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**Reflexive intransitives in Spanish and event semantics**

1 Introduction

The reflexive clitic se/sí in Romance languages assumes a great variety of functions, illustrated in (1)-(4) using Spanish data:

1. Reflexive/Reciprocal se:
   (a) José y María SE miraron en el espejo.
      Joe and Mary SE looked at 3pl in the mirror
      'Joe and Mary looked at themselves/each other in the mirror.'
   (b) José y María SE mandaron un mensaje.
      Joe and Mary SE sent 3pl a message
      'Joe and Mary sent themselves/each other a message.'
2. Middle/Passive se:
   (a) Esta camisa SE lava fácilmente.
      This shirt SE washes easily
      'This shirt washes easily.'
   (b) SE construyeron muchas carreteras el año pasado.
      SE built 3pl many highways the year past
      'A lot of highways were built last year.'
3. Anticausative se:
   Gracias a Dios, los cristales no SE rompieron.
   Thanks to God, the crystals neg SE broke 3pl
   'Thank God, the crystals did not break.'
4. Inherent se:
   María SE arrepintió de haber castigado a su hijo.
   Mary SE regretted 3sg of having punished to her son
   'Mary regretted having punished her son.'

Here all examples have a 3rd person subject, so, the clitic form used is consistently se. The reflexive clitic in fact takes different forms in accordance with the person/number value of the subject, as shown in (5).
accounts of RIs; the data in section 3.1 shows each of these to be ultimately inadequate. Our own analysis is presented in section 4. Section 5 concludes.

2 Background: transitive constructions with Se

Nishida (1994) observes that reflexive transitives (RTs) are most commonly distributed among three semantic classes: consumption of a spatial or temporal object (9), creation of an abstract ‘performance object’ (10), and acquisition by an agent of a (possibly abstract) object (11).

(9) Se come una manzana
   ‘to eat an apple’
   Se chupa un caramelo
   ‘to suck up a candy’
   Se fuma un puro
   ‘to smoke a cigar’
   Se pasa un día entero en la isla
   ‘to spend an entire day on the island’
   Se recita un poema
   ‘to recite a poem’
   Se canta una canción
   ‘to sing a song’
   Se escucha una simfonía
   ‘to listen to a symphony’
   Se ve toda la película
   ‘to see the whole movie’
   Se gana una lotería
   ‘to win a lottery’
   Se roba un collar de diamantes
   ‘to steal a diamond necklace’
   Se aprende una lección
   ‘to learn all the lesson’
   Se estudia un capítulo
   ‘to study a chapter’

The majority of the predicates are accomplishments with the direct object constituting an incremental theme (Dowty 1991). However, aspectual se also occurs with some stative verbs like saber ‘to know’ and conocer ‘to know/to be acquainted with’, as shown in (12). Here, the stative is coerced to an inceptive transition into the corresponding state (cf. de Swart 1998). It has been further claimed that stative predicates can only appear with aspectual se if the sentence they appear in can be interpreted as describing the resultative state of an accomplishment. This point will be relevant to the discussion of RIs in the next sections.

(12a) Se sabe toda la lección.
   ‘John knows all the lesson’
(12b) Se conoce toda la ciudad.
    ‘John knows all the city’
3 Intransitive constructions with se: ‘reflexive intransitives’

3.1 Data and descriptive generalizations

Reflexive intransitives are comprised of a non-transitive verb (a verb not taking a direct or indirect object) and se. The base verb for an RI can be purely intransitive (cf. dormir ‘to sleep’), take a goal or source argument (cf. ir ‘to go’ or salir ‘to get out’) or take a predicative complement (cf. estar ‘to be’). The data to be presented below show that, like RTS, RIs appear with both dynamic and stative predicates. Regardless of the aspectual properties of the base verb, dynamic RIs are achievement predicates denoting transitions, while stative RIs denote the result states of transitions.

A non-exhaustive list of RIs follows, where dynamic RIs are classified on the basis of how the transition comes about.\(^1\) For the most part, the essential meaning of the reflexive intransitive is the same as that of the base verb. If the se-cliticization yields a meaning different from the base verb, (cf. ir+se and dormir+se), this meaning is shown in parentheses.\(^2\)

Class I: Transition caused by a (possibly abstract) object moving away from/out of a location:

(13) escapar+se ‘escape+se’:
El chico SE (les) escapó de la casa.
'the boy SE (les) escaped from the house'

(14) ir+se ‘go+se (go away)’:
José SE (les) fue del pueblo en 1950.
'Jose SE (les) went from the village in 1950'

(15) marchar+se ‘march+go+se (march/go away)’:
El chico SE (les) marchó de la casa hoy.
'the boy SE (les) marched from the house today'

(16) pasar+se ‘pass+se’:
SE les pasó una gran oportunidad
'SE (les) gave them a great opportunity'

(17) volar+se ‘fly+se (fly away)’:
SE (les) voló el papel.
'SE (les) flew the paper'

Class II: Transition caused by an object reaching a location:

(18) caer+se ‘fall+se’:
El chico SE cayó del árbol.
'the boy SE fell from the tree'

(19) resbalar+se ‘slip+se (slip out)’:
SE le resbaló el jarrón de las manos.
'The vase slipped out of his/her hands.'

(20) venir+se ‘come+se (come away)’:
José SE vino de su patria cuando era niño.
'Joe SE came from his country when he was a boy.'

(21) saltar+se ‘jump+se (jump out)’:
SE le saltaron los ojos a la muñeca.
'The doll’s eyes popped out.'

Class III: Transition caused by a temporal object reaching an endpoint:

(22) venir+se ‘come+se’:
SE (le) vino la noche.
'SE (le) came that night'

(23) volver+se ‘come.back+se’:
SE (le) volvieron las cartas que había enviado.
'The letters that s/he had sent came back (to/on him/her).'

(24) subir+se ‘rise+se’:
SE le subió el vino a la cabeza.
'SE (les) gave the wine to the head'

(25) trepar+se ‘climb+se’:
El chico SE trepó hasta lo más alto del árbol.
'the boy SE climbed up to the top of the tree'

(26) pasar+se ‘pass+se (pass by)’:
SE les pasó el tiempo volando.
'The time went by flying.'

(27) terminar+se ‘end+se’:
SE (le) terminaron las vacaciones muy pronto.
'(His/her) The vacation came to an end (on him/her) very soon.'

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\(^1\) Note that we include only verbs that can appear with se for speakers of both Peninsular and Latin American Spanish.

\(^2\) Note that both animate and inanimate subjects are possible with aspectual se.
take a theme subject NP. Second, the above predicates are all achievements or the resulting states of transitions associated with those achievements, cf. the predicates in Class VI. Finally, unlike RTs, RI sentences do not involve an incremental theme; the homomorphic relation observed in RTs between the object denoted by the direct object and the event does not exist here. This holds even for the subject argument, which might be thought to behave like a direct object given the nature of unaccusative verbs.

However, the requirement for quantization in RTs does appear, although here it is a requirement on subjects. While RIs are compatible with a quantified subject NP, as in (35a), (35b) shows that nonquantized subjects are dispreferred. Note that this requirement is limited to RIs; the non-reflexive counterparts take a quantized or nonquantized subject NP (35c).

3.2 Previous analyses of RIs

Zagona (1996), Sanz (2000) and De Miguel & Fernández Lagunilla (2000) attempt to give both RTs and RIs a unified treatment. We consider each of their attempts in turn.

The focus of Zagona’s paper is to establish the link between the semantics (= eventuality descriptions) and the syntax (= reflexivity) of the constructions at issue. Zagona claims that “se only occurs with predicates whose object undergoes a change of state that marks the end of an event” (1996:481). According to Zagona, then, predicates which may appear with se are exclusively drawn from the class of what Pustejovsky (1995) calls ‘transitions’, formally represented as in (36a) by Zagona and as in (36b) by Pustejovsky himself. Note that Zagona’s eventualities are taken to be specified for spatiotemporal location:

(36) (a) \[
[ \tau \ e_1 \ldots e_2 ]^T
\]
(b) \[
[ \tau \ [ P \ S ] ] (T: Transition; P: Process; S: State)
\]
Zagona explains that for RTs, the direct object argument undergoes the change of state transition associated with the event, moving in space from $e_1$ to $e_2$, where the event culminates; as the event culminates, the direct object and the subject end up in the same temporal location. For RJs, it is the surface subject that undergoes a change of state (= change of location). Extending Zubizarreta’s analysis of Spanish se (1987), Zagona proposes that se in RTs and RJs is a verbal operator that binds a temporal argument (i.e. $e_2$) instead of a VP internal argument. Since $e_2$ is the final temporal location for the subject in both RTs and RJs, se as the binder of $e_2$ agrees with the subject, giving rise to structural reflexivity. Zagona’s proposal elegantly correlates syntax and semantics, but is empirically inadequate for RJs. Zagona only considers a small set of motion verbs: i.e. se to go away, caerse ‘to fall (from somewhere)’, subirse ‘to get on’, and treparse ‘to swing up’. While it is adequate for these verbs, the account does not generalize in an obvious way to many of the RI examples shown above, in which the correlation between transitions and movement is less clear.

De Miguel and Fernández Lagunilla (2000; hereafter DMFL) analyze se in RTs and RJs as “an aspectual operator that shows that the event culminates in one point that leads into a change of state.” 4 They point out that Zagona’s analysis is too coarse-grained, since some predicates denoting transitions can take se but others cannot. To resolve the problem, they divide Pustejovsky’s ‘transitions’ into five separate event types; for them, only those classes that include DMFL’s redefined ‘transition’ can take se. Unfortunately, this proposal is not an improvement on that of Zagona. First, DMFL’s criteria for classifying verbs into categories are unclear, as Martinez (2003) points out. For instance, the similar predicates llegar ‘to arrive’ enir(se) ‘to come’ are placed in different classes, although both predicates are compatible with both a source and a goal argument. Thus some distinctions made by DMFL appear unprincipled. Another problem is common to both Zagona and DMFL. Both assume that se makes no contribution to the aspectual composition of the RIs. This is true in some cases, but since V+se does sometimes have a different meaning than its clitic-free counterpart, this prediction is incorrect.

The final analysis we consider is that of Sanz (2000), who proposes a functional projection EventP which sits on top of the TP and whose head is specified for telicity among other features. She claims that se in both RTs and RJs is a marker of telicity, more specifically of accomplishments, and is inserted into the head of the EventP (Evt) to check and erase the feature [+telic]. Although Sanz’s proposal is an interesting one, it is empirically limited. First, she considers an extremely small set of data, i.e. caerse ‘to fall’, morirse ‘to die’, and a few motion verbs. Second, her claim that RI sentences are accomplishments like RTs cannot hold in view of the data seen above.

4 “El se es un operador aspectual que señala que el evento culmina en un punto desemboca en un cambio de estado.” (2000: 28).

Finally, none of the three analyses have any account for two important properties associated with RIs: first, that the subject NP must be quantized, and that RIs can co-occur with the dative of interest. The first property can be tied to the telicity requirement on the sentence introduced by se; we turn to this issue first in the analysis presented in the next section.

## 4 Analysis

Our analysis is meant to account for three basic facts about RIs: the telicity requirement on the sentence se appears in, which we take to result from a requirement for a quantized subject (similar to the quantized object requirement on RTs), the possibility of the ‘dative of interest’ with se-elicitation, and the association with a path of the temporal point at which the transition associated with the verbal achievement occurs. We explore each point in more detail and provide an analysis in the following sections.

### 4.1 Telicity and quantized subjects

Why is the reflexive intransitive resistant to a non-quantized subject NP? First observe the pair of English sentences in (37), where the achievement arrive is the main predicate.

(37) (a) Two travelers from China will arrive at the train station.
(b) Travelers from China will arrive at the train station.

Both sentences are true in situations where the arrivals of the travelers is simultaneous or spread over time. In (37a), the event described by the proposition under the scope of the modal operator is complete only when the two travelers have both arrived; thus no subevent of the described event has this property. As a result, the sentence is interpreted as telic. However, the bare plural subject in (37b) means that no definite endpoint can be determined for the described situation, for more travelers may always arrive; thus subevents may also instantiate the sentence, which is therefore atelic. For an intransitive sentence with an achievement predicate to be interpreted unequivocally as a telic situation, a quantized subject NP is required, in a way similar to the telicity that results from a quantized direct object (Krifka 1992).

As shown above, dynamic RIs are achievement predicates that denote a transition (sometimes as a result of aspectual coercion). RIs resist a non-quantized subject NP like a bare plural because such a subject allows the sentence to be interpreted as temporally unbounded, i.e. atelic. Ultimately, this means that RIs must depict telic situations, either an achievement or a series of achievements that extends over a definite time period.
We model this telicity requirement as a presupposition on the events denoted by sentences. Our specific assumptions are as follows. We follow Miller and Sag (1997), among others, in analyzing reflexive *se* as a clitic attached to the verb: thus e.g. *se murió* has the structure \[ ν [ c_l se ] [ ν murió ] \]. A piece of evidence in favor of this move is the fact that *se* cannot scope over conjuncted VPs:

\[ *\text{Juan se escapó de la casa y fue del pueblo} \]

Intended but unavailable: 'John escaped the house and left the village.'

We further assume that *se* is of type \( \langle (e_v, t), (e_v, t) \rangle \), and so composes with the denotation of a sentence before existential closure of the event argument.

In order to provide a (weakly) compositional semantics for *se*, we utilize the framework of Lexical-Functional Grammar (Bresnan 2001). LFG postulates that syntactic information is represented at multiple levels: among others, c(onstituent)-structure and f(unctional)-structure. Mappings among the various levels are accomplished through functional annotations on syntactic nodes. (39) is an example of how this mapping works, which we simplify by ignoring agreement information.5

\[ (39) \]

(a) Juan murió

John died-3sg

'John died.'

(b)

\[
\begin{array}{c}
\text{S} \\
\text{NP} \quad \text{VP} \\
\vdash \subj = \downarrow \\
| \\
N \quad V \\
\vdash = \downarrow \quad \downarrow = \downarrow \\
| \\
\text{Juan} \\
\text{murió} \\
\end{array}
\]

(c)

\[ \text{PRED ‘DIE(SUBJ)’} \]

\[ \text{SUBJ ‘JUAN’} \]

\[ \text{TENSE PAST} \]

\[ \vdash \]

5 In the sequel we will omit annotations of the form \( \vdash = \downarrow \), restricting attention to annotations that are associated with an f-structural attribute.

6 Note that *morir* ‘to die’ is an inaccusative verb.

The ‘glue semantics’ for LFG (cf. Dalrymple et al. 1997, Dalrymple 2001), reads semantic information off f-structures like that in (39b) to a third level, s(semantic)-structure, indicated with a subscript \( \sigma \) below. We use the version of glue semantics of Dalrymple (2001); in this theory, semantic objects take the form of \( \lambda \)-calculus expressions paired with linear logic formulas (Girard 1987). Glue semantics uses the multiplicative fragment of linear logic: the only connectives are \( \otimes \) ‘multiplicative conjunction’ and \( \rightarrow \) ‘linear implication.’ Note that LL verifies the following equivalence

\[ A \otimes B \rightarrow C \iff A \rightarrow (B \rightarrow C) \]

so implications with conjointed antecedents may be reanalyzed as iterated implications.

Linear logic is resource-sensitive; a premise may be used once and only once in a derivation. Girard provides the example of buying a pack of cigarettes. If a pack of cigarettes costs \$3 (\$3 \rightarrow poc) and one has \$3, then one can buy a pack of cigarettes; doing so, however, eliminates both one’s \$3 and the possibility of buying another pack. This derivation is shown in (40).7

\[ (40) \quad \$3, \$3 \rightarrow poc \models poc \]

In glue semantics, semantic composition occurs within the \( \lambda \)-expressions in tandem with derivations in the glue logic (using the Curry-Howard isomorphism). Since LL is resource-sensitive, expressions used in a derivation cannot be used again, as one would want for deriving the meaning of linguistic expressions. This also, of course, means that compositionality is upheld.

We now give a derivation for the clitic-free sentence Juan murió ‘John died’ shown above in ((41a)). The f-structure provides the following premise set for the glue logic derivation:

Juan : \[ [ \subj ]_\sigma, \lambda x. [ \text{died}(x) ] : [ \subj ]_\sigma \rightarrow \sigma \models \lambda x. \lambda e. [ \text{died}(e, x)](\text{Juan}) : \vdash \sigma \]

We assume that (41a) has the structure in (41b), which maps to the f-structure in (41c):

\[ (41) \quad \text{Juan se murió} \]

John SE died-3pl

'John died.'

7 We use the semantic entailment relation \( \models \) rather than the proof-theoretic \( \vdash \); the completeness of \( \text{LL} \) makes this an unproblematic move.
Se is analyzed as an adjunct here. As shown below, it semantically applies to the sentence (= set of events) in its scope. The sentence is defined only if the sentence denotes a set of telic events. We assume that interpretation functions are partial, and that presupposition failure causes the sentence to become undefined. See e.g. Beaver (2002) for discussion of this account of presuppositions.

Given the standard assumption that existential closure operations apply at the end of the semantic derivation, we need to clarify how se is able to determine whether a set of events is telic or not. We define two functions to aid us in making this work out. The first, $Einst$, is a choice function on sets of events (where $\varphi$ is a set of eventualities, i.e. a function of type $(ev, t)$):

$$Einst(\lambda e.[\varphi(e)]) = e'$$

Thus $Einst$ picks a characteristic eventuality from the set. We now need a function that tells us whether this eventuality is telic. We use one standard definition of telicity: that no event which is a subpart of $Einst(\lambda e[\varphi(e)])$ for a telic predicate $\varphi$ is an event of type $\varphi$ (Smith 1997). Now we define the predicate telic:

$$telic(\varphi) \iff \forall e'[e' \subseteq Einst(\varphi) \rightarrow \neg \varphi(e')]$$

Given these two functions, we can make a first pass at giving a lexical entry for se. Here $\uparrow_{\sigma}$ represents the semantic projection of a S-level constituent, i.e. something of type $t$. The material within curly braces {} represents the presupposition of se: that the sentence it applies to is telic.

$\delta$ Kjell Sanse notes (p.c.) that this approach to the definition is somewhat inelegant. It suffices for our purposes here, however.

Our last reflexive is $se = \lambda P_{(ev, t)}\{telic(P)\} . \lambda e.[P(e)] : \uparrow_{\sigma} \rightarrow \uparrow_{\sigma}$

Thus, se denotes a function from sets of events that returns the same sets of events just in case each eventuality in the set is telic.

We now show how this definition applies to examples with and without quantized subjects (ignoring steps of meaning computation irrelevant to se for simplicity). Node annotations are omitted. We also assume an operation of event existential closure like the assertion operator of Krifka (1992).

(42) RI with quantized subject:

(a) Dos hombres se murieron
Two men SE died.

(b) $S$

$$[\text{NP, V} \quad \text{NP, V}]
| D | N |
| \text{hombres} | \text{Cl} | V |
| se | murió$$

(c) $[\text{PRED 'DIE(SUBJ)'}]$

$[\text{SUBJ 'JUAN'}]$

$[\text{TENSE PAST}]$

$[\text{ADJ} \{\text{PRED 'SE'}\}]$

Since the sentence is telic, it passes the 'filter' imposed by the presupposition.

We now consider an example with a nonquantized subject. For sentences with bare plurals, SV word order is bad independent of the presence of se; for this reason, we use the VS word order, which we assume to be generated with the subject NP as complement of the (cliticized) verb.

$\delta$ Note that the word order in (42) is used simply for symmetry with other examples. An ordering in which the subject follows the verb—se murieron dos hombres—is probably more natural. This point does not affect the discussion.
(43) (a) *Se murieron hombres.
   SE died.3pl men
   'Men died.'
(b)  
   S
   VP
   Cl V N
   se murieron hombres
(c) $\lambda P.(e, d) \{telic(P), \lambda e. [P(e)]\}$
   $\lambda e. [\exists X [men(X) \land died(e, X)]]$:
   $\uparrow e \rightarrow \uparrow e, \uparrow e$
   $\Rightarrow$ undefined.

Since the sentence is not telic, it does not support the presupposition; so the sentence is undefined.

It would also have been possible to adjoin se to VP and give it a denotation of a higher type. Our syntactic assumptions did not allow this, but such a derivation would also have been legitimate.

A nice consequence of modeling se’s telicity requirement as a presupposition is that it is predicted to still hold when se appears in the scope of semantic operators, which indeed seems to be the case.10

(44) (a) No es el caso que se hayan muerto hombres
   no is the case that SE have.SSUBJ.3pl died men
   'It is not the case that men died.'
(b) *Es posible que se hayan muerto hombres
   is possible that SE have.SSUBJ.3pl died men
   'It is possible that men died.'
(c) *Juan cree que se murieron hombres
   John believe.3sg.pres that SE died.3pl men
   'John believes that men died.'

4.2 Dative of interest

A property possessed by RIs, but not by se-less intransitives, is the possibility of using the so-called ‘dative of interest’, which is realized in the form of a dative clitic or a dative clitic/NP pair, as in (45) and many of the sentences used in the RI classification above.

(45) (a) SE nos fue el tiempo volando.
   SE CL.1pl went-3sg the time flying
   'The time went by on us flying.'
(b) SE le resbaló el jarrón de las manos.
   SE CL.dat.3sg slipped-3sg the vase from the hands
   'The vase slipped out of his/her hands.'
(c) El niño SE le quedó dormido a la mamá.
   the boy SE CL.dat.3sg remained-3sg asleep to the mom
   'The boy fell asleep on the mom.'

The dative of interest in intransitive reflexives represents either an individual who conceptualizes the event (45a), or one who gets indirectly involved in/affect
ed by the event by holding some relationship of ‘interest’ with a direct participant in the event: e.g. being the possessor of an involved body part ‘the hands’ (45b), or a kinship relation (45c). Interestingly, the addition of the dative argument is only possible with the reflexive version even in cases when there is no apparent semantic difference between the reflexive and non-reflexive versions, as illustrated below. These pairs of sentences indicate that the dative of interest in reflexive intransitives is not licensed by telicity itself, because both the reflexive intransive and its non-reflexive version depict telic situations.

(46) (a) Hoy SE le murió el padre a José.
   Today SE CL.dat.3sg died-3sg the father to Joe
   'Today Joe’s father died (on him)/Joe had his father die on him'
(b) *Hoy le murió el padre a José.
    today CL.dat.3sg died-3sg the father to Joe
(47) (a) Su marido SE le quedó ciego en el incendio.
   Her husband SE CL.dat.3sg remained-3sg blind-masc.sg in the fire
   'Her husband became blind on her in the fire'
(b) *Su marido le quedó ciego en el incendio.
    Her husband CL.dat.3sg remained-3sg blind-masc.sg in the fire

Note that this behavior, in which an argument position is added, is the opposite of that seen in ‘argument’ clitics, which saturate one argument of their predicates (see Nishida 1991 on Spanish and Monachesi 1999 on Italian, among many others). We take the above facts to indicate that reflexive se simply adds a possibly implicit argument position to the predicate it appears with.11 This argument is related to the event described by the sentence under an underspecified relation R which receives its value from context. Thus we modify the basic lexical entry for se provided above, as follows:

11 Dalila Kahlil (p.c.) points out another possibility: that se introduces an additional event argument that is associated with an individual then expressed as the clitic. While this approach is interesting, since the nature of this event is not totally clear to us we choose to analyze le as an additional argument of the main predicate.
The case where the dative argument is unexpressed will be similar, except that \( Dsat \) will apply to \( se \) before composition with the sentence denotation.

It is also possible to 'double' the dative argument, though only if the dative clitic \( le \) is present (Gutiérrez-Rexach 1999). We do not consider the doubling facts in detail in the present paper due to space constraints, noting only that the phenomenon can be related to the necessity of doubling certain clitics when they are interpreted as event participants (Bleam 2000).

We treat the dative clitic licensed by the \( se \)-constructions as an oblique argument subcategorized for by \( se \) (a move preserving the intuitions described by Castaño 1999). For cases in which the dative argument is not realized by an overt argument, we assume a type-shifting operation \( Dsat \) which saturates the argument place added by \( se \):

\[
Dsat = \forall x \forall y. \exists z \exists t. [(\exists y. (\exists t. (ev, e, t))) \land \exists P(x, e) \land P(y, e, t) \land P(z, e, t)]
\]

We also assume an operation of existential closure that applies to the free variable \( x \) left by this operation in cases where it is not anaphoric to a previous nominal; the anaphoric case can be left up to standard processes of dynamic interpretation (Groenendijk and Stokhof 1991, Kamp and Reyle 1993, i.a.).

These assumptions give the following representation for a simplified variant of (46a):

\[
se = \lambda x. [\lambda P. (ev, e, t) \{telic(P) \land [\lambda e. P(e) \land R(x, e)]]]
\]

\[
[\sigma \otimes \top \sigma \leftarrow \sigma] 
\]

\[
(51) \begin{align*}
& (a) \text{ Juan se le murió a María } \\
& \text{ Juan SE Cl.dat.3sg died.3sg to María } \\
& \text{ 'Juan died on María.' }
\end{align*}
\]

\[
(52) \begin{align*}
& (a) \text{ MP for Class I verbs: } V : \exists e. [se(V, e, e) \rightarrow \exists z. [L(e) = B(p)]] \\
& (b) \text{ MP for Class II verbs: } V : \exists e. [se(V, e, e) \rightarrow \exists z. [L(e) = E(p)]]
\end{align*}
\]

4.3 Spatiotemporal paths

If RIs must denote a transition, what function does \( se \) assume in the aspectual composition of RIs? The majority of verbs that combine with \( se \)—all in Class I and II—are predicates denoting spatial movement with an inherent direction. RI sentences with movement verbs denote either the onset (Class I) or the final endpoint of the spatial path (Class II). Thus, we can say that \( se \) takes a process consisting of a directed path as its argument and focuses on one location, either on the onset or the final endpoint of that movement. Which endpoint of the path is focused on seems to depend on whether the movement is inherently source-oriented or goal-oriented.\(^{12}\) Note further that verbs without \( se \), as they combine with a source or a goal argument, can denote a transition, the onset or the final endpoint of the process.

We model the observations above using meaning postulates on verb classes (conditions on admissible models for sentences containing \( se \)). In the following \( p \) and \( d \) are variables over paths and locations respectively. Paths are totally ordered sets of spatial points. We assume the availability of two operators \( B \) and \( E \) on paths:

\[
B(p) = \{ d \in p \land \forall d' [d' \in p \land d \neq d' \rightarrow d' > d] \}
\]

and

\[
E(p) = \{ d \in p \land \forall d' [d' \in p \land d \neq d' \rightarrow d' < d] \}
\]

\( B \) thus picks out the initial point of a path, and \( E \) the final endpoint. We also need an operator \( L \), which is a function of type \( (ev, d) \rightarrow e \) that maps events to the locations at which they occur—a spatial analogue of the temporal trace function \( \tau \). Using these three operators, we can now define meaning postulates on the verb classes that describe their behavior with respect to their associated path arguments.

Given these postulates, any model verifying a sentence containing a Class I verb+\( se \) will contain a spatial path whose beginning is copatial with the spa-
tial location of the event described by the sentence; models verifying sentences with Class II verbs + se also contain a path, but here the location of the event is coparallel with the path’s final endpoint.

Se can also focus on a location of a process not involving spatial movement, e.g. on the final point in a temporal path, as in some class IV examples like that in (53) below.

(53) SE (le) terminaron las vacaciones muy pronto
    SE (CL.dat.3sg) ended-3pl the vacations very soon
    ‘(His/her) The vacation came to an end (on him/her) very soon’

The path-based semantics above can be extended to account for the way morir + se ‘die + se’ differs from morir ‘to die’. While nonreflexive morir can refer to any kind of death, morir + se describes one that is associated with a preparatory phase, as after an illness (cf. Sanz 2000). Thus it is incompatible with expressions implying a sudden accidental death, as shown in (54).

(54) (a) El colonel se murió después de años de sufrimiento.
    the colonel SE died-3sg after of years of suffering
    ‘The colonel died after years of suffering.’

(b) *El colonel se murió en un accidente de coche
    the colonel SE died-3sg in a accident of car
    ‘The colonel died in a car accident.’

These facts indicate that se is interpreted as introducing a path argument in the case of morir as well as that of some verbs in class IV such as terminar; here, however, it is a temporal path. This idea can be modelled in a manner analogous to what was done for the spatial paths above, simply by allowing d to range over paths that have both spatial and temporal coordinates. Now B maps paths to their spatiotemporal initial points, and E to their spatiotemporal final points. We can make use of τ to define a meaning postulate for verbs of this type. The following MP requires that all models verifying sentences with se contain a spatiotemporal path whose endpoint is temporally coextensive with the event’s runtime.

(55) MP for morir-type verbs V:
    \[\forall e (se(V(x, e)) \rightarrow \exists p [\tau(e) = E(p)])\]

In other cases, the verb combined with se focuses the beginning of a nondirected process or on the inchoative onset of a state. It may be that these cases can be analyzed as involving a ‘minimal path’ (Denis et al. 2003), which occupies only a single spatiotemporal instant and is thus equivalent to an achievement (= instantaneous transition). It is not clear to us at present whether an approach based on meaning postulates can capture the facts in a satisfying way.

5 Conclusion

To summarize, RIs have three distinctive properties. They require a quantized subject NP, they license a dative argument which stands in some relation with the event denoted by the sentence, and they coerce the verbs they appear with to achievements denoting a transition, the onset or the final end of a process or a state. We modelled these facts by introducing a presupposition of telicity on the VP associated with reflexive se, allowing RIs to be associated with a (possibly implicit) additional argument, and placing meaning postulates on verb types associating the temporal interval of the event with the initial or final point of a path.

We close with a final point. While we have shown that, in general, se requires quantized subjects, there are cases of habitual sentences like those in (56) in which nonquantized subjects are possible:14

(56) (a) Se le caen cosas
    SE CL.dat.3sg fall-3pl things
    ‘Things fall on/from him/her.’

(b) Si se caen gotas de vino, se manchará el sofá.
    If SE fall-3pl drops of wine, SE will stain-3pl the sofa
    ‘If drops of wine fall down, the sofa will get stained.’

We believe that these cases are special in that, as habituals, they involve an implicit quantification over events (cf. Smith 1997). Each of these subevents can be analyzed as involving a discrete amount of things or wine; each subevent, then, will be telic. We leave a detailed explication of this idea to future work.

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References


14 This fact was pointed out to us by Cristina Martínez Benito (p.c.).


