. #La huelga/ el ayuno se rompió por sí sola.  
The strike/ the fast REFL broke by self alone  
‘The strike/ the fast broke by itself.’

The lack of the anticausative variant of some change of state verbs has been attributed to the fact that certain verbs are inherently agentive and therefore lexically specify for two arguments (Rappaport Hovav & Levin 2012; Horvath & Siloni 2011). I illustrate in this section that it is the choice of the theme that triggers agentive *romper*-VPs, while other combinations are not necessarily agentive.

Previous research on *romper* has shown that *romper* imposes few restrictions on the cause arguments, which can range from agents, natural forces, instruments, stative eventualities to events of all kinds, as illustrated in example (18) taken from Mendikoetxea (1999: 1589).

<sup>3</sup>Note that the adverbial modifier *por sí solo/a*, ‘by itself’ added to the ungrammatical anticausative sentences (16) and (17) is crucial to distinguish between the anticausative variant and the form-identical reflexive passive in Spanish, which identifies the cause and the theme as one unique argument (see Koontz-Garboden 2009 for a detailed discussion on anticausatives in Spanish).

- (18) Juan/ el hacha/ el huracán/ el peso de los libros/ la explosión rompió la mesa.  
 Juan/ the axe/ the hurricane/ the weight of the books/ the explosion broke the table.  
 ‘Juan/ the axe/ the hurricane/ the weight of the books/ the explosion broke the table.’

These research suggest that *romper*-events can be caused by non-agentive causes, which in turn is correlated with the possibility to build anticausatives as observed by Mendikoetxea (1999) and Koontz-Garboden (2009):

- (19) La mesa se rompió.  
 The table REFL broke  
 ‘The table broke.’

The absence of restriction with respect to the cause argument of the change event, however, is not available across the board. Combinations with certain types of themes seem to make some uses of *romper* more restrictive than others, as has also been acknowledged by Levin & Rappaport Hovav (1995) or Piñón (2011). While physical objects in object position easily combine with a whole range of cause arguments, as in example (18), not all abstract themes do so, as illustrated in (20-a) and (21-a). This in turn is correlated with the absence of an unaccusative variant, as in (20-b) and (21-b)

- (20) a. Juan/ #la rueda/ #el accidente/ #la anchura de la piscina/ #la explosión rompió la ley/ la norma.  
 Juan/ the wheel/ the accident/ the width of the swimming pool/ the explosion broke the law/ the norm.  
 ‘Juan/ the wheel/ the accident/ the width of the swimming pool/ the explosion broke the law/ the norm.’  
 b. #La norma se rompió por sí sola.  
 The norm REFL broke by self alone.  
 ‘The norm broke by itself.’
- (21) a. Juan/ #la ikurriña/ la autorización de la ikurriña/ #el accidente/ rompió un tabú que parecía sagrado.  
 Juan/ the ikurriña/ the authorization of the ikurriña/ the accident broke a taboo that seemed sacred.  
 ‘Juan/ the Basque flag/ the authorization of the Basque flag/ the accident broke a taboo that seemed sacred.’ [*El País Corpus (adapted)*]  
 b. #El tabú se rompió por sí solo.  
 The taboo REFL broke by self alone.  
 ‘The taboo broke by itself.’

Among the themes attested in corpus that disallow for the whole variety of causes are: *molde, código de conducta, tradición, costumbre, esquemas de pensamiento* ‘mold, code of behavior, tradition, custom, schema of thought’. This illustrates that the dividing line does not simply separate abstract themes from non-abstract domains, a distinction made by Piñón (2011), who states that abstract breaking generally requires an agent, while concrete breaking does not. Recall from above that certain abstract themes are perfectly compatible with the anticausative alternation: (13), (14) and (15).

The data seems to suggest much more that the lack of alternation applies in cases where the theme denotes some kind of atelic state that continues in its existing inertia, which does not expire by itself. This may well be due to the fact that certain states essentially belong to the world of human behavior such as *laws* and *norms*, which do not change by themselves, but rather require a human agent to make them cease or alter. Uses of *romper* with this kind of themes subcategorize for agentive causers as in (20-a) or at most allow for a agent-related action as in *the authorization of the ikurriña* in (21-a). Both cases lack the anticausative variant, since the fact that the causative event is specified for an agent prevents the verb from denoting an event that takes place without the intervention of an agent as pointed out by Mendikoetxea (1999).

Semantically, the necessity of an explicit causing agent seems to be correlated with the lack of direct affectedness of the theme. That is, the underspecification for a cause for *romper-VP* with *ventana* ‘window’, *amistad* ‘friendship’ or *desarrollo* ‘development’ is correlated with another semantic aspect, namely ‘direct affectedness’ of the theme. While *romper*-uses that do allow for the anticausative alternation, describe a true change of state in the theme, as affectedness tests prove (22), non-alternating uses do not express direct affectedness and these themes fail the affectedness tests, as illustrated in (23).

- (22) a. Juan/ el accidente rompió la ventana/ la amistad/ el desarrollo.  
 Juan/ the accident broke the window/ the friendship/ the development.  
 ‘Juan/ the accident broke the window/ the friendship/ the development.’
- b. Lo que le pasó a la ventana/ la amistad/ el desarrollo es  
 That what to it happened to the window/ the friendship/ the development is  
 que se rompió.  
 that REFL broke  
 ‘What happened to the window/ the friendship/ the development is that it broke.’
- (23) a. Juan rompió la ley/ la norma/ la huelga/ un tabú.  
 Juan broke the law/ the norm/ the strike/ a taboo  
 ‘Juan broke the law/ the norm/ the strike/ a taboo.’
- b. #Lo que le pasó a la ley/ la norma/ la huelga/ al tabú es que  
 That what to it happened to the law/ the norm/ the strike/ the taboo is that  
 se rompió.  
 REFL broke  
 ‘What happened to the law/ the norm/ the strike/ the taboo is that it broke.’

Characteristic properties of the themes in (22) such as the ‘integrity’ of the *window*, the ‘perdurability’ of the *friendship* or the ‘incrementality of the process’ of *development* cease throughout the breaking-event. Themes that appear in (23), on the contrary, stay integer throughout the breaking event performed by an agent. In these cases it seems that the change takes place in the agent’s attitude towards certain conceptual limits like *ley* ‘law’, *tabú* ‘taboo’ and *norma* ‘norm’ or states like *huelga* ‘strike’. That is, if an individual participant breaks a *huelga* ‘strike’, the *huelga* can still endure, as the continuation of example (24) illustrates. Though Juan abandons the strike, his colleagues carried on:

- (24) Juan rompió la huelga. Los demás no nos rendimos hasta el día siguiente.  
 Juan broke the strike. The rest no us rendered until the day next  
 ‘Juan broke the strike. The rest of us carried on until the next day.’ [*El País Corpus*]

Thus, the necessity of a causing agent for *romper* is also correlated with a difference in the semantic prominence of the theme, which is not affected by the change. *Leyes* ‘laws’, *normas* ‘norms’ and *records* ‘réconds’, contrary to *ventana* ‘window’ and *amistad* ‘friendship’, generally do not disappear despite the fact that individuals can overcome or violate them. This suggests that non-affected themes only allow for agents and the event expresses a new state of the agent towards a particular state like *huelga*.

In the line with the observation that only affected themes allow for non-agentive causes goes the observation made by Folli & Harley (2004), who note that for the group of Italian consumption verbs an inanimate subject is only licensed in combinations with an explicit change of state event, which they argue is present in (25-a) through the reflexive morphology, but absent from (25-b).

- (25) a. Il mare se é mangiato la spiaggia.  
 The sea REFL is eaten the beach  
 ‘The sea has eaten the beach.’  
 b. \*Il mare ha mangiato la spiaggia.  
 The sea has eaten the beach  
 ‘The sea has eaten the beach.’

Similar observations concerning object-subject interdependencies have been made for other verbs (Rappaport Hovav & Levin 2012) and explained by the necessity of direct causation for certain events. Yet many accounts that acknowledge this kind of restrictions postulate two separate lexical entries for a particular verb, for example, a causative *romper*<sub>1</sub> and an agentive *romper*<sub>2</sub> (Piñón, 2011), which in turn forces a sense enumerative model of the lexicon. For this study, which argues for an underspecified meaning of the verb *romper*, I consider the object-subject interdependencies as an argument for the necessity of co-composition, while principally sticking to only one lexical entry for *romper*. It is the semantic properties of object arguments that may impose semantic requirements on the subject and limit the morphosyntactic realizations of *romper*-sentences.

All in all, the corpus data presented above provide evidence for the fact that *romper* is one of the many cases of very complex verbs and its meaning variation across syntactic patterns and theme arguments is not sufficiently accounted for when defined as a verb that denotes always the same kind of transition, namely ‘change of material integrity’ (see Spalek (in preparation) for a detailed description of the results obtained through a corpus study of change of state verbs in Spanish).

## 2.2 *The way romper affects its typical theme arguments*

This section provides a descriptive characterization of the typical theme arguments attested in corpus for *romper*. Some of the most frequent examples are presented and analyzed here, while the appendix A provides a more extended summary of the major groups of actually attested themes. The present characterization serves the later analysis of how the characteristics of a theme argument contribute to construe the meaning of *romper*-VPs.

According to corpus evidence *romper* principally takes two kinds of theme arguments: physical objects and eventualities, the latter of which in turn are subdivided into states and processes. Across contexts *romper* describes a change in the value of an attribute ascribed to these theme arguments. That is, the final result state brought about by a *romper*-event seems to depend crucially on the nature of the theme argument, whether it is a physical object, an event or a state and even what kind of state, as the morphosyntactic alternation differences for themes like *amistad* ‘friendship’ and *ley* ‘law’ illustrated above.

For the set of theme arguments that represent physical objects the *romper*-event affects

the physical integrity of the object. The result state effectively describes ‘lack of integrity’ as in example (26) and schematized in (27).

(26) Juan rompió la ventana/ el juguete/ el papel/ la camisa.  
 Juan broke the window/ a toy/ the paper/ the shirt  
 ‘Juan broke the window/ the toy/ the paper/ the shirt.’

(27) *romper* + [ventana, papel, camisa]  
 Affected property: integrity

Interestingly, *romper* differs from its equivalents in English (*break*) or German (*brechen*) in being less restrictive with respect to the material properties of physical theme arguments that can be affected. In contrast to its equivalents in English or German, Spanish *romper* does not encode manner, which would restrict its applications to themes with particular characteristics. Consequently where Spanish describes events with *romper* alone, English and German use at least two distinct lexical items to distinguish the affectedness of the integrity of hard object (*break, brechen*) from a soft texture like paper or fabric (*tear, zerreißen*):

(28) a. John broke the window/ the toy.  
 b. #John broke the paper/ shirt.  
 c. John tore/ ripped the paper/ shirt.

(29) a. Johann brach das Fenster/ Spielzeug.  
 John broke the window/ toy  
 ‘John broke the window/ toy.’  
 b. #Johann brach das Papier/ Hemd.  
 John broke the paper/ shirt  
 ‘John broke the paper/ shirt.’  
 c. Johann zerriss das Papier/ Hemd.  
 John tore the paper/ shirt  
 ‘John tore the paper/ shirt.’

The second group of nominals selected by *romper* are eventualities. Among those are state-denoting nominals like *unión* ‘union’, *silencio* ‘silence’ or *acuerdo* ‘agreement’. These are affected by breaking with respect to their temporal extension. This in fact is due to the very nature of events, which occur in time, while objects do not. Thus the main characteristics of states is their temporal perdurability. By possessing an atomic time structure states represent an undifferentiated interval and the only change they can undergo is the suppression of their existence. That is, the way breaking affects *unión* ‘union’ (30), *silencio* ‘silence’ (31) or *acuerdo* ‘agreement’ (32), for example, is that it targets their temporal aspect and provokes the ceasing of the state.

(30) La crisis de los mercados financieros rompió la unión de los partidos de  
 The crisis of the markets financial broke the union of the parties of  
 izquierda. [*El País Corpus*]  
 left  
 ‘The crisis of the financial markets broke the union of the left wing parties.’  
 ⇒ The union does any longer exist.

(31) #El grito rompió parcialmente el silencio.  
 The scream broke partially the silence  
 ‘The scream partially broke the silence.’

For *acuerdo* ‘agreement’ what is targeted is the perdurability of the binding arrangement between parties. As a consequence when a holding ‘agreement’ is interrupted the agreement ceases to exist.

- (32) Uganda rompió el acuerdo con Israel. [*El País Corpus*]  
 Uganda broke the agreement with Israel  
 ‘Uganda broke the agreement with Israel.’  
 ⇒ The agreement does not hold any longer.

For certain themes, which do not naturally possess a temporal dimension, the temporal anchoring can be made explicit by further specification. That is, a concept like *idea*, which does not inherently represent an eventuality, can be coerced into a believe-state by making explicit that it is a specific idea that is temporally delimited. Thus, while combining *romper* with *idea* ‘idea’ is unacceptable (33-a), it is perfectly acceptable if *idea* has some further specification (33-b), which converts it into temporally holding state in the sense of a traditional belief. This condition can also be fulfilled, if the temporal aspect of a non-eventive concept like *idea* has been provided in previous discourse.

- (33) a. #Marie Curie rompió la idea.  
 Marie Curie broke the idea.  
 ‘Marie Curie broke the idea.’  
 b. Marie Curie rompió la idea de una ciencia masculina. [*Web*]  
 Marie Curie broke the idea of a science masculine.  
 ‘Marie Curie broke the idea of a masculine science.’

Support for a concept like *idea* understood as a state comes from the fact that it passes certain kinds of eventuality tests such as the ‘durar’-test in (34), both of which scope at the temporal dimension:

- (34) La idea de una ciencia masculina duró muy poco tiempo.  
 The idea of a science masculine lasted very little time.  
 ‘The idea of a masculine science lasted very little.’

In a schematic way, the property targeted for states is the holding of the state at an interval. That is, *romper* affects the quality of existence of the state.

- (35) *romper* + [silencio]  
 Affected property: holding of the state of silence in a time interval

Schema (35) stipulates that, given the lack of part structure for *silencio*, *romper silencio* represents a pure punctual ceasing of the state.

- (36) *romper* + [unión]  
 Affected property: holding of a bilateral or multilateral union in a time interval

The lexical entailment correlated with *romper unión* is the ceasing of the holding relation between at least two parties.

- (37) *romper* + [acuerdo]  
 Affected property: holding of the state at an interval

In (37) *romper acuerdo*, again what is affected by the change of state event is the temporal holding of the contract between parties.

Another major group *romper* typically combines with are process-denoting nominals. ‘Breaking’ a process has as a consequence the ceasing of the ongoing development as in (38), (39) and (40).

- (38) En el último trimestre se produjo un estancamiento en la venta de viviendas que rompió la evolución positiva que se había vivido en los primeros meses. [*El País Corpus*]  
 In the last trimester REFL produced a stagnation in the selling of livings that broke the evolution positive that REFL had lived in the first months.  
 ‘In the last trimester the sales of housings stagnated, which interrupted the positive evolution experienced in the first months.’  
 ⇒ The positive evolution stopped.
- (39) La crisis inmobiliaria rompió el desarrollo económico de España. [*El País Corpus*]  
 The crisis property.ADJ broke the development economic of Spain  
 ‘The housing crisis interrupted the economic development of Spain.’  
 ⇒ There is no economic development anymore.
- (40) Franco no sacó a España de la miseria, más bien rompió el progreso que se iniciaba con la II República Jacobina. [*El País Corpus*]  
 Franco not bring out to Spain of the misery, much good broke the progress that REFL starting with the II Republic Jacobin  
 ‘Franco did not bring Spain out of misery, but rather interrupted the progress that started out with the second Republic.’  
 ⇒ There is no progress in Spain anymore.

It is worth noticing that most of the process-denoting nouns that naturally combine with *romper* in Spanish, such as *progreso*, *desarrollo*, *evolución* ‘progress, development, evolution’ are derivations from the corresponding ‘gradual completion verbs’, *progresar*, *desarrollar*, *evolucionar* ‘progress, develop, evolve’, as they were denominated by Bertinetto & Squartini (1995). Characteristic components of these processes are thus the gradual incrementality or decrease in a particular dimension in addition to a final goal, which thus projects a scale of change. This suggests that only scalar processes can undergo breaking and illustrates that what we presuppose for these kind of processes is the temporal perseverance in increase or decrease of a particular property towards a goal (41). Consequently the way *romper* acts over processes is that it prevents the attainment of a further stage in the development with respect to a given dimension. *Romper* thus describes a pure process of ceasing, which has as a consequence the lack of continuity of the process.

- (41) *romper* + [process]  
 Property: temporal incrementality towards a final goal

The examples above illustrate that what allows *romper* to select not only for physical objects, but equally for states and processes as theme arguments are certain properties of the themes, which get lost through the action of breaking.

After a brief review of the model of lexicon I am assuming, I argue in section 4 that the process of composition works equally regular in all cases though different characteristic properties of a particular noun are affected by the *romper* predicate. The result states differ according to the characteristic properties of the corresponding themes. The apparent

polysemy of *romper* thus represents regular composition.

### 3 The advantages of underspecification over sense enumeration

This wide range of combinatorial capacity of verbs illustrated in detail for the verb *romper* in the previous section crucially represents a problem of compositionality and is directly related to the possible ways of viewing the lexicon. One way of providing an analysis for this problem is to turn to the concept of polysemy, which evokes the model of lexicon that accounts for the distinct combinatorial restrictions by the enumeration of senses. Though I crucially defend the underspecified model of the lexicon that is able to provide a uniform meaning for *romper*-VPs, despite the semantic variation contributed by the alternation of the theme arguments, I first present some considerations about sense enumeration, which forces polysemy, and then explain the underspecification model.

#### 3.1 Polysemy

Combinations of the kind illustrated in section 2, where the verb *romper* apparently acquires distinct meanings depending on its arguments, have often been considered to be idiomatic, idiosyncratic and hence irregular meaning extensions. Particularly under the perspective of Apresjan's (1973: 15) definition of 'regular' versus 'irregular polysemy' they have often been classified as irregular metaphors.

'Polysemy of a word A with the meaning  $a_i$  and  $a_j$  is called regular if in the given language, there exists at least one other word B with the meaning  $b_i$  and  $b_j$ , which are semantically distinguished from each other in exactly the same way as  $a_i$  and  $a_j$  and, if  $a_i$  and  $b_i$ , and  $a_j$  and  $b_j$  are non-synonymous.'

Put in prose, regular polysemy is considered to represent a concrete relation among distinct senses of a word, which above all is repetitive in the lexicon of a language. A typical example of such a relation among word senses is metonymy, where the part-whole relation represents a rule that explains the distinct combinatorial behavior of the verb *drink* in example (42).

- (42) a. John usually drinks a glass in the evening.  
b. John usually drinks a beer in the evening.

This kind of 'content-container' reversal in (42) is available for many distinct lexical units not only in English, but also in many other languages and thus according to Apresjan (1973) fulfills the condition to be called 'regular'. The combinatorial possibilities displayed by *romper* are not comprised under such a definition of regular polysemy, mainly because there is apparently no immediate relation between an action *romper* that has as a result a lack of integrity in a physical object and an action *romper*, which terminates a process. The standard compositional model, which assumes that verbs behave as active functors that select for certain arguments while their theme arguments have a passive role, is thus forced to postulate distinct lexical entries *romper* and represent *romper* as distinct homonymous verbs with differing combinatorial restrictions: *romper*<sub>1</sub> + physical objects meaning 'break', *romper*<sub>2</sub> + states meaning 'stop from existing', *romper*<sub>3</sub> + processes meaning 'interrupt'. Before entering the composition the verb has to be disambiguated appropriately. Under such a view of the lexicon any meaning variation or polysemy is reflected by multiple listings of words, each annotated with a separate lexical sense. A dictionary entry represents a typical example of sense enumeration. In distinct ways, up to date this is still the predominant model in the theoretical linguistics literature (Dowty 1979; Levin 1993; Alonso Ramos 2011), where composition takes place with disambiguated lexical units.

However, it has been observed by several researchers that when words are combined the result often deviates from the meaning that a standard compositional semantics would expect (Pustejovsky 1995; Asher 2011). That is why the model of a sense enumerative lexicon has received justified criticism and has been argued to be inadequate for the description of natural language semantics (see (Pustejovsky 1995, chap. 4) and (Asher 2011, chap. 3) for a detailed argument against a sense enumerative model).

The main criticism has pointed out the fact that words in novel contexts take on different meanings, for which it is not always obvious how to select the correct word sense out of a list. It has also been noted that the pervasive creativity of language makes it almost impossible for an enumeration of senses to provide an exhaustive list that correctly predicts the meanings in any new contexts. Furthermore it has been argued that a sense enumerative lexicon greatly exaggerates the discreteness of the distinct word meanings and thus misses out that word meanings are not atomic units, but that they overlap in diverse ways. The fact that in the case of *romper* the number of listed meanings across dictionaries varies between 20 and 30 senses precisely illustrates this kind of problem, because *romper* does not seem to be 20 to 30 ways ambiguous. All these facts render an enumerative lexicon a poor model for natural language.

Underspecification, of which the Generative Lexicon model by Pustejovsky (1995) is a prominent example, on the contrary is a model that allows accounting for the complexity of lexical meaning and its variability in context (see also Bosch (1985) for earlier work on contextual meaning of the lexicon). Lexical items are not taken as atomic units that carry a fixed semantic content, rather they are understood to contain distinct types of structural and sub-lexical information represented in form of complex types based on information on argument structure, events, qualia and semantic types. Different contexts can put into focus distinct sub-lexical features of the units combined.

For the rest of the article I attempt to show that the effects of inserting distinct types of theme arguments are actually quite regular, if we also take into account the nature of the theme arguments. The goal of this work, thus, is to show that though uses as observed above have usually been considered to be non-regular they actually correspond to a regular composition.

### 3.2 *Underspecification*

For the purpose of this paper the underspecification model is interesting in as far as it allows taking into account equally the meaning of the verb that enters the process of composition as well as the meaning of the theme. The hypothesis defended is that verbs basically possess underspecified lexical entries, which are only fully fleshed out by context. This allows for a certain meaning variation in the overall denotation of the event, rather than placing all the burden on the verb alone thus forcing polysemy. A direct consequence of the position is that great part of the traditional distinction between literal and figurative meaning is resolved, given that the mechanism of composition, which legitimates literal combinations, is the same that operates in the construction of the figurative.

Within the framework of the Generative Lexicon theory, an early study by Asher & Lascarides (2001) explored the metaphoric meaning transfer of change of location verbs (henceforth CoL verbs). They show that spatial constraints on the reference location (source, path, goal) are preserved over the distinct uses of the verbs, both in literal as well as metaphorical contexts. Their account defines an underspecified meaning for CoL verbs based on presuppositions about space and locations and how each CoL verb affects the trajectory of space. Type clashes of the combination of CoL verbs with non-spatial location arguments are resolved by a lexical rule that operates on the non-spatial reference locations

and forces a reinterpretation of abstract noun phrases as locations. One particular CoL verb, however, does not vary in meaning across the literal or metaphorical reference locations, laying this way part of the semantic burden on the theme. *Enter*, for example, requires the interior of a location as an argument, expressing the movement from a position close to the location to its inside. This kind of restriction on the reference location applies in (43). However, it also is maintained in (44), since according to Asher & Lascarides (2001), *crisis* is a state that occupies a non-gradable metaphorical three-dimensional location, comparable to a delimited space.

(43) John entered the room.

(44) John entered a crisis.

In contrast to that, a *line*, which is a two-dimensional object, is an infelicitous spatial argument for the verb *enter*, which is shown by the inadequacy of example (45).

(45) #John entered the line of permissible behavior.

Asher and Lascarides' account shows how a certain amount of more refined semantic content of the reference location has to be taken into account for the metaphoric uses of CoL verbs. By allowing the verbs and the arguments to possess complex semantic meanings the authors show how the underspecification model reevaluates the very nature of semantic composition itself turning it into a process of co-composition.

More recently De Miguel (in preparation) has defended that many verbs in Spanish, like *perder*, 'lose', *levantar*, 'lift', *dar*, 'give', *cortar*, 'cut' or *romper*, 'break' are best accounted for when understood as possessing an underspecified lexical meaning. She observes that all these verbs have very rich combinatorial possibilities, which come together with important differences in the interpretation of the predicate. For this reason these kind of verbs have often been claimed to possess only very light semantic content and are denominated *verbos de soporte*, 'verbs of support'. De Miguel (in preparation), building on a sub-lexical structure of features, argues that differences in meaning of the predicate are directly related to the sub-lexical information introduced by each of the distinct arguments the verb is constructed with. The most important sub-lexical features identified by De Miguel (in preparation) for the verbs she researched are whether the argument noun designates an object or an event, whether the object is preexistent to the event described by the verb or is brought about through the event, whether the nouns designated are simple objects (natural entities) or complex one (artefacts). However, De Miguel does not provide a full-fledged analysis of how the composition process works.

The approaches illustrated above coincide in the crucial observation that when words are combined the resulting meaning often deviates from what a standard compositional semantic view would make us expect. Thus with the intention of avoiding multiple definitions for the diversity of possible meanings of verbs, which verbs display in combination with distinct arguments, these accounts prevent enlarging the lexicon unnecessarily.

Following the insights of these approaches, I defend that with the model of underspecification the process of composition engages the theme argument actively in putting some requirements on its internal properties as well as its mereological structure and thus makes it contribute to the overall variable result meaning of *romper*-VPs. I follow the widely accepted observation according to which predicates impose selectional preferences on their arguments, but I argue that these are much more abstract than usually assumed. In agreement with the theory of lexical meaning by Asher (2011), I assume that predication involves not only functional application of a predicate to an argument, but crucially also takes into

account the theme argument's type via a mechanism like Pustejovsky's co-composition (Pustejovsky, 1995). More explicitly, contra the proposal of Asher & Lascarides (2001), which analyzes selectional shifts by an additional lexical rule, I defend that these kinds of shifts for *romper*-VPs can be independently explained by looking deeper into the semantics of the themes. The assumption that the composition process works straightforwardly, be it with physical nouns or abstract nouns with CoS verbs goes hand in hand with the idea that verbs like *romper* do actually not impose such concrete presupposition on the physical nature of the theme argument as 'physical object'.

In the next section I improve on a widely accepted model of event templates by introducing indexical variation in the resulting state in dependence of the theme. I thus claim that the so called metaphoric meanings as well as the literal meanings of change of state verbs are only apparently distinct when different kinds of themes are plugged in, while they really possess the same abstract semantic core.

#### 4 Handling meaning variation of *romper*-VPs through underspecification

My account of the underspecification of verbal meaning is crucially based on the involvement of the semantics of the them, which contributes in establishing the meaning of the VP in two ways: 1) I show that the notion of scales, which has identified properties as a key concept in the analysis of change predicates, is relevant for the meaning of *romper* across the variety of theme arguments observed in 2.2; 2) I explain variable gradability of *romper*-VPs based on the mereological complexity of the theme. This detailed analysis of the theme allows to systematize the selectional preferences of *romper* and reduces lexical entropy decisively.

##### 4.1 Accounting for variable results

To account for the variable results of *romper*-VPs I assume a verb decomposition with an indexical result property, which allows to account for the fact that the result of breaking-events is only fully defined in company of a particular theme argument. I take an event decomposition model as a syntactico-semantic skeleton, which incorporates the underspecified property that is ascribed to the affected theme. The modified event schema conveys that a *romper*-VP in Spanish, in absence of the theme argument, is always underspecified. There is only a nuclear meaning of bringing about the ceasing of a certain property of the theme argument, be it physical or temporal, but the exact final property is not lexically specified. I thus illustrate how the theme contributes actively to the composition process by providing the exact dimension of change.

In the course of the study of the semantics of verbs of change of state events have been associated with scales (Ramchand 1997; Caudal & Nicolas 2005; Piñón 2008; Kennedy & Levin 2008; Levin & Rappaport Hovav 2010) and it has been widely discussed how scales are present in certain groups of verbs that convey change, such as incremental theme verbs, change of location verbs and change of state verbs, while they are absent from others like verbs that denote states. For change of state verbs it has been noted in the literature (Abusch 1986; Ramchand 1997; Rappaport Hovav & Levin 2005) that the themes are generally associated with some property that is lexicalized in the verb and the scale is projected by the available degrees for this property. In the words of Ramchand (1997: 118) the 'name of the property state will often be related in some way to the lexical entry of the verb in question.' This property lexicalized in the verb is then attributed to the affected argument.

Given that the vast majority of the literature on the semantics of verbs assume a scalar semantics for CoS verbs, which is based on verbal properties, I take it as a base to fur-

ther elaborate on the variable result states *romper*-events can result in. Along with this assumption, I draw on the insight that events are not atomic units but rather have an internal structure, which articulates the verb's meaning justified by many syntactic and semantic facts (Dowty 1979; Rappaport Hovav & Levin 1998; Asher & Lascarides 2003). I thus assume a compositional syntax-semantics interface in the spirit of Levin and Rappaport's event templates.

I use the twofold RESULT template, which CoS verbs are typically associated with (Rappaport Hovav & Levin, 1998) to refer to the affected property expressed by the RESULT-STATE. The RESULT template makes use of a CAUSE and a BECOME operator, which are widely accepted whether they are treated as semantic or syntactic primitives, and puts them in relation with the resulting state brought about by the event. The RESULT-STATE predicates about the final state of the theme that combines with the verb under decomposition. The accomplishment event template in (46) establishes a relation between the causing subject and a patient, related to the cause by an aspectual operator BECOME as well as a resulting state:

(46) Result  $\rightarrow$  [[ x ACT ] CAUSE [ y BECOME < RESULT-STATE > ]]

The result, <RESULT-STATE>, represented by a state template, is idiosyncratic to each particular verb and is described by the past participle form of the verb, while the syntactic-aspectual template based on the operators CAUSE and BECOME is characteristic of a whole class of verbs.

For the verb *romper* the result state is ROTO, as illustrated in (47).<sup>4</sup> Thus, all actions denoted by the verb *romper* decompose either into a causative event, which has at its core a result state ROTO (47) or into a less complex event template, which lacks an explicit cause and only expresses the transition of *y* into the RESULT-STATE: ROTO (48).

(47) Result  $\rightarrow$  [[ x ACT ] CAUSE [ y BECOME < ROTO > ]]

(48) Result  $\rightarrow$  [ y BECOME < ROTO > ]

This kind of event template originally addressed variation in verb meaning only in form of a more or less complex syntactic event structure. Accordingly the RESULT-STATE template ignores the fact that the verb phrase's meaning is influenced by the semantics of distinct theme arguments, as illustrated throughout this study. Decomposing the verb *romper* into a result state ROTO thus strongly relies on the meaning of the RESULT-STATE, which directly relates to the deverbal adjective *roto* that is not further defined for the huge range of possible theme arguments. That is, the template implicitly relates back to a trivial lexical meaning conception for providing the meaning of the verb, or only takes into account a reduced number of real uses of the verb *romper*.

Yet, the present kind of syntactic decomposition is a useful way of portraying *romper* as a member of a bigger class of verbs, namely the CoS verb class. It also illustrates the direct relation between two forms of the alternating causative-anticausative syntactic realizations (47) and (48).<sup>5</sup>

<sup>4</sup>I assume based on Levin & Rappaport (1986) that the state-denoting constant ROTO 'BROKEN' is related to the deverbal adjective *roto*, which, unlike simple property states, describes a result state that entails a preceding change of state event (Levin & Rappaport 1986; Koontz-Garboden 2012).

<sup>5</sup>This representation actually oversimplifies the alternation. As shown by Koontz-Garboden (2009), in Romance languages, and very crucially in Spanish, the inchoative variants derived from a causative one actually retains the CAUSE operator. Under Koontz-Garboden's analysis this is due to the fact that under reflexivization the individual undergoing the change of state event is also the EFFECTOR participant in the event that causes the change of state. The crucial distinction between EFFECTOR versus AGENT roles in the causer

I will thus suggest an underspecified indexical result state of the kind  $\langle ROTO_i \rangle$ , which is context-sensitive through an indexical property. This property is theme-dependent, because it is only in composition with a particular theme argument that it is determined how exactly the theme is affected by the event of breaking. In other words, the property that is being modified is identified contextually with regards to the theme argument. Following the accomplishment event schema the event template is suitably modified as in (49) for the anticausative constructions and as in (50) for the causative constructions:

(49) Result  $\rightarrow$  [[ y BECOME  $\langle ROTO_i \rangle$  ]]

(50) Result  $\rightarrow$  [[ x ACT ] CAUSE [ y BECOME  $\langle ROTO_i \rangle$  ]]

By allowing the property to be argument-dependent the overall meaning of *romper*-VPs is rendered dynamically in composition.

#### 4.2 Accounting for variable gradability

In this section I illustrate how the gradable and non-gradable behavior of *romper* -VPs depends on the structural complexity of the distinct theme arguments combined with *romper*. The variable gradability displayed by *romper*-VPs is taken here as a further feature of underspecification.

As illustrated in the contrast of (6) and (7) *romper* can equally appear in gradable as well as in non-gradable events. Going deeper into the gradability of *romper*-VPs *romper* can appear within punctual events as shown by the following tests: 1) *romper*-VPs are incompatible with ‘for-adverbials’ *durante*-adverbials (51), 2) they do not allow for entailments from progressive to perfect (52), 3) they do not license comparisons (53).

(51) #Juan rompió el hilo durante un día.  
 Juan broke the thread during a day  
 Intended meaning: ‘John broke the thread for one day.’

(52) El hilo se está rompiendo.  
 The thread REFL is breaking  
 ‘The thread is breaking.’  
 $\nrightarrow$  The thread has broken.

(53) ??El hilo viejo está más roto que el nuevo.  
 The thread old is more broken than the new  
 Intended meaning: ‘The old thread is more broken than the new one.’

In company of other theme arguments, however, *romper*-VPs are gradable and thus do allow for 1) modification by *durante*-adverbials ‘for-adverbials’, (54), 2) they do show the progressive to perfect entailments (55) and 3) they do license comparison (56).

(54) El paleta rompía el ventanal durante 15 minutos.  
 The worker break-IMP the church window during 15 minutes  
 ‘The worker was breaking the church window for 15 minutes.’

(55) El ventanal se estaba rompiendo desde hace días hasta que se  
 The church window REFL was breaking from makes days until that REFL  
 partió completamente.  
 split completely  
 ‘The church window was breaking for days, until it split completely.’

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position also helps to explain that certain change of state verbs lack the anticausative variant, because they are specified for agents.

- (56) El ventanal viejo está más roto que el nuevo.  
 The church window old is more broken than the new  
 ‘The old church window is more broken than the new one.’

That is, gradable event descriptions for *romper* seem to take their more articulated scale from the extension of the theme *ventanal*. This fact makes the lexically scalar CoS verb *romper* look more similar to incremental theme verbs, which draw the scale from their theme arguments.

The contrast in gradability of *romper*-VPs between extent and non-extent themes, illustrated in the physical domain by comparing the theme arguments *hilo*, ‘thread’ and *ventanal*, ‘church window’, can also translate into the eventualities domain. Thus *romper* in combination with eventualities mostly results in a non-gradable VP, as illustrated in example (57), where *romper* combines with the state *silencio*, ‘silence’, which is not divisible into parts, and thus only allows for punctual *romper*-VPs:

- (57) #El grito rompió parcialmente el silencio.  
 The scream broke partially the silence  
 ‘The scream partially broke the silence.’

More complex states like an oral agreement, *acuerdo*, which we naturally assume to possess sub-parts, likewise describe punctual *romper*-VPs: applying the tests (54) to (56) to *acuerdo*, ‘agreement’, always triggers a binary result, namely the disobedience of one or both agreeing parties to the agreement, as illustrated in (58) to (60).

- (58) #Chávez rompió el acuerdo con Colombia durante media hora.  
 Chávez broke the agreement with Colombia during half hour  
 ‘Chávez broke the agreement with Colombia during half an hour.’
- (59) #El acuerdo con Colombia estaba rompiéndose desde hace días hasta que se rompió completamente.  
 REFL broke completely  
 ‘The agreement with Colombia was breaking for days, until it broke completely.’
- (60) #El acuerdo con Colombia está más roto que el acuerdo con Cuba.  
 The agreement with Colombia is more broken than the agreement with Cuba  
 ‘The agreement with Colombia is more broken than the one with Cuba.’

Explicit mention to a complex structure of the eventuality, however, can make *romper*-VPs gradable. This way the eventive interpretation of *acuerdo*, ‘agreement’ does in fact allow for a gradable VP. This occurs when the part structure of the agreement is made explicit. In (61) the salient interpretation of *acuerdo* is the holding state of a binding relation and yet the explicitly made parts structure, ‘imports’ and ‘cultural exchange’ make the *romper*-VP gradable. Consequently the *romper acuerdo*-VP is felicitously modified by the proportional modifier *parcialmente*, ‘partially’.

- (61) Chávez rompió (parcialmente) el acuerdo con Colombia al prohibir las importaciones de productos colombianos. El intercambio cultural, sin embargo, se mantuvo intacto.  
 Chávez broke (partially) the agreement with Colombia when prohibit the imports of products Colombian.PL The exchange cultural, without impediment, REFL maintain intact.

‘Chávez broke partially the agreement with Colombia by prohibiting the import of Colombian products. The cultural exchange, nonetheless was maintained.’

It is important to note that *acuerdo*, is a dual aspect noun and thus not only can denote a state, but equally a resultant written document.<sup>6</sup> The dual nature of *acuerdo* has consequences for the gradability of the event: When *acuerdo*, ‘agreement’ is interpreted as an eventuality without an explicit mention to the part structure, the event is preferably punctual, as the tests in (58) to (60) show. When it denotes a physical object, a written contract, which is the forced interpretation in examples (62) to (64) by the addition of modification, the *romper*-VP is preferably gradable, as the durativity tests illustrate.

- (62) Chávez rompía el largo acuerdo con Colombia durante media hora.  
Chávez breaking the long agreement with Colombia during half hour  
‘Chávez was breaking the long agreement with Colombia during half an hour.’
- (63) El acuerdo con Colombia, que estaba en la mesa de Chávez, estaba rompiéndose desde hace días hasta que se rompió completamente.  
The agreement with Colombia, that was in the table of Chávez, was breaking REFL from makes days until that REFL broke completely  
‘The agreement with Colombia, that was on the table of Chávez, was breaking for days, until it broke completely.’
- (64) El acuerdo con Colombia, en el papel rojo, está más roto que el del papel amarillo con Cuba.  
The agreement with Colombia, in the paper red, is more broken than the one of the paper yellow with Cuba  
‘The agreement with Colombia, on the red paper, is more broken, than the one on yellow paper with Cuba.’

The variable behavior of *romper* shows that the atomicity or the lack of atomicity of the event is not established by the verb alone. As the data illustrate, the part structure of a theme, be it an entity or an event, crucially contributes to establish the gradability of the verb phrase. Physical object themes seem to have a well-understood mereological structure, while it needs to be made explicit for abstract nouns thus defining by available information whether for example a particular *acuerdo* has subparts. All these facts illustrate that at the level of the VP gradability can come in through the structure of the theme.

After a bit of general introduction to the notion of degrees in the next section I flesh out how to account for this variable gradability of *romper*-VPs in a formal way.

## 5 Scales at the core of *romper*-VPs: a formal solution

The problem of defining the exact aspectual properties of a verb within a particular context is well known at least since Vendler (1967) and, as observed already by Dowty (1979: 62), it is additionally complicated by the problem of polysemy. Thus the following two sections explore the scale projected by *romper* and formalize how the mereological structure of the theme contributes to define the aspectual characteristics of a verb phrase with *romper*.

<sup>6</sup>*Acuerdo*, ‘agreement’ represents a typical example of a dual aspect noun, which can have two denotations. Dual aspect nouns are nouns with two distinct aspects, which are related to each other in a logical way. That is why *acuerdo* appears to have an ‘eventive’ and a ‘physical’ aspect. In composition one of the aspect is selected. In the theory of Pustejovsky (1995) and Asher (2011) this kind of nouns is also denominated ‘dot-objects’.

### 5.1 Defining the scale of romper

Within the recent discussion of verbal aspect and scalar verbs, degree achievement verbs, a subclass of CoS verbs with an adjectival core, have been used most clearly to argue that CoS verbs encode scales. Hay et al. (1999) noted that deadjectival degree achievement verbs like *lengthen* or *narrow* can be associated with a scale for the event they describe. Thus with the unfolding of the event the theme is associated with increasing values on the scale contributed by the verb's adjectival core, which has some naturally projected gradation.

Extending Kennedy & McNally's (2005)<sup>7</sup> analysis of scalar adjectives and Hay et al's analysis of degree achievements, Kennedy & Levin (2008) provide an analysis on which degree achievements contribute a measure of change function: a function  $m_d \uparrow$  that measures the degree to which an object changes along a scalar dimension due to undergoing an event (Kennedy & Levin 2008: 18):

(65) Measure of change

$$\text{For any measure function } \mathbf{m}, \mathbf{m}_\Delta = \lambda x \lambda e. \mathbf{m}_{\uparrow m(x)}(\text{init}(e))(x)(\text{fin}(e))$$

The measure of change function  $\mathbf{m}_\Delta$  takes an object  $x$  and an event  $e$  and returns the degree that represents the amount that  $x$  changes in the property measured by  $\mathbf{m}$  as a result of participating in  $e$ . With 'init' and 'fin' representing the initial and the final temporal points of the event the result is a positive difference between the degree to which  $x$  measures at the beginning of the event and the degree to which  $x$  measures at the end of  $e$ . Thus the crucial difference between measure functions encoded by adjectives and measure of change functions encoded by verbs is the fact that measure functions only return absolute degrees of scalar properties manifested by an object, while measure of change functions represent functions from objects and events to degrees and thus measure the difference to which an object manifests a particular property at the beginning and the end of an event (Kennedy, 2012).

According to Kennedy & Levin (2008: 19) degree achievements need to combine with the null degree morpheme *pos*, defined in (66), in order to denote properties of events:

$$(66) \quad \text{pos}(\mathbf{m}_\Delta) = \lambda x \lambda e. m_\Delta(x)(e) \geq \text{stnd}(m_\Delta)$$

(66) indicates that a verb based on a measure of change function is true of  $x$  and  $e$  just in case the degree to which  $x$  changes by participating in  $e$  exceeds the standard of comparison for the measure of change. A measure of change function is thus a difference function, which returns degrees of objects that represent the difference between the object's affectedness and another degree on the scale, which corresponds to the standard (Kennedy & Levin 2008: 174).

Assuming that change of state verbs in general encode measure of change functions, a *romper*-function measures the difference in the degree to which an object has the property ROTO at the beginning of the event versus the end of that event. The question that arises thus is: what is the standard of comparison for the predicate *romper*? Note here that the set of degrees associated with the property ROTO is special, since *romper* 'break' implies that there was no degree of brokenness immediate before the event. That is, *romper* allows

<sup>7</sup>Following Kennedy & McNally (2005) a scale is understood as a relation  $\langle S, R, \delta \rangle$ , where  $S$  stands for a set of ordered degrees,  $R$  for the ordering on  $S$  and  $\delta$  for the value that represents the dimension of measurement. The change in a particular property throughout the event thus takes into account whether  $S$  provides a open or a closed structure, whether  $R$  has an increasing or an decreasing ordering and which dimension  $\delta$  is affected by the change, and thus specifies the change along a scale. Scalar adjectives in this analysis are understood to denote functions from individuals to degrees.

basically for two values: the absence of the property ROTO or the presence of the property state ROTO, which appears as soon as the minimal part of the theme is ROTO. That means that the set of degrees is reduced to only two values  $\{0,1\}$  and does not project a complex degree-scale, unlike many degree achievements. Any minimal degree of brokenness of a particular theme is equivalent to the theme being ROTO. That is, the minimum non-zero value on the ROTO-scale is identical to the maximum non-zero value. Consequently, the standard of comparison of *romper* is not context dependent, as in the case of many degree achievements, but is always equal to 1, which makes the event telic by default.

The telicity of *romper* can be demonstrated using various diagnostics. For example, the progressive of *romper* does not entail the perfect (67). *Romper* can also appear in a culminating periphrasis *acabar de* ‘to finish’, which illustrates that the previous process that culminates in breaking is of a distinct kind (68).

- (67) El hilo se está rompiendo.  
 The thread REFL is breaking  
 ‘The thread is breaking.’  
 ↯ The thread has broken.
- (68) La cuerda acabó rompiéndose.  
 The rope finished breaking.REFL  
 ‘The rope finished breaking.’

That is, despite the common assumption that CoS verbs lexicalize measure of change functions, which measure the difference in the degree to which an object possesses a particular property at the beginning of the event versus the end of that event, *romper*, as a prototypically cited member of this class has a puzzling behavior.

Two options are available at this point: 1) the change of state verb class cannot be considered to be scalar across the board, because such a crucial member as *romper* is not straightforwardly scalar, considering a two-value systems non-scalar. 2) simple transitions with only two available value states, as instantiated by *romper*, can be included as special case of lexically encoded scales. Together with previous research, which has included two-point scales in scalar analysis (Ramchand 1997; Caudal & Nicolas 2005; Beavers 2008; Rappaport Hovav & Levin 2010) I take *romper* to lexicalize a two-point scale in order to preserve the intuition that verbs of change in general can be associated with scales.<sup>8</sup> That is, *romper* is associated with a binary scale, while the complex degree-scales for *romper*-VPs seem to arise through the part structure of a theme. A formal representation of the variable gradability, but not variable telicity of *romper*-VPs, is provided in the following section.

## 5.2 Computing the gradability of *rompers*-VPs with themes of distinct mereological complexity

For the sake of space, I will illustrate the semantic computation of *romper*-VPs with distinct theme arguments using the intransitive variant *romperse*.

To capture the effects of the mereological structure of the theme argument and thus account for the variable gradability of *romper*-VPs, I further adopt the approach to incremental themes in Kennedy (2012), which analyzes the part structure of the theme argument

<sup>8</sup>An anonymous reviewer raises the question whether it is worth considering a system of two values a scale, rather than admitting that some change of state verbs are not lexically scalar. I agree that there is a point to this view, yet it was not further elaborated on, since the choice between a trivial scale or a non-scalar verb *romper* is in fact not crucial for the present computation of the gradability of *romper*-VPs, given that *romper* is always telic and thus any more complex scale depends on the structure of the theme.

as encoding its own measure of change function that can be inherited by the VP as a whole.

The measure of change function encoded by *romperse* is given in (69):

$$(69) \quad \textit{romperse}: \lambda x \lambda e. \mathbf{romperse}(x, e)$$

According to Kennedy & Levin's (2008: 19) analysis a measure of change functions encoding verb needs to be type shifted through degree morphology to denote properties of events, which is done by the introduction of a null degree morpheme: *pos*.

$$(70) \quad \textit{pos}: \lambda g \lambda x \lambda e. g(x, e) \geq \textit{stnd}(g)$$

The measure-of-change-function  $g$  of type  $\langle e, \langle \epsilon, d \rangle \rangle$ , being  $\epsilon$  the type of events, combines this way with *pos* and gives as a result a relation between entities and events:

$$(71) \quad \textit{pos}(\llbracket \textit{romperse} \rrbracket): \lambda x \lambda e. \mathbf{romperse}(x, e) \geq \textit{stnd}(\mathbf{romperse})$$

This relation will hold iff the value of the measure of change function **romperse** on the pair  $x$  and  $e$  is greater than or equal to the standard value of the measure of change function. In the case of *romper* the standard is going to always be 1, as the data in the previous section indicate. The verb is now ready to combine with its theme argument. First I take a theme argument that denotes a simple entity with no internal structure, namely *silencio*:

$$(72) \quad \textit{romperse} \textit{el silencio}: (\lambda x \lambda e. \mathbf{romperse}(x, e) \geq \textit{stnd}(\mathbf{romperse}))(\mathbf{s}) = \lambda e. \mathbf{romperse}(\mathbf{s}, e) \geq \textit{stnd}(\mathbf{romperse})$$

After existential closure over the event argument we obtain:

$$(73) \quad \textit{romperse} \textit{el silencio}: \exists e. \mathbf{romperse}(\mathbf{s}, e) \geq \textit{stnd}(\mathbf{romperse})$$

The predicate will be true just in case there is a positive degree of change in the relevant property of silence. If *romperse* is associated with a two-point scale any minimal non-zero degree of the predicate *romper*  $d_{0+}$  is by default equivalent to the maximal degree  $d_{max}$ :  $d_{0+} = d_{max} = 1$ . That is, given that the non-null degree of change yielded by the *romper*-measure of change function is 1 and the theme argument silence is atomic in part structure, the VP is not gradable in any interesting way. Consequently, the predicate should be instantaneously telic, which is corroborated by the lack of examples like (74).

$$(74) \quad \text{El silencio se rompió parcialmente.} \\ \text{The silence REFL broke partially.} \\ \text{'The silence broke partially.'}$$

Recall, however, that *romper*-VPs can be non-trivially gradable when the theme argument has a part structure that can undergo the event of breaking by parts. To account for examples such as *romper el ligamento* 'tore the ligament' or *romper el hielo del polo norte*, 'break the ice of the North Pole' it is necessary to access the part structure of the theme. Here I follow Kennedy (2012), who introduces the incremental **partof**<sub>Δ</sub> function to handle incremental readings of DPs. As a basis for his analysis he assumes that an individual-denoting DP can combine with a partitive head *part<sub>inc</sub>*, which takes an individual  $x$  and provides an expression that measures the degree to which a portion of the constitutive parts  $y$  of  $x$  changes as a result of undergoing a change in an event  $e$ :

$$(75) \quad \textit{part}_{inc}: \lambda x. \lambda d \lambda y \lambda e. \mathbf{partof}_{\Delta}(x, y, e) \geq d$$

Applying (75) to the argument *el ligamento* 'the ligament' this relation will be true if the

portion  $y$  of ligament that has undergone a change as a result of the participation in the event exceeds the degree  $d$ :

$$(76) \quad \text{part}_{inc}(\llbracket el \text{ ligamento} \rrbracket): \lambda d \lambda y \lambda e. \mathbf{partof}_{\Delta}(\mathbf{l}, y, e) \geq d$$

According to Kennedy's analysis, when there is no overt degree phrase to saturate the degree argument of the incremental partitive, an appropriate standard takes over. In this case the degree argument is fixed to an implicit standard provided by the totally closed  $\mathbf{partof}_{\Delta}$  function. Total closure of the function is given by the fact that it measures degrees to which a quantity of  $y$  constitutes the entity  $x$ , and  $x$  is finite. The options for the appropriate standard are only two: a maximum standard and a minimum standard. That is, the value of  $d$  can be either  $>0$ , in the case that a minimal part of the individual  $x$  is affected, or 1. This offers the following two options for the  $\text{part}_{inc}$  function applied to *ligamento*, which correspond to examples (78) and (79) respectively.

$$(77) \quad \llbracket_{VP} \text{ romperse } \text{part}_{inc} \text{ el ligamento} \rrbracket =$$

- a.  $\text{part}_{inc}(\llbracket el \text{ ligamento} \rrbracket): \lambda y \lambda e. \mathbf{partof}_{\Delta}(\mathbf{l}, y, e) > 0$
- b.  $\text{part}_{inc}(\llbracket el \text{ ligamento} \rrbracket): \lambda y \lambda e. \mathbf{partof}_{\Delta}(\mathbf{l}, y, e) = 1$

(78) El ligamento se rompió parcialmente.  
 The ligament REFL broke partially.  
 'The ligament tore partially.'

(79) El ligamento se rompió completamente.  
 El ligamento REFL broke completely.  
 'The ligament tore completely.'

For the composition of the predicate *romperse* and  $\text{part}_{inc} \llbracket el \text{ ligamento} \rrbracket$  it has to be taken into account that both have the same type  $\langle e, \langle \epsilon, t \rangle \rangle$ . Consequently functor-argument application is not possible. Again here following Kennedy, I assume that the denotation of the nominal combines intersectively with the denotation of *romperse* via a version of Kratzer's Event Identification rule (Kratzer 1996) as follows:

$$(80) \quad \begin{array}{l} \text{a. } \lambda y \lambda e [\mathbf{romperse}(y, e) \geq \text{stnd}(\mathbf{romperse}) \wedge \mathbf{partof}_{\Delta}(\mathbf{l}, y, e) > 0] \\ \text{b. } \lambda y \lambda e [\mathbf{romperse}(y, e) \geq \text{stnd}(\mathbf{romperse}) \wedge \mathbf{partof}_{\Delta}(\mathbf{l}, y, e) = 1] \end{array}$$

Thus *romperse* in composition with the theme argument has two options. First, when we apply  $\mathbf{romperse}$  to some  $y$ , which corresponds to a part of the ligament and to some event  $e$ , the result will be true iff the value of the pair  $\langle y, e \rangle$  on the  $\mathbf{romperse}$ -measure-of-change-function equals or exceeds the standard for *romperse*, which as noted is equal to 1. This means that for each part that undergoes breaking, the breaking of the part is not a gradable event, but the whole VP can be gradable insofar as the predicate holds of successively larger parts of the ligament, parts which can be inherited by the VP as a whole, as illustrated in (80-a). Second, if on the other hand we take (80-b), where 1 is the standard value, we will get a completely non-gradable interpretation for *romperse el ligamento*. This predicate affects the theme holistically, which corresponds to an achievement-like interpretation for the VP *romperse el ligamento*. That is, the *romper*-VP obtains a more complex degree structure only through the extension of the theme.

The data illustrated here corroborate the previously explored idea that degree structure is not a purely lexical phenomena, in this case inherited from the verb, but rather is construed at sentence level (Dowty 1979; Krifka 1989; Caudal & Nicolas 2005; Kennedy 2012).

## 6 Conclusions

I have presented a study of the polysemy of *romper* based on data extracted from a Spanish press corpus, contrasting it with what has been said about the meaning of *romper* in other studies. This contrast has led to a discussion about the model of the lexicon. In this discussion I have argued in favour of an underspecification model, which is able to illustrate how verb and theme interact semantically.

With respect to the meaning of *romper* I have left underspecified the way in which the arguments of *romper* can be broken by illustrating that *romper* can select for different theme-characteristic properties. By taking into account distinct theme objects like physical entities, states and processes I have illustrated how they contribute to shape the overall result meaning of *romper*-VPs, which can vary from ‘disintegration’ to ‘ceasing’.

At the same time I have proposed a binary scalar analysis as the core component that is present throughout all *romper*-VPs independently of the theme argument. In analyzing the gradability variation of *romper*-VPs in terms of a simple scalar component in the verb and attributing to the theme the capacity to induce more articulated gradability this analysis is in line with the latest advances in the area of lexical semantics, which have emphasized the importance of scales as a core semantic component of change of state predicates in general (Hay et al. 1999; Caudal & Nicolas 2005; Rappaport Hovav 2008; Beavers 2008; Kennedy & Levin 2008; Levin & Rappaport Hovav 2010).

By making the overall result of a *romper*-VP dependent on a property of the theme susceptible to undergo a change, my analysis takes into account the semantics of the theme into the compositional result and thus follows recent work, which has emphasized the role that verbal arguments play in resolving how verb meanings differ when they combine with their arguments (Pustejovsky 1995; Asher 2011).

## A Appendix

In the following a summary of the major groups of themes actually combined with *romper* is provided. Each group of the instances of theme arguments attested in corpus appears in alphabetical order.

1. PHYS OBJECTS: *cadena*, *cartel*, *cejas*, *cristales*, *lunas*, *puertas*, *revista*, *camiseta* ‘chains, poster, eyebrows, glasses, mirrors, doors, journal, shirt’

2. STATES:

a) States: *aislamiento*, *compromiso*, *confianza*, *crédito de Mussolini*, *dependencia ideológica*, *desconfianza*, *dominio*, *equilibrio político*, *estancamiento*, *igualdad*, *indiferencia*, *monotonía*, *mutismo*, *neutralidad*, *silencio*, *situación de incertidumbre*, *soledad*, *solidaridad*, *tranquilidad social* ‘isolation, commitment, trust, reputation of Mussolini, ideological dependency, distrust, control, political balance, stagnation, equality, indifference, monotony, silence, neutrality, silence, situation of uncertainty, solitude, solidarity, social tranquility’

b) Unity: *cohesión*, *unidad*, *unión de la izquierda* ‘cohesion, unity, union of the left’

c) Relation: *acuerdo*, *alianza*, *compromiso matrimonial*, *la federación con el PP*, *relación diplomática*, *los vínculos de lealtad* ‘alliance, matrimonial commitment, federation with the Spanish Popular Party, diplomatic relation, ties of loyalty’

d) Norms: *esquema clásico*, *costumbres*, *huelga*, *ley*, *moldes*, *normas*, *principios de coexistencia*, *tabú*, *tradición*, ‘classical idea, customs, strike, law, molds, norms, the principles of coexistence, taboo, tradition’

3. PROCESSES: *carrera de armamento*, *círculo vicioso*, *conversaciones*, *desarrollo*, *evolución*, *mejor de la bolsa*, *negociaciones*, *progreso*, *racha de victorias*, *salida pacífica* ‘armament race, vicious circle, conversations, development, evolution, improvement of the stock market, negotiations, progress, run of victories, pacific exit’

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