Chapter 7
Spanish Clitics, Events and Opposition Structure

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7.1 Introduction

In this paper we will try to elaborate a unified analysis of the Spanish clitic *se*, capturing its polysemy in terms of underspecification of case features. Although a sense enumeration analysis is always possible,[1] it is not clear that the whole range of data can be captured with a reduced set of senses. Such an approach may also require additional senses (or subcategorization) frames for those verbs that allow the corresponding cliticization. From a computational point of view, a sense enumeration model creates lexical ambiguity, which in the case of *se* results in ambiguous syntactic structures. These multiple syntactic trees must be resolved at discourse level. Consequently we will look at the minimal assumptions for a single lexical entry for the Spanish clitic *se*. It is underspecified for the accusative-dative and singular-plural distinction. It is non-first person (allows 3rd person or 2nd person antecedents: *usted*, *ustedes*). Unlike other clitics it is anaphoric. As the least specified clitic, it can be used as impersonal: it is a least informational referring noun phrase.[2]

[1] See Pustejovsky (1995) for a critical view of a sense enumeration model, in particular regarding control and light verbs.

[2] This is not an exclusive characteristic of the *se* clitic in Spanish: third person plural forms are similarly used with impersonal interpretation (with or without clitic), second person singular is used in an impersonal generic interpretation and finally the pronoun *uno* is also used in a similar way.

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Given these characteristics, co-composition and underspecification in the sense of the Generative Lexicon (Pustejovsky 1995, henceforth GL) play a crucial role. High underspecification and co-composition result in a very complex set of possible combinations.

The general goal of our approach is to provide a unified analysis for the clitic *se*, while also considering the contribution of this analysis to clitics in general. We argue that the system of syntactic features that characterizes the paradigm of Spanish clitics must map systematically, both to the syntax or the related semantic distinctions that they enable.

The specific goal of this paper is to show that the sense enumerative view of different lexical entries for the clitic *se* is not only theoretically undesirable but also empirically inadequate. Rather, the data strongly suggest a unified generative analysis is superior, in that it accounts for the full range of compositional alternatives presented with *se*. In Sect. 7.1.1 we discuss the sense approaches to *se* and their shortcomings. In Sect. 7.1.2 we briefly present the features of Spanish clitics. In Sect. 7.3 we present data that show the occurrence of the clitic *se* in a paradigmatic variation. These data question the different senses for the clitic *se* assumed in the literature. In Sect. 7.4 we present the basics of the framework we are going to use to consider the data. We also discuss some examples concerning dative clitics. In Sect. 7.5 we discuss the *se* data using the machinery we introduced in the previous section. In Sect. 6 we present the conclusions and we discuss some ideas for future work concerning a mapping from arguments to Event Structure in terms of the computation of the Event Persistence Structure (Pustejovsky 2000).

7.1.1 Lack of Unified Analysis in Different Frameworks

It is not possible to review the rich literature addressing the behavior of the Spanish clitic *se* and equivalent forms in other Romance languages here. What remains in this section presupposes the reader has knowledge of some terminology used concerning clitics. Although we are considering only Spanish data, there are many common properties concerning the clitic *se* in Romance Languages, and common assumptions were made in the literature, as will be seen in this section.

7.1.1.1 The Argument/Non-argument Clitic Distinction

The literature typically assumes that there is a distinction between ‘argument’ and ‘non-argument’ clitics, (Monachesi 1999; Sportiche 1998; Grimshaw 1981; Borer and Grodzinsky 1986; Cinque 1988; Zubizarreta 1982 and others), whatever the nature of the non-argument clitic might be. There is a tension between a desired or intended generalization which requires a clitic to be related to an ‘argument’.

The 'non-argument' clitics emerge as exceptions that cannot be accounted for by any attempt of generalization. In a GB[3] or Minimalist framework this could be stated as:

> . . . the clitic . . . must be linked to one of the thematic slots available in the head, . . .
> Borer (1983), p. 39[4]

There is a change in the following statement after the so called non-argument clitics are acknowledged:

> . . . pronominal clitics typically satisfy subcategorization requirements of verbs, and as such are in complementary distribution with the syntactic category for which such a verb subcategorizes
> Borer (1986)

> . . . all clitics, with the sole exception of ethical clitics, must be linked to a thematic role in the theta-grid of the verb.
> Jaeggli (1986) p. 28

The canonical and more recalcitrant example of non-argument clitics is the ethical dative, and a very well known example from Spanish is (11a) a variant of which is quoted by Jaeggli (1986).[5] The problem that non-argument clitics pose has been addressed in the following ways:

> a suggestion that seems plausible is to assume that these clitics [ethical datives] are not assigned a theta role by the predicate but rather that they themselves contribute a theta role to the verb . . . as with clitics in the inalienable possession construction . . .
> Jaeggli (1986) p. 24

Masullo (1992) gives an account of several Dative clitic constructions (with different interpretations: possessor, location, etc.) via an Incorporation analysis. He follows the UTAH (Baker (1988)), and consequently the clitics must be generated in a theta-position.

Sportiche (1998) also proposes certain clitics are exceptional:

> French inherent clitic verbs could just as well list a theta-less clitic object, which would then be subject to the normal rules for clitic placement. Likewise, for ethical dative constructions, in which the clitic is not obviously related to the verb, we would have to allow the generation

[3]Government and Binding Theory or the Principles and Parameters Theory, the work which was done in the Chomskyan framework in the 1980s.

[4]Similarly, Kayne (1975) states that clitics must be generated in a subcategorized position. For Jaeggli (1982), clitics absorb government; for Zubizarreta (1982) and Aoun (1985), clitics may absorb theta-roles, and, for Sportiche (1998), clitics are associated with an NP argument (via LF movement).

[5]Jaeggli (1986) claims: "... only first- and second-person clitics are perfectly natural in the ethical dative construction, while third-person clitics are either completely unacceptable or highly unnatural."

We don't agree with this claim. The example he quotes:

> Este chico no le come! (This kid does not eat for him/her!)
> is perfectly fine for us.

Fig. 7.1 Inherent reflexive

$$\left[\begin{array}{l}\text{HEAD}\left[\begin{array}{l}\textit{verb}\\ \text{AGR}\ \boxed{1}\end{array}\right]\\ \text{VAL}\left[\begin{array}{l}\text{SUBJ}\ \langle \text{NP}\rangle\\ \text{COMPS}\ \textit{elist}\end{array}\right]\\ \text{CLTS}\left\langle \text{NP}\left[\textit{mark-ss},\ \text{AGR}\ \boxed{1}\right]\right\rangle\end{array}\right]$$

> of a theta-less XP headed by the dative clitic, which would then be subject to the normal rules of clitic placement. ... Since clitics usually are linked to an argument position, inherent clitics and ethical datives would constitute an exceptional class of clitics.

In a different framework, HPSG, the "argument-hood" requirement for clitics is stated as an alternation between basic verbal forms and verbal forms bearing clitics. For example, in Miller and Sag (1997) the verbal forms with clitics have reduced subcategorization frames or in Abeill'e et al. (1998), clitics must be connected to the ARG-ST list. In Monachesi (1999) the "argument-hood" requirement is stated as a modification in the COMPS value for a verb with a clitic.[6] The exceptions are encoded as particular lexical entries: e.g. the inherent reflexive proposed as non-arguments by Monachesi (1999), p. 113:2, shown in Fig. 7.1.

As a final example, in LFG, (e.g., Grimshaw 1981) non-reflexive clitics are assigned grammatical functions (OBJ and A OBJ). On the other hand, intrinsic clitics:

> do not correspond to logical or grammatical arguments of the verb at all

They are only a grammatical marker. Also, reflexive clitics are dealt with using a lexical reflexivization rule. Alsina (1996) claims that reflexive clitics are argument structure binders.

Assuming this division (argument/non-argument clitic), however, proves to be quite problematic: either different lexical entries for the same clitic must be posited or different syntactic operations must be performed by a single item (which are not allowed for other elements of the same class). On the view presented here, both solutions are equivalent and undesirable.

7.1.1.2 Additional Partitions for the Clitic *se*

Regarding the clitic *se*, there are three additional partitions considered in the literature: The nominative/non-nominative *se*, the anaphoric/non-anaphoric *se* and the pronominal/morphological marker. For instance, Burzio (1986), Manzini (1986), Cinque (1988), Masullo (1992) and others, assume a nominative/non-nominative *se*. On the contrary, Dobrovie-Sorin (1998) claims that Romanian does not have

[6] Similarly, the Impersonal, Middle, Ergative Lexical rules (IMPSI-LR), (MIDSI-LR), (ERGSI-LR), operate on the argument structure list and valence values.

nominative *se* and her analysis is based on the anaphoric properties of *se*. The distinctions between nominative *se* is grounded in the Italian tradition[7] and it was based in examples like those in (1) where an explicit subject and the clitic *si* cannot occur[8]:

(1) a. Non si è mai contenti.
not SI is ever satisfied
'One is never satisfied'

b. Spesso si è trattati male.
frequently SI is treated bad.
'One is often ill-treated.'

c. (Prima o poi) si scopre sempre il colpevole.
(Sooner or later) SI discover always the culprit
'(Sooner or later) one always discovers the culprit.'

However, Manzini (1986) acknowledges the following problems to associate the impersonal *si* with the subject position (or nominative case, if it is assigned to the subject position):

> Similarly, the distribution of impersonal *si* is quite different from the distribution of the subject clitics in Northern Italian. The Northern Italian subject clitics, at least in the variety illustrated here with the Modena dialect, appear before the negation particle, like the French subject clitics and unlike impersonal *si*, … What is more, in Modenese the impersonal element, s(e) can and must co-occur with a subject clitic, to be precise the expletive subject clitic

For instance, the Manzini (1986) and Cinque (1988) argument for the Italian *si* as nominative is based on the fact that it cannot occur in infinitival control clauses[9]:

(2) *E' bello lavarsi volentieri i bambini.
It is good [one to gladly wash the children].

(3) *E' bello andarsi volentieri.
It is good [one to glady go]. Manzini (1986)

[7]We are not going to address here if the italian *si* is equivalent to the Spanish *se*, a question which is quite beyond the scope of this paper.

[8]These examples are given by Cinque (1988).

[9]However they do not address the issue of possible interactions between, PRO arb and *si*, considering that although the interpretation is similar, it is not exactly the same: PRO arb is not equivalent to pro arb.

But the following examples show that it is possible in Spanish to have an explicit embedded subject in the same type of clauses, although *se* seems not to be possible (as in the Italian examples above)[10]:

(4) Es bueno resolver **uno** los problemas.
Is good to-solve one the problems.
'It is good to solve the problems oneself.'

(5) Sería bueno para María resolver **ella misma** los problemas.
Would-be good for Maria to-solve she self the problems.
'It would be good for Maria to solve the problems herself.'

These data undermine the argument that impersonal *se* cannot be possible in embedded infinitives because nominative case is not assigned by infinitives. On the other hand, the following examples show that the impersonal *se* is possible in embedded control infinitives.

(6) En caso que quisiera aprobar*se* estas leyes habría que convencer al gobernador.
In case that would-want to-aprove-SE these laws would-have that convince the governor.
'If one wants to aprove these laws one should convince the governor.'

(7) En caso que quisiera presentar***se*** las propuestas después de té rmino, hay que presentar un escrito.
In case that would-want to-present-SE these proposals after the deadline have that present a written.
'If you want to present the proposal after the deadline you have to present a written letter.'

We are not going to discuss at length the whole range of issues that the so called impersonal *se* raise, but we want to point out that its distribution is also constrained by tense/mood and discourse factors (see Cinque 1988). There are other partitions proposed in the literature, like the anaphoric/non-anaphoric *se*, which includes some non-argument (e.g. inherent and nominative *se*). Also, it is very common to assume that the 'non-argument' clitic *se* is an aspectual marker (Nishida 1994; Arce-Arenales 1989; De Miguel Aparicio 1992, and others). How these partitions are integrated, distinguished, or consistent is quite problematic and varies from approach to approach. Although not addressed fully in this paper, it will be apparent that our approach considers the argument/non-argument question in a

[10]This is not a clear cut judgment. The following sentence is perfectly fine, although the interaction with PRO arb, makes the interpretation a little different, and clearly similar to an ethical dative:
(1) Es bueno resolverse los problemas.
Is good to-solve-SE the problems.
'It is good to solve the problems by yourself.'

Table 7.1 Spanish clitics features

Clitic	Person	Number	Case	Anaphoric	Gender
me	First	Singular	Accus./Dat.		
te	Second	Singular	Accus./Dat.		
nos	First	Plural.	Accus./Dat.		
os	Second	Plural	Accus./Dat.		
lo	Third	Singular	Accusative	No	Masculine
la	Third	Singular	Accusative	No	Feminine
los	Third/Second	Plural	Accusative	No	Masculine
las	Third	Plural	Accusative	No	Feminine
le	Second/Second	Sing/Plu	Dative	No	
les	Third	Plural	Dative	No	
se	Third/Second		Accus./Dat.	Yes	

unified manner. We will continue to use the following mnemonic terms to describe the constructions with se: reflexive/reciprocal, middle, passive, ergative, inherent, impersonal, ethical, possessive, etc. Use of these terms does not acknowledge any theoretical status to them or to the possible partitions that they could entail, as will be apparent immediately. Moreover, a clear-cut distinction is not so easy to draw using labels of this kind.

7.1.2 Spanish Clitic Features

Romance clitics are pronominal elements (Garcia 1975; Everett 1996). Traditional descriptive grammars like Real Academia Española (1998) or even Fernandez Soriano (1999) consider clitics as pronominal elements. We follow Garcia (1975), believing that clitics complete a system together with verbal agreement and pronouns. Clitics can have accusative or dative case. There is no sustained evidence for a nominative case clitic in Spanish. Verbal agreement can be considered the morphological nominative equivalent of the clitics. Table 7.1 has a descriptive purpose and does not intend to present a theory of the pronominal features corresponding to clitics. It is similar to the one presented by the Real Academia Española (1998) or in Fernandez Soriano (1999).[11,12]

[11]The data we are going to consider in this paper is based on the Spanish spoken in the Rio de la Plata region (Argentina and Uruguay). The use of clitics in that area seems more unconstrained than the standard Spanish from Spain. For instance, the sentence (10b) below would be hardly accepted by a speaker from Spain. On the contrary, equivalent pairs like those of (21a) are found everywhere in other dialects. However, this more creative behavior seems to be based more on general properties of the Spanish clitics than peculiar idiosyncratic uses.

[12]The anaphoric nature of *se* can be reduced to the lack of specification of A′-features (see, e.g. Reinhart and Reuland (1993).

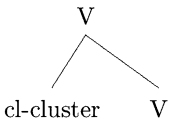


Fig. 7.2 Clitics structural position

Clitics are affix-like entities. They form clusters that have phonological properties and constrain possible clitic cluster combinations (Fig. 7.2).[13]

7.2 Peculiarities: Unmotivated Distinctions

We understand that the classes of *se* mentioned in the first section correspond to unmotivated distinctions. In this section we present pairs or sets of examples where the distinction between the different "classes" of clitics is difficult to justify. These examples in most cases present either a variation of the person or anaphoric properties of the clitic, but not in their case properties (e.g.: 8a–8b, 10a–10b). Variations in some of the arguments are also introduced (e.g., *nene* ('child') versus '*jefe*' ('boss') in 10c–d)

(8) a. María se fue al mercado. Inherent Reflexive
María SE went to-the market. 'María went to the market.'
b. María le fue al mercado. Ethical
María cl-3p-Dat went to-the market.
'María went to the market for him/her.'

In this pair of sentences the two different interpretations should arise from the different features we find in *se* and *le*: the first is either dative or accusative, whereas the second is dative only. The following pair (9a–9b) shows that the clitic *se* in (8) and (9a) can correspond to an accusative clitic, given that the verb *ir* allows an accusative clitic construction in (9b).

(9) a. María se fue. Inchoative
María SE went.
'María left.'

b. La fueron (a María). Causative
cl-3p.Ac.femi go-3p.pl (to María).
'They made her/María go.'

Considering the sentences in (10), observe that (10a) is a classical example of the so-called ethical Dative. On the other hand, (10b) and (10c) may be considered aspectual or perhaps possessive. But the only difference between (10a)

[13] See Bonet (1995) for morphophonological constraints in clitic cluster combinations.

and (10b–10c) corresponds to the fact that *se* is anaphoric (a fact that at least for these two examples is considered indisputable). If we consider (10a) and (10d), probably interpreted as possessive or source, why should this difference arise? The only difference is the subject: *jefe* versus *nene* ('boss' versus 'child'). And finally in (10e), why should this sentence be ambiguous in so many ways? These data demonstrate that there is no sustained evidence to assume different syntactic structures for each possible interpretation.

(10) a. El nene me comió (la comida). Ethical
The baby cl-1pSg eat-past (the food).
'The baby ate (the food) for me.'

b. El nene se comió *(la comida). Ethical, Aspectual
The baby cl-1pSg eat-past (the food).
'The baby ate the food.' (emphatic)

c. El nene se comió *(los caramelos). Aspectual, Ethic. or Poss.
The baby cl-1pSg eat-past *(the candies).
'The baby ate the candies.'

d. El jefe me comió *(la comida). Ethical, Possessor, Source
The boss cl-1pSg eat-past *(food).
'The boss ate/the food for me/on me/my food'

e. Se comió (la comida).
Impersonal, Ethical, Aspectual SE eat-past (food).
'The food was eaten/Someone ate the food/
(He/she) ate the food for himself/(He/she) ate the food.'

The following examples present similar properties to the previous ones. The pair (11a) and (11b) presents the question: why should a change in the subject allow for different readings? Are the specifications of the pronominal clitic any different? If we compare (11a, with (11c), it is apparent that there is no problem for the noun phrase *el barco* to be the subject of a "transitive" *hundir*. Indeed it is consistent with the Burzio (1986) generalization.

(11) a. El barco se hundió (solo). Ergative reading
The ship SE sank (alone). 'The ship sank by itself'

b. Juan se hundió (solo). Reflexive/Ergative reading
Juan SE sank (alone). 'Juan sank (himself).'

c. El barco la hundió. Transitive
The ship cl-3pSg.Acc.Fem sank. 'The ship sank it/her.'

More strikingly, (12a) is ambiguous in four ways: Erg-Passive, Impersonal, Ethical and Possessive. If we compare it with (12b–e), we find out that it can be partially disambiguated. Compare first (12a) with (12b): given that *le* is only Dative and it is not anaphoric, there is only one possible interpretation of the

clitic *le*: Possessor. In (12c), the combination of a plural subject (cf. singular subject in (12a)) and a singular noun phrase in object position restricts the possible interpretations. There are two readings that are not available anymore: Impersonal and Ergative-passive. However there is a new one available: the reciprocal. In (12d) the presence of another dative clitic, blocks the interpretation of *se* as a dative.[14]

(12) a. Se hundió el barco. Erg-passive,Ethical, Possessive, Impersonal
SE sank-3pSg. the ship.
The ship sank/(He/she) sank the ship for himself
(He/she) sank his ship/(Somebody) sank the ship.

b. Le hundió el barco. Dative (Possessor)
cl-3p-Dat sank-3pSg. the ship. '(He/she) sank his ship'

c. Se hundieron el barco. Reciprocal, Possessive, Ethical
SE sank-3pPl. the ship.
'(They) sank each other ship./(They) sank their own ship'/
'(They) sank the ship (not their ship).'

d. Se le hundió el barco. Ergative
SE cl-3p-Dat sank-3pSg. the ship.
'The ship sank on him'/'Somebody sank his ship',
'(He/she) sank (his/her) ship.'

e. Nuestro piloto se hundió el barco. Ethical, Possessive
Our pilot SE sank the ship.
'Our pilot sank the ship for himself.'/'Our pilot sank his ship'.

7.3 Towards a Unified Analysis of the Clitic *se*

The above examples show that there is nothing in the data that prevents us from assuming there is only one *se*, underspecified for the accusative/dative distinction.[15] These are just the minimal assumptions, and we see no grounds for assuming any additional properties or another lexical entry. On this approach, all the interpretative differences (or theta-roles) are merely an epiphenomenon derived from the interaction with other elements in the construction. The clitic *se* imposes only one additional constraint: it is anaphoric, so in either case it must be co-indexed both to the nominative subject and morphological agreement. Spanish is a *pro-drop* language, so if the subject is not specified lexically, it is interpreted according to the information supplied by the verbal inflection, and restricted to

[14]The occurrence of dative clitics is constrained by different factors which we will not consider here.

[15]This is not a peculiar characteristic of the clitic *se* in Spanish, the clitics *me, te, nos* and *os* are the same.

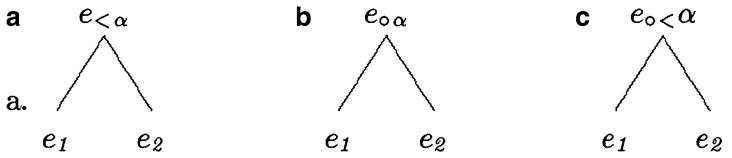


Fig. 7.3 (**a**) Precedence, (**b**) Overlapping, and (**c**) Precedence and partial overlapping

discourse anaphoric relations. Given that the clitic *se* is the least specified (in person and case features), it is quite consistent with its interpretation as impersonal. The referent of the clitic is interpreted as somebody not identified or for which no information is given, and this is highly dependent on whether there is a discourse antecedent for the subject agreement, as we will see later (38a). Our proposal for the analysis of *se* collapses together, on one hand, the ergative, passive, middle and some reflexive/reciprocal (Accusative *se*)[16] and, on the other hand, the so called possessor, ethical, impersonal, and some reciprocal (dative *se*). At the same time, the aspectual effects, which are present in either case, are explained in terms of event structure composition. We flesh out our proposal assuming the Generative Lexicon (GL) framework (Pustejovsky 1995–2000). We propose that Dative clitics in Spanish are capable of introducing an underspecified telic relation. This relation is similar to a telic proto-role, in a sense that will be made more clear later and which differs from the sense of telicity (somehow equivalent to boundedness as an aspectual distinction). This notion of telicity is captured partially by the notion of Opposition Structure (OS) in GL (see Levin (2000) for a discussion on telicity and argument structure relations).

7.3.1 Event and Qualia Structure: Pustejovsky 1988–2000

We assume the notions of Event Structure and Qualia Structure as developed in the Generative Lexicon (henceforth GL) (Pustejovsky 1991, 1995, 2000).

The structure in Fig. 7.3a might be considered an event transition, in other words reflecting a causation relation, somehow equivalent to (13), (cf. Dowty (1979), Levin (2000), and many others):

(13) $e1$[x act] CAUSE $e2$ [y be/become]

Although this is often the case, we want to adopt a more general alternative, so that we are not committed to a strict causation relation. Instead, Fig. 7.3a may be understood as an abstract version of (13). This can be interpreted as mapping an Opposition Structure (OS) into the event structure in the sense of Pustejovsky (2000), as in:

[16] A step which already has been made by Burzio (1986).

Fig. 7.4 Opposition structure

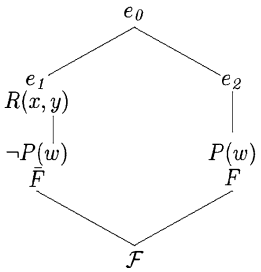


Fig. 7.5 Opposition structure

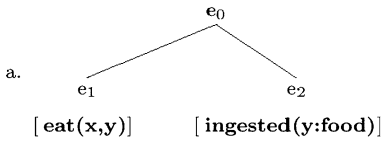
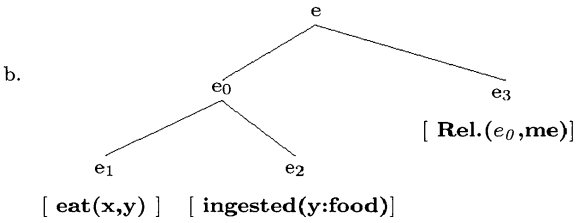


Fig. 7.6 Transformed opposition structure



A representation such as the one in Fig. 7.4 enables a higher level of abstraction than the one in (13), in the sense that there is not a causal relation required between the two subevents.

A Qualia Structure in GL is a feature-valued structure, as shown in Fig. 7.7, below. In the following sections we restrict our attention to the interaction of the event structure and the roles in the Qualia structure: FORMAL, AGENTIVE and TELIC.

7.3.2 The Basics of Our Proposal

In a sentence like (10a), El nene me comió (la comida)./'The baby ate (the food) for me.', the presence of the dative clitic triggers the event structure shown in Fig. 7.6 below, as an operation on the event structure shown in Fig. 7.5. Abstractions of temporal relations in Figs. 7.5 and 7.6 can be understood as even more general versions of Fig. 7.3[17] relative to the event structure, where the temporal precedence relations are not specified.

[17]We are not considering issues related to tense anchoring nor headedness issues in the event structure. Consequently our event trees will not be annotated with those relations.

$$\begin{bmatrix} eat & \\ \text{ARGSTR} = & \begin{bmatrix} \text{ARG}_1\text{: } nene : child \\ \text{ARG}_2\text{: } food \\ \text{ARG}_3\text{: } me \end{bmatrix} \\ \text{EVENTSTR} = & \begin{bmatrix} \text{EVENTSTR} = \text{E}_0\text{:} \begin{bmatrix} \text{E}_1 = \ldots \\ \text{E}_2 = \ldots \\ \text{RESTR} = \ldots \end{bmatrix} \\ \text{E}_3 = \ldots \\ \text{RESTR} = \ldots \\ \text{HEAD} = \text{E}_i \end{bmatrix} \\ \text{QUALIA} = & \begin{bmatrix} \text{FORMAL} : \textbf{ingested}(e_2, y) \\ \text{AGENTIVE: } \textbf{eat}(e_1, x, y) \\ \text{TELIC} : \textbf{relation}(e_3, e_0, z) \end{bmatrix} \end{bmatrix}$$

Fig. 7.7 Feature structure corresponding to the OS in Fig. 7.6

The structure in Fig. 7.6 is equivalent to the following Qualia Structure in Fig. 7.7:

7.3.3 Motivation

The representations in Figs. 7.6 and 7.7 capture the intuition that the entire event e_0 concerns or is related to the argument introduced by the relation in e_3. This is an operation that adds structure on top of already available structure. It follows the same pattern, as the causative alternation, also produced by Spanish clitics as the following examples in (14) show:

(14) a. Juan corre/sube/baja.
'Juan runs/goes up/goes down.'

b. Lo/la/se corrieron/subieron/bajaron
cl-3p-sg-acc ran-3P.Pl./went-up/went-down.
'They made him/her/the run/go up/go down.'

For instance, in the verb *correr* (to run), the 'starting point' for the cliticization is not a transition but a process So, in this case, the result is a causativization (examples in (14b) correspond to the event structure in Fig. 7.8b):

Figure 7.9 depicts Fig. 7.8 annotated with the Qualia attributes in the Event tree.[18]

[18]We will continue using the event trees instead of the Qualia Structure full specification for expository convenience.

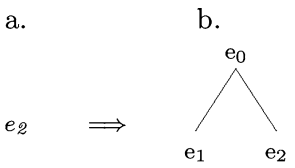


Fig. 7.8 Process-causative transformation

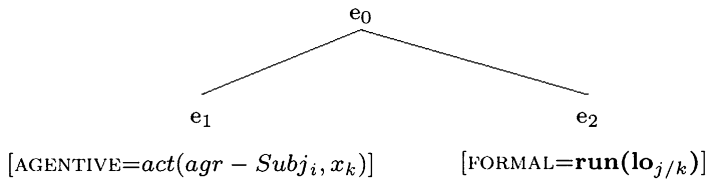


Fig. 7.9 Causative representation of *correr* (This notation is intended to mean that *x* may be co-referential with *lo* (him, it). If it is co-referential, there is a direct causation, otherwise it is indirect)

This is equivalent to the representation in (15):

(15) $\lambda x\ \lambda e1\ \exists e2$ [act($e1$, they, x) $\wedge$ run($e2$, him/it) $\wedge$ $e1 < e2$]

The event structure depicted in Fig. 7.9 is not an innovation (although the analysis of the corresponding data from (14b) has not been addressed – as far as we know). The contrast between *ir* ('go') – a process – and *irse* ('leave') – an inchoative – supports the analysis presented here. The aspectual properties of sentences with the clitic *se* are a side effect of the corresponding event structure and its opposition structure (as depicted by Fig. 7.4). Furthermore, the following sentences provide additional support to this analysis, i.e.: process verbs like those in (14b) and (16) have the structure depicted in Fig. 7.8 (i.e., a transition event).

(16) Juan se durmió mirando la tele.
Juan SE slept watching the TV. 'Juan fell asleep watching TV.'

(17) # Juan durmió mirando la tele.`
'Juan slept watching TV.'

In (16) the gerundive phrase *mirando la tele* gives more content to the subevent e_1. On the contrary, the sentence in (17) is deviant because the verbal phrase corresponds to a process, *sleep* (with no OS), and this process is not compatible with watching TV. This contrast shows that the analysis of inchoatives as having the structure depicted in Fig. 7.8b might be superior to one which considers inchoatives as operators as in (Dowty 1979; Jackendoff 1990 and many others). The analysis of (10a) we proposed in Figs. 7.6 and 7.7 is an extension of the same basic mechanism. In Fig. 7.7 a clitic (accusative) which cannot satisfy an argument of the verb produces a change in the event structure. The availability of an underspecified agentive slot in the Qualia Structure enables the corresponding construal and makes possible this composition. On the other hand, the structure shown in Fig. 7.6 (and the

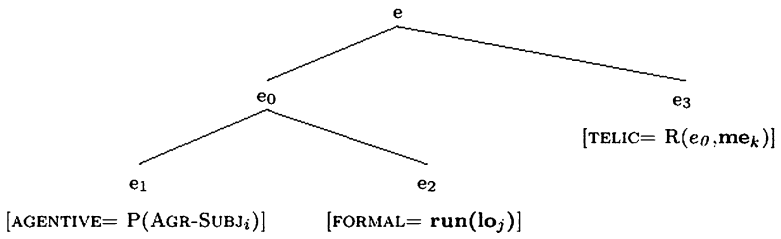


Fig. 7.10 *Correr* (run) with dative and accusative transformation

similar Fig. 7.10 below) is the result of another clitic-verb composition, in this case a dative clitic. This composition produces a change in the event structure given the availability of an underspecified telic slot. It is interesting to note that it is possible to add another clitic to the sentences in (14b) as exemplified in the sentence in (18), and it produces the same effect as in sentence (10a) with the structure shown in Fig. 7.10:

(18) Me lo corrieron.
cl-1p-sg-dat cl-3p-sg-acc ran.
'(They) made him run/move for/on me.'

There is also some evidence supporting this type of analysis. We consider that the presence of a telic clitic is possible whenever there is a bounded event, and we assume that aspectual properties are captured through the event structure:

(19) Juan (*se) comió manzanas.
Juan (*SE) ate-perf apples. 'Juan ate apples.'

(20) Juan (se) comió una manzana.
Juan (SE) ate an apple. 'Juan ate an apple.'

In (19) the presence of a bare noun phrase blocks the presence of the clitic *se*. Sanz Yagüe (1996) and Nishida (1994) attribute this to aspectual properties of the clitic *se*.[19] We will not analyze this issue here because the data are much

[19]Sanz Yagüe (1996) considers the clitic *se* in these constructions has a + telic feature. The sense of telicity used by Sanz Yagüe (1996) corresponds to the notion of telicity as understood in Tenny (1987), Tenny (1992), Grimshaw (1990), Krifka (1992) and many others. This is totally different from the notion of telic role in the Qualia Structure as we mentioned above. The equivalent of a telic event corresponds here to the notion of transition, or Opposition Structure as presented in the next section.

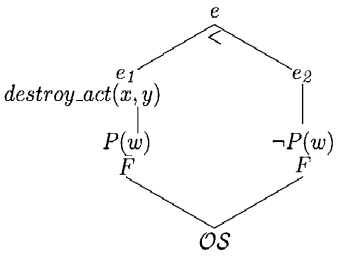


Fig. 7.11 Opposition structure

more complex than that considered by Sanz Yagüe and Nishida.[20] This complexity is due in part to the interaction of opposition structure and event structure.[21] Although we consider clitics as affix-like syntactic objects, we are not assuming a lexical argument-changing operation. We understand instead that clitics specify information that is enabled by the Qualia. The clitics are linked to functions already present in the Qualia which otherwise might remain underspecified. As a consequence, the argument structure might be determined co-compositionally by the predicate and the clitics provided there is a mapping to the Qualia Structure.

7.3.4 Opposition Structures

The operation presented in Figs. 7.8 and 7.9 is equivalent to (and a generalization of) causativization, where a process is transformed into a transition. As presented above (see Fig. 7.4), the notion of Opposition Structure (OS) is equivalent to the notion of transition, in the sense that if there is a transition necessarily there is an OS.[22] Pustejovsky (2000, p. 458) proposes the notion of OS as a model of change (and persistence) incorporated into the event structure. For example, in a verb like destroy, it is represented as in Fig. 7.11.

We propose here that the presence of the clitic also triggers an OS in a structure like the one in Fig. 7.10 (similar to Fig. 7.12 below). If the argument introduced by the clitic is affected by the event, there is a change on some property *P* related to

[20]Consider for example the following sentence similar to (28):

(1) Juan (se) comió manzanas verdes.
Juan (SE) ate-pef apples green 'Juan ate green apples'.

(2) Juan (se) comía manzanas a lo loco.
Juan (SE) ate-imperf apples as the mad. 'Juan ate/was eating apples as a mad.'

[21]Rigau (1994) (quoted by Sanz Yagüe (1996)) says that the presence of a benefactive *se* produces the perfective interpretation of the event.

[22]Alternatively, it is not necessarily the presence of an OS that might imply a change. For instance, change may occur if the OS falls within an 'intensional' domain or a paradigmatic domain.

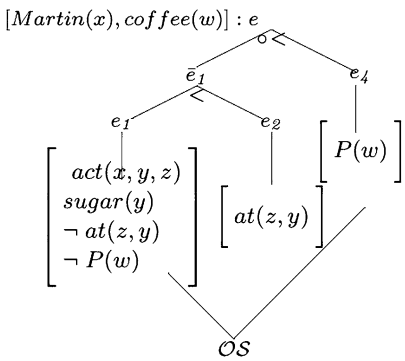


Fig. 7.12 Opposition structure for a dative clitic with locative Interpretation

this argument (the clitic). This is illustrated by sentence (21) and the corresponding structure in Fig. 7.12.[23]

(21) Martín *(le) puso azúcar (al café). locative
Martín cl-3pSgDat put sugar (to-the coffee).
'Martín put sugar into the coffee.'

The role of the argument introduced by the clitic is indirect, so some kind of computation is required to recover the possible relations that are implicitly stated in the Qualia. The OS (and associated Qualia) enable the computation of abduction operations (Hobbs et al. 1993; Ng and Mooney 1990; Charniak and Goldman 1988; and others).

7.3.4.1 Abduction Operations

Hobbs et al. (1993) use abduction as an inference mechanism for sentence interpretation. Given the expression $p(x) \supset q(x)$, and $q(a)$, abduction allows us to conclude $p(a)$. This is not a valid mode of inference, but it is a powerful mechanism that allows us to compute certain interpretations in natural language. These interpretations are usually constrained to reduce the power of the mechanism, and require some minimal consistency checking. In the Dative clitic constructions in Spanish, the clitic can have many different roles (see Castaño (2001) for a discussion), and, in some cases, quite elusive or abstract ones, like the ethical Dative.

We assumed that Dative clitics that are not subcategorized by the verb introduce some relation or property of the clitic argument to the event. This is the minimal assumption (see Figs. 7.6 and 7.10). However there are cases where this relation has some more specific content according to the particular event involved. The computation of abduction operations will allow us to provide more content to the

[23]This example, dative clitics and the use of abduction are discussed in Castaño (2001).

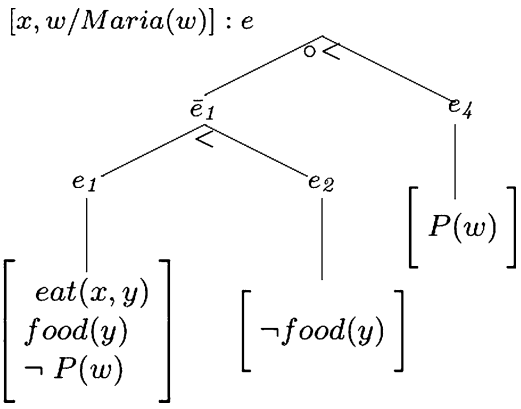


Fig. 7.13 Opposition structure for a dative clitic with several interpretations

abstract predicate *P* whenever it is possible, instead of using a catalog of theta-roles, which are difficult to justify. The use of abduction operations is limited here to predicates already present in the core event structure. In other words, predicates from the OS introduced by the core event are tried first. In this case, the OS [¬**at**(*z, y*), **at**(*z, y*)] encodes the change of location that is required by a verb like *poner* ('put').

Alternatively, the use of abduction can be restricted to predicates that are related to the arguments of those predicates by way of Qualia.

In Fig. 7.12 *P*(*w*) is congruent (≅) with **at**(*z,y*), unifying *w* with *z* via Abduction: **at**(*w,y*) ≅ *P(w)* based on the telic role of *azúcar* (sugar). The structure can be simplified as follows: $e_4 = e_2$, given there is no distinction between both sub-events.

Next, sentence (22) is a variation of the classical ethical dative (10a). The possible operations are the same, either in the interpretation (i) or (ii): *P* ≅ ¬**has_y**. This can be interpreted in two ways. It can be a benefactive, the case in which the argument introduced by the clitic wants the food to be eaten (e.g. (10a)). Otherwise, it is a negatively affected participant, the case in which the argument introduced by the clitic doesn't want the food to be eaten (e.g. one of the possible interpretations of 10d). These are discourse dependent interpretations. We have shown that the paradigm of variations in one or more arguments yields different interpretations. Those interpretations can be computed using the abduction operation constrained by the OS and the Qualia, i.e., it specifies an argument that participates in the OS (Fig. 7.13).

(22) le comió (la comida) (a María).
cl-3pSgDat eat-past (food) (to María).
i) '(he/she) ate (the food) for (he/she) María.'
ii) '(he/she) ate (the food) from/on María.'

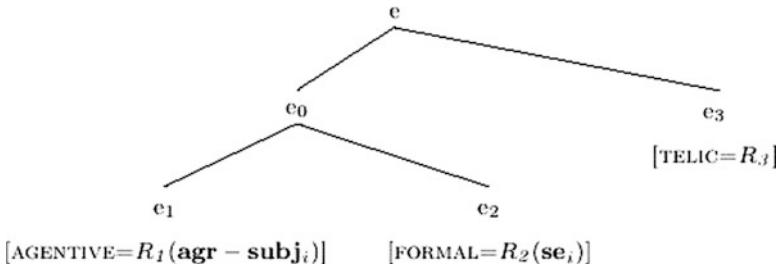


Fig. 7.14 Acusative clitic (*se*) linked to the FORMAL predicate in the Qualia

7.4 Reconsidering the Clitic *se*

Given the clitic *se* is underspecified for Case, the available options are the following, (a) accusative behavior, which corresponds to reflexive, inherent, ergative,[24] inchoative, middle and (b) dative behavior which corresponds to impersonal, ethical, possessive and locative.

7.4.1 Accusative Case: Reflexive, Inherent, Ergative, Inchoative and Middle se

In these cases and if the clitic is not *se*, but an accusative clitic, the verb must be transitive or transitivizable. In the following examples the clitic *se* is linked to the FORMAL predicate in the Qualia.

The structure represented in Fig. 7.14 shows, as a *blueprint*, the general schema that corresponds to the following sentences in (23). The subject (if any, given Spanish is a pro-drop language) and the verbal agreement link to an argument in the Agentive role. The accusative clitic links to an argument in the Formal role. If there is no Dative clitic (the simplest cases we are considering here), no argument is bound to the telic role.

(23) a. Juan se afeitó. reflexive
John SE shaved. 'John shaved himself.'
b. Se reía. inherent reflexive
SE laughed. 'He/she laughed.'
c. El barco se hundió. ergative
The ship SE sank. 'The ship sank'.
d. Juan se fue/durmió. inchoative
Juan SE went/slept. 'Juan left/fell asleep.'
e. Las manzanas se comen fácilmente. middle
The apples SE eat easily. 'Apples are eaten easily.'

[24]This interpretation of ergatives is quite similar to the one in Bouchard (1995).

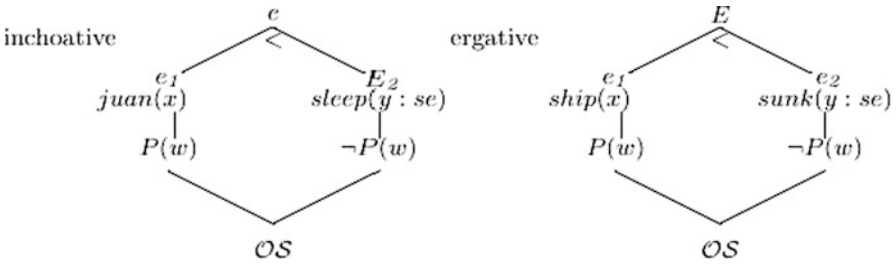


Fig. 7.15 Inchoative and ergative opposition structures

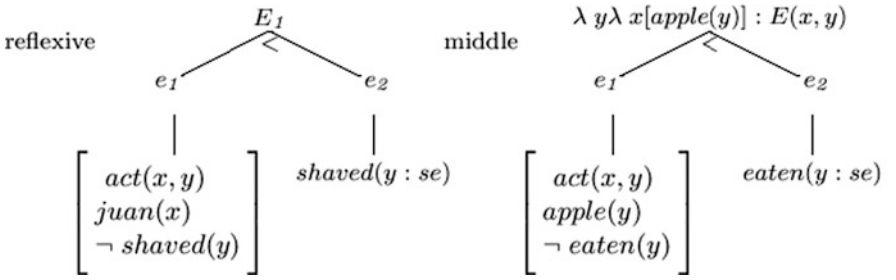


Fig. 7.16 Reflexive and middle opposition structures

We will consider now in detail some of these examples. We will start with the inchoative (23d) and ergative (23c) examples (Fig. 7.15)[25]:

The difference between both sentences is that in the inchoative case (23d) the verb is a process and the core event requires only one argument (in this case the 'sleeper'). The difference between (23c) and a transitive that does not alternate with an ergative construction corresponds to the fact that the core event specifies a sub-event where an action takes place as specified in Fig. 7.16, corresponding to (23a). The middle construction (23e), also represented in Fig. 7.16, contains an unsaturated action sub-event description, which can be interpreted as an event type. It is unsaturated because the *actor* is not specified.

Finally we consider the inherent reflexive as in (23b). The above sentence is similar to (24a) below, and their meaning can barely be distinguished. However, as the contrast between (24b) and (24c) shows, the presence of the clitic produces some differences. This is accounted for if we assume the event structure depicted in Fig. 7.17 is ruled out for sentence (24b) because the phrase *de Pedro* cannot map to a corresponding sub-event in the event structure. The same analysis corresponds to the sentence in (16). This can be seen as an effect of a requirement on mapping

[25]The core event associated with the verb, in the sense of Pustejovsky (2000), is capitalized.

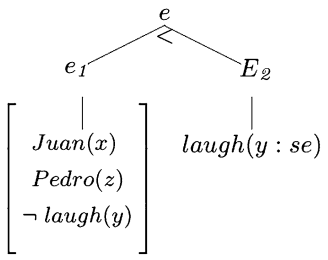


Fig. 7.17 Opposition structure for an inherent reflexive

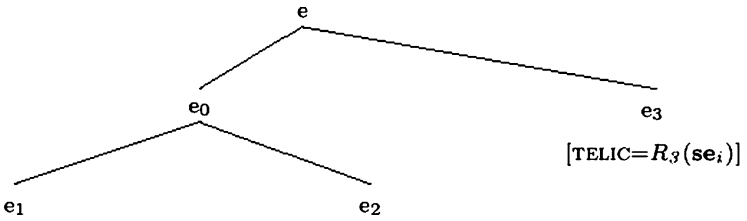


Fig. 7.18 Dative clitic se

conditions between arguments and event structure.[26] We will discuss this issue in the next section (Fig. 7.18).

(24) a. Juan reía.
Juan laughed.
b. *Juan reía de Pedro.
Juan laughed of-from Pedro. 'Juan laughed at Pedro.'
c. Juan se reía de Pedro.
Juan SE laughed of-from Pedro. 'Juan laughed at Pedro.'

7.4.2 Dative Case: Impersonal, Ethical, Possessive and Locative se

In the following examples, the clitic *se* is linked to the telic predicate in the Qualia. This representation makes the interpretation of the impersonal *se* equivalent to

[26]For instance, Levin (2000), Rappaport Hovav and Levin (1999) propose the Argument Per Subevent Condition: there must be at least one argument XP in the syntax per sub-event in the event structure. Under the approach presented here it is a side effect of the computation of the EPS. For more, see Sect. 6.

an ethical dative. The only difference is that the interpretation of the subject as impersonal is due to discourse anaphoric constraints.[27] Unlike the previous case, here the clitic introduces an argument that does not participate in the primary OS; instead it introduces a secondary affected object, i.e. a secondary OS. The interpretation of (25a–b) is the same regardless of the presence of the clitic, except that (25a) may also be interpreted as (25c)[28]:

(25) a. Se robaron el banco.[29] impersonal with *se*/ethical
SE robbed the bank.
'The bank was robbed.'

b. Robaron el banco. impersonal without *se*
robbed-3rd-plural the bank. 'The bank was robbed.'

c. Nuestros amigos se robaron el banco. ethical
Our friends SE robbed the bank.
'Our friends robbed the bank (for themselves).'

d. Juan se compró un libro. benefactive/possesive
Juan SE bought a book. 'Juan bought a book for himself.'

e. María se puso el sombrero. locative/possesive
María SE put the hat. 'María put the hat on.'

The structure in Fig. 7.19 depicts the impersonal interpretation in (25a). It is equivalent to the ethical interpretation we find in (25c) represented in Fig. 7.20, which we already discussed in (22). The only difference between Figs. 7.19 and 7.20 is the interpretation of the subject (and the clitic *se*), as an unbound argument in Fig. 7.19. This argument is bound at the discourse interpretation level (either as impersonal or as a specific group introduced in the discourse. In both (25a) and (25c) the presence of the clitic is highly redundant, it is not introducing a new argument (it is anaphoric), and it is not introducing a new relation. The content of the abstract relation introduced by the clitic (the OS [$\sim P(w), P(w)$]) is consistent with the relation in the OS:[$\sim has(x,y), has(x,y)$], given $w = x$. This produces an emphatic contrast between the sentence (25a) and (25b) (either in the impersonal or non-impersonal interpretation). When the clitic is not anaphoric, as in (26) and the corresponding Fig. 7.21, then $w \neq x$. A different role for the clitic argument is

[27]This is probably a similar view to the one from Otero (1986) who says that impersonal se allows a definite arbitrary subject (arbitrary pro in GB terminology).

[28]This is the case in the following sentences

i. Mis amigos lo planearon con cuidado. Ayer se robaron el banco.
My friends planned it carefully. Yesterday (they) (SE)-robbed the bank

ii. Juan llegó. Se trajo los libros a la biblioteca.
Juan arrived. (He) (SE)-brought the books to the library.

[29]See Real Academia Española (1998) page 382 for the use of 3rd person plural as impersonal. Although this example is in plural, equivalent examples are possible in 3rd person singular; see the previous footnote.

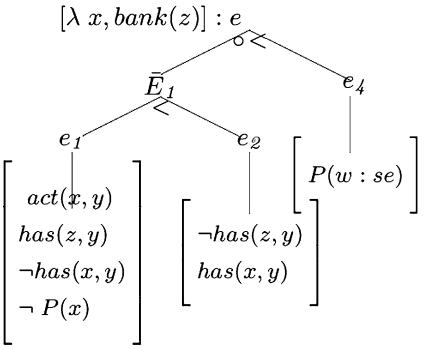


Fig. 7.19 Opposition structure with impersonal-posessor-benefactive interpretations

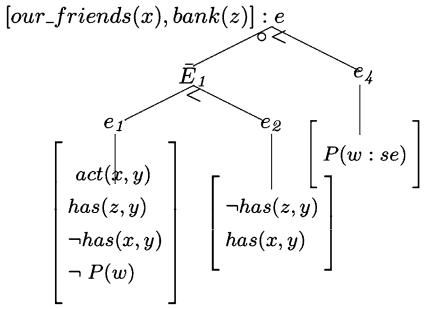


Fig. 7.20 Opposition structure with benefactive interpretation

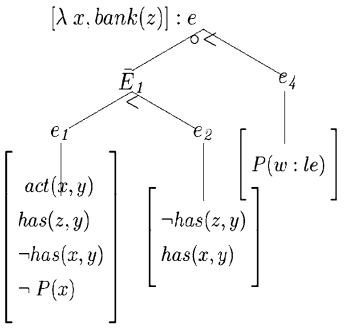


Fig. 7.21 Affected participant opposition structure

required, but the representation of the Event Structure is the same. In this case, the role of *le* is interpreted as the possessor of the bank: *has(w,y)*, given the implication *has_y(w)* ⊃ *P(w)* and consequently the OS [*has(w,y)*,∼*has(w,y)*].

(26) le robaron el banco.
3pDat robbed the bank.
His bank was robbed.'

The following examples are similar to the ones we considered before in Sect. 7.3.4. The sentence (25d) above (Juan se compró un libro./'Juan SE bought

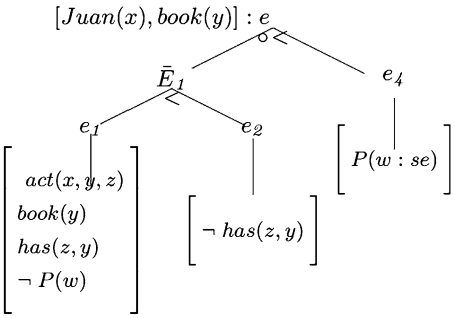


Fig. 7.22 Possesor-benefactive opposition structure

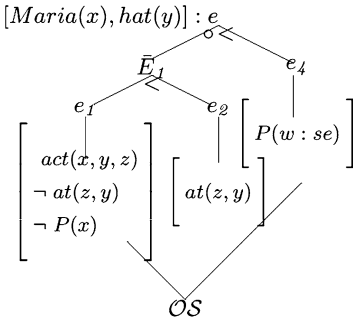


Fig. 7.23 Locative-possesive interpretation

a book.') has the interpretation obtained from the OS in Fig. 7.22: $z \neq w$, $w = x$ by *se*, $e_4 \neq e_2$ and e_4 is not *tense anchored*, so it is an *intensional* domain, $P \cong has\_y$, by abduction (skolemized): *has_y(w)* ⊃ P(w). In this case, what triggers this interpretation is that $w = x$.

In Fig. 7.23 corresponding to (25e), (María se puso el sombrero/'María put the hat on.') the structure can be simplified as follows: $w = x$ by *se*, $e_4 = e_2$, *P(w)* ≅ *at(z, y)*, unifying *w* with *z* via Abduction: *at(w, y)* ⊃ *P (w)*.

7.5 Conclusions and Future Work

We presented sufficient evidence that supports the view that a sense enumerative view of the clitic *se* is not granted. Crucially, we showed that the claim that it cannot occur in embedded infinitival phrases is not correct, and that it shares properties of other Dative and Accusative clitics, these being the minimal assumptions.

We presented an analysis that provides an account of the full range of data concerning *se* and showed that they can be explained by its underspecified case and anaphoric nature. Given its pronominal nature, its interpretation is context dependent and subject to anaphoric and discourse reference resolution mechanisms.

We used the Generative Lexicon notions of Event Structure, Opposition Structure and Qualia Structure. We also used the mechanism of abduction to compute the interpretations of the so-called non-argument clitics. We showed that Spanish clitics enable the generation of causative constructions and we extended this mechanism to what we called Telic constructions. Although we did not discuss other romance languages, there are enough similarities to suspect that this analysis can be extended to many of them.

There are many other issues we did not address, which are tightly related to the discussion of the mapping from arguments to Event Structures: event composition concerning the Core Event and prepositional and verbal phrases (e.g. causatives). In addidition, a full discussion of the telicity and other aspectual effects is required. Such machinery is necessary for a full discussion of the impersonal *se* and the different interpretations that it enables. Those issues will be addressed in future work. In the remainder of this section we would like to present some ideas that are beyond the data we have been considering, but they are direct generalizations over the analysis we have presented so far.

7.5.1 Mapping from Arguments to Event Structures

The following subsections are highly speculative, and they aim to describe some ideas concerning future work. There are two possible views or aspects of the constraints in the interpretation of the clitic "roles" in the data that we have discussed in this paper. First we consider a mapping procedure from arguments to Qualia Roles, interpreted as structural positions in the Event Structure. Then we consider Argument Linking as a byproduct of the computation of the EPS.

7.5.1.1 Mapping Arguments to Qualia Roles

Implicit in our analysis, there was a straightforward mapping between the Qualia structure and morpho-syntax. In the following two subsections we describe this mapping according to the verb valence.

Intransitive Verbs

The subject maps either to the Formal or the Agentive Quale according to the verb type (so far we have been considering cases where it maps to the Formal). Predicate arity may be modified as follows: if an accusative clitic is present with a unary predicate the subject maps to the Agentive Quale and the Object to the Formal provided the construal is consistent with the predicate properties.

if there is no accusative clitic:

AGR/Subject ⇒ Formal (or Formal and Agentive Quale)

if there is an accusative clitic:

AGR/subject ⇒ Agentive Quale
ACC/OBJECT ⇒ Formal Quale.

Transitive Verbs

The subject maps to the Agentive Quale and the object maps to the Formal Quale. Arity may be modified as follows: We may get the effect of detransitivization (if it is not just reflexive) binding the two arguments in the qualia with an anaphoric clitic, (examples from Sect. 7.4.2). If an extra (Dative) clitic is present then it maps to the Telic Quale (and we get the effect of converting a transitive to a ditransitive verb).

AGR/subject ⇒ Agentive Quale.
ACC/OBJECT ⇒ Formal Quale.

if there is a dative clitic:

DAT ⇒Telic Quale.

The proposal stated here can be understood as an abstract theory of theta-roles. In a sense similar to the notion of Proto-roles (cf. Dowty (1991)) with the addition of another Proto-role: the Proto-Telic. But we are considering theta roles to be a derivative notion, which must be explained through the syntax of the semantic framework we assume this view is similar to the one in Jackendoff (1990) where theta-roles are reduced to configurations in the Conceptual Structure. We make use of structural configurations with highly underspecified properties which impose very general constraints on the possible construals. The interpretation of a sentence is dependent on the particular expressions involved interacting with the Qualia. We can give, then, a more specific content to the notion of co-composition, which might be considered as the satisfaction of independently stated constraints.

7.5.1.2 Argument Linking as Constraints on the Computation of the EPS

The mapping algorithm sketched above can be understood as a precondition for the computation of the Event Persistence Structure (Pustejovsky 2000):

> We denote the event description assigned to the matrix predicate of the clause, *P*, as the backbone in the construction of the event persistence structure, that is all additional event predications in the clause are annotations to this core structure.

However, these annotations to the core event cannot be performed unless a mapping from the arguments is given. In GL this mapping is pre-compiled in the

Qualia as Feature Value Sharing from the Argument Structure to the Qualia. We want to present here a general view of argument linking as a mapping from case marked arguments to the Event Structure in the computation of the EPS.

> The goal of the EPS is to represent not only what has changed by virtue of the matrix event description, but to also model secondary effects of the action, if they can be captured, as well as what has stayed the same.
>
> To this end, I will assume that any predicate, be it verbal, adjectival, or phrasal (PP), is assigned an independent event description δ_i; further, every sortal expression will be assigned an event description.

The consequences of the changes are computed using the event descriptions corresponding to the set $\mathbf{\Delta}$ of event descriptions in an expression and a gating function (Pustejovsky 2000, p.467):

> GATE: For an event description, $\delta \in \Delta$, in the domain of the matrix predicate *P*, δ is gated by *P* only if the property denoted by δ is either initiated or terminated by *P*.

Argument linking can be seen as a set of constraints on the calculation of the EPS:

The Thematic Argument Constraint

At least the Formal Quale must be specified. (If there is an Opposition Structure, this is clearly the case in which the Formal requires specification). The argument affected by the OS must be specified (Qualia Unified), and the relevant properties gated. This is performed by the accusative case. Otherwise, the Nominative Case arguments can specify the OS. (For instance, if there is no accusative case or the accusative case argument is not gated, but it participates in a relational property of the subject that is gated). The formal quale event must be covered by an argument obligatorily: covering can be made by existential closure of default arguments (e.g., *John already ate*).

The Perspective Argument Constraint

The Agentive Quale specifies the event properties of the initiating conditions of the event. This is performed by the Nominative Case. This may result in underspecified sub-events, i.e. a shadowing effect (unaccusative alternation).

The Telic Role Constraint

Additional participants affected by the event may be introduced. Their role in the event is indirect, so the computation is performed using abduction to recover the possible relations that are implicitly stated in the Qualia and Event Structure.

These constraints can be embedded in the algorithm for computing the EPS, or be a sort of side effect of the algorithm in the computation of the Event Persistent Structure. In this conception, there is no argument structure, but the argument structure is determined compositionally by the predicate and the arguments, given general constraints determined by the particular grammar. For example, Spanish has the clitics, which constrain the quantity of arguments and the mappings in particular ways; other languages have case morphology for noun phrases. Simple or complex predicates (e.g. morphological causatives) will have the same constraints on the argument mapping: the cases available from the grammar constitute a reduced set.

Next, we sketch an algorithm for computing the participant roles. Each expression has its own event variable (or set of event variables associated with it, corresponding to the persistent properties) and the Event Persistence Structure is computed as follows (examples are given in the Appendix).

- If the Core Event Structure has an Opposition Structure, Gating is tested first for the DO/Accusative clitic.
  - If the DO is gated (Case 1), then the subject is assigned the Agentive role.
  - Otherwise gating is tested for Nominative argument (Case 2). If there is only a subject, it must be unified with the Formal.
- If the Core Event Structure has no Opposition Structure:
  - If the DO is Qualia Unified with the Formal, and the Subject is not Qualia Unified with the Formal (Causation), then there is an OS created in the computation of the EPS (Case 5a). In this case the subject is assigned the Agentive role.
  - If both Subject and DO can be Qualia Unified with both Formal and Agentive roles in the core event structure, then both arguments are in an asymmetric relation (Case 5b).
  - If there is no DO, the subject must be unified with the Formal (Case 4).

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Appendix: EPS Computation

A.1 Core Event with OS

Case 1. **Transitives**. If any of the set of properties (events) in the DO are gated, but not the subject (unless the DO is anaphoric) (Fig. 7.24):

(27) John broke the glass.

Case 2 Unacussativity. If there is no DO then the Subject must be gated: this possibility is constrained in different ways according to the language: e.g. Spanish requires a clitic, so this option is not available with transitive verbs; English doesn't (in the case the Agentive is not the same argument as the Formal) (Fig. 7.25).

Fig. 7.24 Transitives

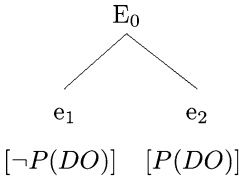
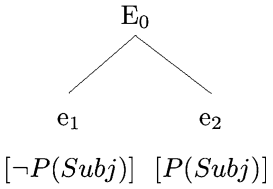
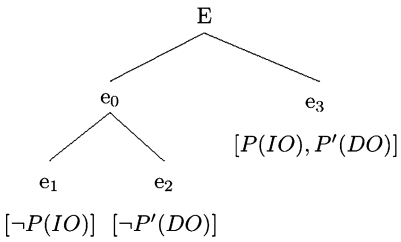


Fig. 7.25 Unacussative



(28) a. The glass broke.
b. John arrived.

Fig. 7.26 Ditransitive



Case 3 Ditransitives. A Dative argument introduces a secondary OS (Fig. 7.26).

(29) John gave a book to Mary.

A.2 Core Event with No OS

If the core event has no Opposition Structure then there is no gating.

Case 4 (**Process: Unergatives**) (Fig. 7.27):

(30) John walks.

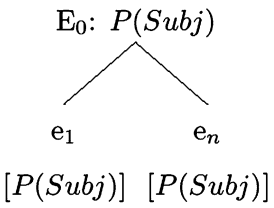


Fig. 7.27 Unergative case with no OS

Case 5a. Unergative-Transitive alternation (Fig. 7.28)

(31) a. Juan se/lo durmió.
Juan SE/3pAc.slept. 'Juan fell asleep.'
b. The lieutenant marched the soldiers for hours.

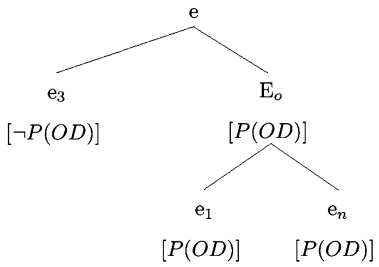


Fig. 7.28 Unergative transitive OS

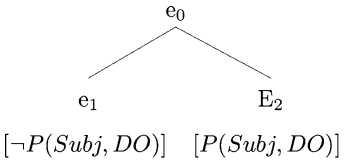


Fig. 7.29 Unergative transitive- OS

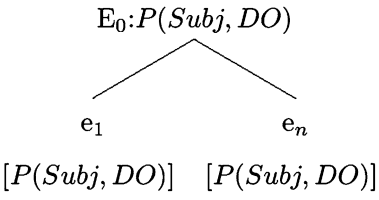


Fig. 7.30 Transitive process or states

Case 5b. **Unergative/Transitive alternation**: If no eventualities in the DO are gated, then it is a participant in the OS structure (i.e. it defines the OS of the subject because the gated properties are relational) (Figs. 7.29 and 7.30).

(32) Juan caminó dos kilómetros. 'Juan walked two km.'

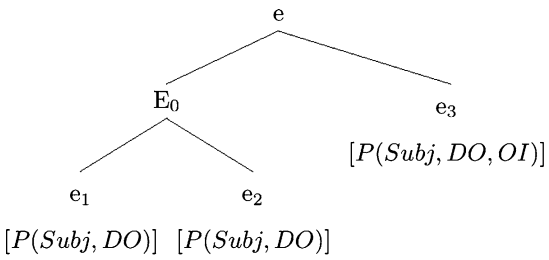


Fig. 7.31 Ditransitive process or states

Case 6. Ditransitive process or States (Fig. 7.31)**:**

(33) Juan le sabe la lección (al maestroi).
Juan 3pDat knows the lesson (to-the teacher).
Juan knows the lesson for him (the teacher).'

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