

Boundaries at play

Left-bounded reading of the *se* morpheme in the Spanish psych-domain

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The psych alternation

Psych verbs participate in a well-known alternation between **EXP** and **STM**:

- (1) a. [We]_{EXP} puzzled over [Sue's remarks]_{STM}. [ES]
 b. [Sue's remarks]_{STM} puzzled [us]_{EXP}. [EO]
 (Landau 2010)

Spanish alternates the **EXP** from a basic transitive **EO** verb (cf. (2)) to an intransitive **ES** verb (cf. (3)) by means of the *se*-morpheme.

- (2) Ana_{STM} divierte / asusta a Carlos_{EXP}.
 Ana entertains frightens to Carlos
 'Ana entertains / frightens Carlos.'
- (3) Carlos_{EXP} **se** divierte / **se** asusta.
 Carlos SE entertains SE frightens
 'Carlos gets entertained / gets frightened.'

The *se*-morpheme has been analyzed differently, as:

- ▶ true reflexive (Arad 1998, Grimshaw 1990)
- ▶ anti-causativizer (Schäfer 2008, Alexiadou & Schäfer 2010, Alexiadou & Iordachioaia 2014)
- ▶ inchoativizer, as in the causative inchoative alternation (De Miguel & Fernández 2000; Bar-el 2005)
- ▶ left-boundary marker in the so-called “inchoative states” (Marín & McNally 2005, 2011)

Research Questions I

In Spanish, how can we model...

- ▶ ... the different readings of the *se*-morpheme in the psych domain, i.e. reflexive reading and left-bounded state reading,
- ▶ ... the left boundary with psych-verbs,
- ▶ ... the different subtypes of psych-verbs, i.e. punctuals and non-punctuals
- ▶ ... the alternation between the morphologically simpler but semantically more complex verb (EO) to the morphologically more complex but semantically more simple verb (ES)?

In order to answer those questions:

- ▶ ontology of boundaries (Piñón 1997)
- ▶ lexical rules to model different readings of *se*-morpheme
- ▶ HPSG

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Reflexive reading

true reflexives: semantically transitive predicates

an external theta-role (i.e. **STM**) which has proto-agent properties

an internal theta-role (i.e. **EXP**) which has proto-patient properties

Both are assigned to the same entity (e.g. *Carlos* in (cf. (4)))

se reflexive reading (cf. Arad 1998) with:

- ▶ **Class II** e.g. *divertir* 'entertain' and *asustar* 'frighten' (cf. (4))
- ▶ **Class III** e.g. *amar* 'love' (cf. (5))

(4) [Carlos]_{EXP} se divierte / se asusta [a sí mismo]_{STM}.
Carlos SE entertains / SE frightens to him self
'Carlos entertains / frightens himself.'

(5) [Ana]_{EXP} se ama [a sí misma]_{STM}.
Ana SE loves to her self
'Ana loves herself.'

Canonical inchoative reading

se-morpheme in **class II** has generally been analyzed as a regular inchoativizer.

Inchoativity denoted with a BECOME operator (Dowty 1991)

BECOME picks up the transition from $\neg\varphi$ to φ .

BECOME models the change of state (CoS).

Telicity with CoS: *in*-adverbial measures the interval of an eventuality (cf. 6) (Dowty 1991).

- (6) La ropa se secó en 5 minutos.
the clothes SE dried in 5 minutes
'The clothes got dried in 5 minutes.'

- └ Different readings of se morpheme
 - └ Left-bounded reading

Left-bounded reading

But **class II** *se*-verbs: left-bounded states (Marín & McNally 2011)

Instead of an *inchoativizer*, class II *se*-verbs have a *left boundary* (based on boundaries ontology by Piñón 1997).

Left boundary is the beginning of the state the VP refers to.

Class II *se*-verbs exclude the interval prior to onset.

Telicity with left-bounded states: atelic. *in*-adverbial measures interval at the end of which the eventuality takes place, i.e. *ingressive* reading (cf. 7) (Piñón 1997)

- (7) Carlos se divirtió / se asustó en 5 minutos.
Carlos SE entertained SE frightened in 5 minutes
'Carlos got entertained / got frightened in 5 minutes.'

- └ Different readings of se morpheme
 - └ Left-bounded reading

Class II *se*-verbs can be further divided into 2 subclasses (Marín & McNally 2011)

Punctuals: e.g. *asustarse* 'get frightened', which denote a left boundary (i.e. a point in time) of a state (cf. 9).

[[*asustarse*]]

= $\lambda x \lambda e \exists e' [\text{BEG}(e, e', \lambda e'' [\textit{frightened}(e'', x)])]$

Non-punctuals: e.g. *divertirse* 'get entertained', which denote a state with a left boundary (cf. 8).

[[*divertirse*]]

= $\lambda x \lambda e \exists e', e'' [\text{BEG}(e', e'', \lambda e''' [\textit{entertained}(e''', x)])] \wedge e = (e'' \oplus e')$

Differences in reading with *for*-adverbial:

- ▶ **non-punctuals:** durative reading (cf. 8)
- ▶ **punctuals:** iterative reading (cf. 9)

- (8) Carlos se divirtió durante 5 minutos.
 Carlos SE entertained for 5 minutes
 'Carlos got entertained for 5 minutes.'

- └ Different readings of se morpheme
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- (9) Carlos se asustó durante 5 minutos.
Carlos SE frightened for 5 minutes
'Carlos got frightened for 5 minutes.'

se-morpheme combines with both punctuals and non-punctuals leading to two readings:

- ▶ non-punctual left-bounded state reading (cf. (8))
- ▶ punctual left-bounded reading (cf. (9))
- ▶ reflexive reading (cf. (4))

- └ Different readings of se morpheme
 - └ Left-bounded reading

Stimulus recover or stimulus implicature?

Class II *se*-verbs (cf. (10)) can add the stimulus back by means of a preposition.

- (10) Carlos *se* divirtió / *se* asustó con Ana.
Carlos *SE* entertained SE frightened with Ana
'Carlos got entertained / got frightened by (because of) Ana.'

However, *con Ana* is not an argument of the verb anymore (as in the transitive alternant (cf. (2))) but an adjunct (Vanhoe 2004).

The stimulus does not need to be implied, but it can be implicated (cf. (11)).

- (11) Carlos *se* divirtió / *se* asustó de la nada.
Carlos *SE* entertained SE frightened of the nothing
'Carlos got entertained / got frightened out of nothing.'

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Background for the analysis

Following previous HPSG analyses on clitics in Romance languages, we analyze the *se* **clitization** as **morphological** and not as a syntactic process

(cf. Miller & Sag 1997; Abeillé & Godard 2002; Crysmann 2003; Bildhauer 2007).

We make a distinction between **inflectional morphology** and morphological changes that **affect the** ARG-ST of a lexeme, (12)–(15).

(12) asust- -ar **-se**
fear- **-INF** -SE
'get frightened'

(13) * **se** asust- -ar
SE fear- INF
'get frightened'

(14) * asust- -a **-se**
fear- -3SG.PRS -SE
'get frightened'

(15) **se** asust- -a
SE fear- **-3SG.PRS**
'get frightened'

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Starting point: Semantic arguments

- ▶ IND has a value of type *semarg* (e.g. *ind*, *evlty*) (cf. Flickinger et al. 2003)
- ▶ The *eventuality* hierarchy is based on Bach (1986), enriched with the boundaries proposed by Piñón (1997).
- ▶ *boundary* is a subtype of *evlty* that is defined as being **a point in time** (and not an interval), and always **a boundary of a further eventuality** (cf. Piñón 1997).

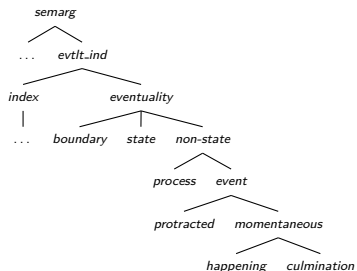


Fig. 2: Type hierarchy for *semarg*

Starting point: Semantic relations

- ▶ The value of RELS is a list of elements of type *sem-rels*.
- ▶ We treat θ -roles as well as predicates as subtypes of *sem-rels* and model θ -roles by means of an inheritance hierarchy (Machicao y Priemer & Fritz-Huechante 2018).
- ▶ We follow a neo-Davidsonian approach (cf. Parsons 1990; Copestake 2006).

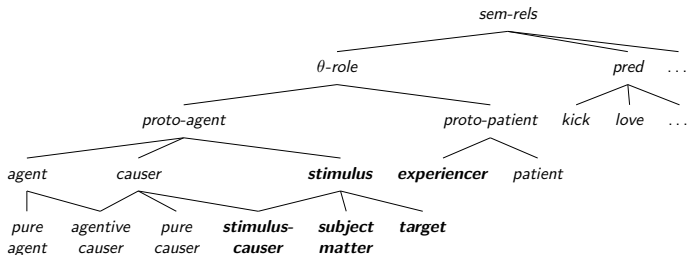


Fig. 3: Type hierarchy for *semantic-relations*

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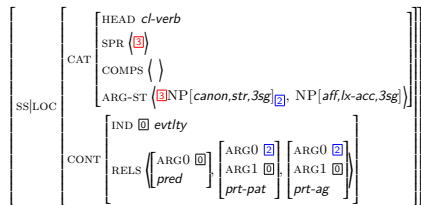
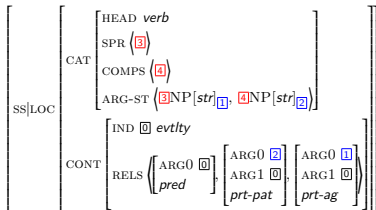
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True reflexive se

(20) Ana rasura a Carlos.
'Ana shaves Carlos.'

(21) Carlos se rasura.
'Carlos shaves himself.'

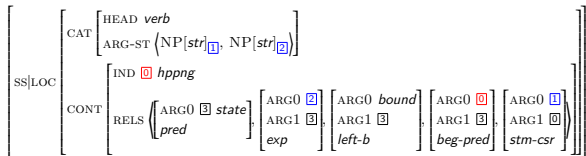


Affixes (non-canonical arguments) are **not mapped** into the **valency lists**.

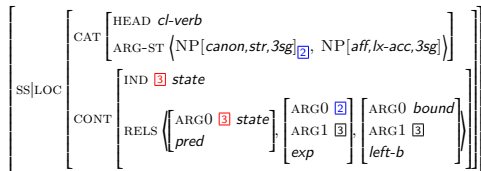
(following Bouma et al. 2001; Abeillé & Godard 2002)

Non-punctual left-boundary se

(22) Ana divierte a Carlos. 'Ana entertains Carlos.'

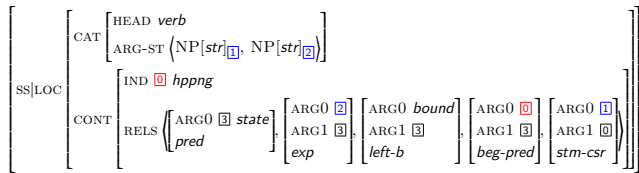


(23) Carlos se divierte. 'Carlos gets entertained.'

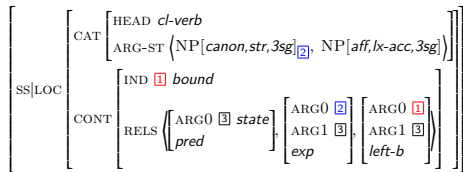


Punctual left-boundary se

(24) Ana asusta a Carlos. 'Ana frightens Carlos.'



(25) Carlos se asusta. 'Carlos gets frightened.'



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- ▶ What are the **commonalities** between the **true reflexive** and the left-bounded readings with the *se*-clitic and how can they be modeled?
- ▶ We propose to account for the similarities between the two structures by means of an **inheritance hierarchy for lexical rules**.

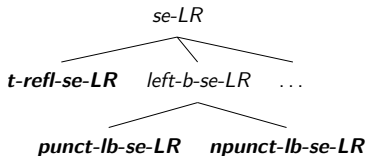
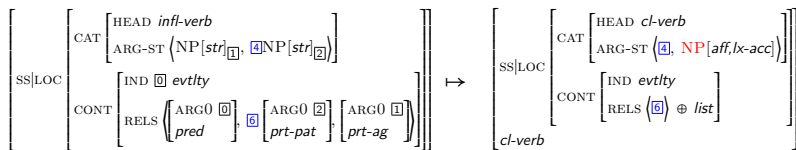


Fig. 4: Lexical Rules for *se*-morpheme

Generalization: Underspecified se-LR

(26) Constraint for se-LR:



Generalisations: *true-reflexive-se-LR*

(26) Constraint for *se-LR*:

$$\left[\begin{array}{l} \text{SS|LOC} \\ \left[\begin{array}{l} \text{CAT} \left[\begin{array}{l} \text{HEAD } \textit{infl-verb} \\ \text{ARG-ST} \left(\text{NP}[\textit{str}]_{[1]}, [4] \text{NP}[\textit{str}]_{[2]} \right) \end{array} \right] \\ \text{CONT} \left[\begin{array}{l} \text{IND } [0] \textit{evltly} \\ \text{RELS} \left(\left[\text{ARG0 } [0] \right], [6] \left[\text{ARG0 } [2] \right], \left[\text{ARG0 } [1] \right] \right) \end{array} \right] \end{array} \right] \end{array} \right] \mapsto \left[\begin{array}{l} \text{SS|LOC} \\ \left[\begin{array}{l} \text{CAT} \left[\begin{array}{l} \text{HEAD } \textit{cl-verb} \\ \text{ARG-ST} \left([4], \text{NP}[\textit{aff,ix-acc}] \right) \end{array} \right] \\ \text{CONT} \left[\begin{array}{l} \text{IND } \textit{evltly} \\ \text{RELS} \left([6] \oplus \textit{list} \right) \end{array} \right] \end{array} \right] \end{array} \right] \left[\begin{array}{l} \textit{cl-verb} \end{array} \right]$$

(27) **Constraint for *t-refl-se-LR*:**

$$\textit{cl-verb} \mapsto \left[\begin{array}{l} \text{SS|LOC} \\ \left[\begin{array}{l} \text{CAT} \left[\begin{array}{l} \text{HEAD } \textit{cl-verb} \\ \text{ARG-ST} \left(\text{NP}[\textit{str}]_{[2]}, \text{NP}[\textit{aff}] \right) \end{array} \right] \\ \text{CONT} \left[\begin{array}{l} \text{IND } [0] \textit{evltly} \\ \text{RELS} \left(\left[\text{ARG0 } [0] \right], \left[\text{ARG0 } [2] \right], \left[\text{ARG0 } [2] \right] \right) \end{array} \right] \end{array} \right] \end{array} \right] \left[\begin{array}{l} \textit{t-refl-cl-verb} \end{array} \right]$$

Generalizations: *left-bounded-se-LR*

(26) Constraint for *se-LR*:

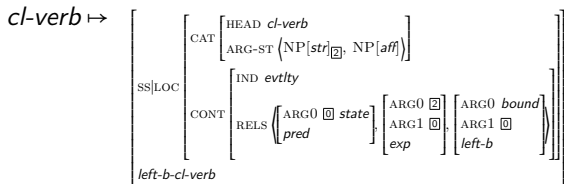
$$\left[\begin{array}{c} \text{SS|LOC} \\ \left[\begin{array}{c} \text{CAT} \left[\begin{array}{c} \text{HEAD } \textit{infl-verb} \\ \text{ARG-ST} \langle \text{NP}[\textit{str}]_1, \text{NP}[\textit{str}]_2 \rangle \end{array} \right] \\ \text{CONT} \left[\begin{array}{c} \text{IND } \textit{evtlty} \\ \text{RELS} \langle \left[\begin{array}{c} \text{ARG0 } \textit{pred} \end{array} \right], \left[\begin{array}{c} \text{ARG0 } \textit{prt-pat} \end{array} \right], \left[\begin{array}{c} \text{ARG0 } \textit{prt-ag} \end{array} \right] \rangle \end{array} \right] \end{array} \right] \end{array} \right] \mapsto \left[\begin{array}{c} \text{SS|LOC} \\ \left[\begin{array}{c} \text{CAT} \left[\begin{array}{c} \text{HEAD } \textit{cl-verb} \\ \text{ARG-ST} \langle \text{NP}[\textit{aff}], \text{NP}[\textit{lx-acc}] \rangle \end{array} \right] \\ \text{CONT} \left[\begin{array}{c} \text{IND } \textit{evtlty} \\ \text{RELS} \langle \textit{list} \rangle \oplus \textit{list} \end{array} \right] \end{array} \right] \end{array} \right] \\ \textit{cl-verb} \end{array} \right]$$

(28) Constraint for *left-b-se-LR*:

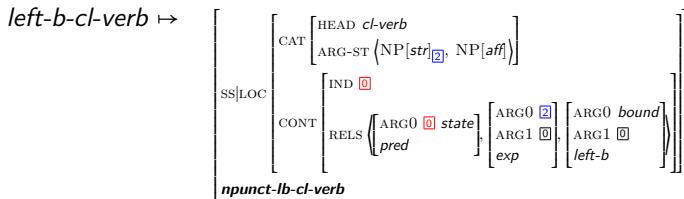
$$\textit{cl-verb} \mapsto \left[\begin{array}{c} \text{SS|LOC} \\ \left[\begin{array}{c} \text{CAT} \left[\begin{array}{c} \text{HEAD } \textit{cl-verb} \\ \text{ARG-ST} \langle \text{NP}[\textit{str}]_2, \text{NP}[\textit{aff}] \rangle \end{array} \right] \\ \text{CONT} \left[\begin{array}{c} \text{IND } \textit{evtlty} \\ \text{RELS} \langle \left[\begin{array}{c} \text{ARG0 } \textit{state} \\ \textit{pred} \end{array} \right], \left[\begin{array}{c} \text{ARG0 } \textit{exp} \\ \textit{exp} \end{array} \right], \left[\begin{array}{c} \text{ARG0 } \textit{bound} \\ \text{ARG1 } \textit{left-b} \end{array} \right] \rangle \end{array} \right] \end{array} \right] \end{array} \right] \\ \textit{left-b-cl-verb} \end{array} \right]$$

Generalizations: *non-punctual-left-bounded-se-LR*

(28) Constraint for *left-b-se-LR*:

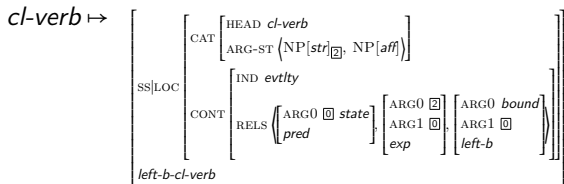


(29) Constraint for *npunct-lb-se-LR*:

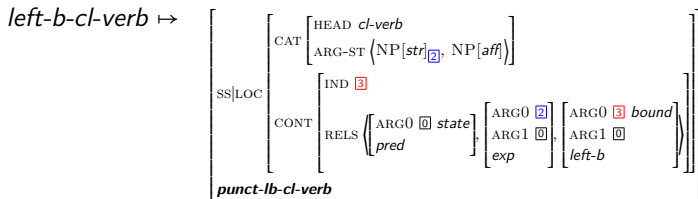


Generalizations: *punctual-left-bounded-se-LR*

(28) Constraint for *left-b-se-LR*:



(30) Constraint for *punct-lb-se-LR*:



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Conclusions

- ▶ Description of 3 different readings for the *se*-morpheme in a unified account
- ▶ Dative verbs (e.g. *gustar* or *amar* with dative) cannot build the *se*-form.
- ▶ Verbs of the class of *amar* (with accusative) cannot build the left-bounded readings.
- ▶ Verbs like *divertir* and *asustar* can have a true reflexive as well as a left-bounded reading.
- ▶ The analysis shows the similarities between the analyzed structures.
- ▶ Similarities to passive and medio-passive constructions can also be seen.
- ▶ The proposed analysis takes a morphologically simple but semantically more complex item (e.g. *asustar*), and derives a morphologically more complex but semantically more simple item (e.g. *asustarse*).
- ▶ An analysis in terms of boundaries enriches the type hierarchy for eventualities in HPSG and provides a more fine-grained classification of psych-verbs, i.e. a distinction between punctuals and non-punctuals.



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