

# Aspectual Properties of Spanish Absolute Small Clauses\*

Rafael Marín

Universitat Autònoma de Barcelona. Departament de Filologia Espanyola.  
08193 Bellaterra (Barcelona) Catalonia (Spain)  
rafa@liceu.uab.es

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## Abstract

The major aim of this paper consists in determining the aspectual constraints affecting absolute small clauses (ASCs) headed by a past participle.

A detailed analysis of these constructions seems to indicate that there are enough arguments to postulate the existence of two types of ASCs: those having an NP direct internal argument (AASCs), and those in which this NP is phonetically unrealized (PASCs). The different temporal interpretation that these two types of ASCs can receive is one of the facts that most clearly support this distinction.

From the analysis of the aspectual properties of ASCs, the following generalization arises: AASCs can only be formed from eventive predicates, whereas PASCs are not affected by these aspectual restrictions.

Finally, an implementation in HPSG is proposed on the aspectual information necessary to capture our results.

**Key words:** absolute small clauses, aspectual analysis, HPSG.

## Resum. *Les propietats aspectuals de les oracions reduïdes absolutes*

L'objectiu principal d'aquest article consisteix a intentar determinar les restriccions aspectuals que afecten les oracions reduïdes absolutes (ORAs) el nucli de les quals és un participi.

Una anàlisi detallada d'aquest tipus de construccions sembla indicar que hi ha arguments suficients per postular l'existència de dos tipus d'ORAs: aquelles que contenen un SN argument intern directe i aquelles en les quals aquest SN es troba elidit. La diferent interpretació temporal que poden rebre aquest dos tipus d'ORAs és un dels factors que més clarament incideixen en aquesta distinció.

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L'anàlisi de les propietats aspectuals de les ORAs també sembla incidir en la plausibilitat d'aquesta distinció. Així, les ORAs amb SN realitzat fonèticament només podran ésser constituïdes per predicats eventius, mentre que les ORAs amb SN elidit no es veuen afectades per aquestes restriccions aspectuals.

Finalment, exposem una proposta d'implementació en el model HPSG de la informació aspectual necessària per copçar aquests fenòmens.

**Paraules clau:** oracions reduïdes absolutes, anàlisi aspectual, HPSG.

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## 1. Introduction

This paper is devoted to the analysis of the aspectual properties of Spanish absolute small clauses (henceforth, ASCs), which are headed by a past participle in HPSG. It is structured as follows.

Section 2 provides an account of the main characteristics of ASCs, focusing on the temporal interpretation that these constructions adopt. Likewise, we will propose, following Dini (1994), the existence of two types of ASCs: aspectual ASCs and predicative ASCs.

In section 3, a general treatment of Aktionsart is given. We will present a strictly compositional analysis of Aktionsart starting from the aspectual information that lexical entries contain. We will discuss, moreover, what the most adequate level for the aspectual calculus is.

Section 4 deals with the aspectual properties of ASCs by means of the general treatment of Aktionsart proposed in section 3. We will see that the distinction between two types of ASCs offered in section 2 is especially useful in this matter.

Finally, in section 5, our analysis is implemented in HPSG. We will see that a strictly lexicalist approach allows us to perform a precise compositional analysis of Aktionsart, as well as an accurate treatment of ASCs.

## 2. A Formal Description of Absolute Small Clauses

López (1994) defines ASCs in the following terms: «Absolute Small Clauses are adjuncts composed of a predicate —usually, but not necessarily, a past participle— and a noun phrase, which is optional in many cases».

Hernanz (1991) describes ASCs on the basis of these four properties: «Absolute Constructions are not lexically selected by the predicate of the clause they modify; they adopt an adverbial interpretation which does not correlate with any overt

complementizer; they have a lexical NP subject, coreferent or not with an NP in the main clause, and they are headed by an heterogeneous class of predicates, ranging from non-finite verbal forms to adjectives, adverbs, and PPs».

## 2.1. Some Syntactic Constraints

2.1.1. *Only Transitive and Unaccusative Verbs.* According to López (1994), the NP subject of an ASC has to be the deep object of the verb; that is, the superficial subject of an unaccusative verb, as in (1), or the object of a transitive verb, as in (2):

- (1) a. Desaparecidas las joyas, llamaron a la policía.  
 disappeared the jewels, called-3pl to the police  
 'The jewels having been disappeared, they called the police.'  
 [apud López (1994)]
- b. Muerto el perro, se acabó la rabia.  
 dead the dog, SE finished the rabies  
 'Once the dog is dead, the rabies is over.'  
 [apud Hernanz (1991)]
- (2) a. Arreglado el coche, pudimos seguir el viaje.  
 repaired the car, could-1pl continue the trip  
 'Once the car was repaired, we could continue the trip.'
- b. (Una vez) perpetrado el robo, los ladrones huyeron.  
 (once) perpetrated the theft, the thieves run-away  
 'Once the theft was perpetrated, the thieves run away.'

Deep subjects cannot appear in these constructions, so intransitive verbs cannot be projected as predicative heads of ASCs:

- (3) a. \*Trabajado el torero, Madonna pagó el dinero.  
 worked the bullfighter, Madonna paid the money
- b. \*Corrido Antonio, Melanie se puso nerviosa.  
 run Antonio, Melanie SE got nervous

2.1.2. *Order.* The order past participle + NP is obligatory in ASCs, as shown in the following examples:

- (4) a. Rotos los vínculos familiares, los adolescentes se deprimen.  
 broken the bonds familiar, the adolescents SE depress  
 [apud López (1994)]
- b. \*Los vínculos familiares rotos, los adolescentes se deprimen.  
 the bonds familiar broken, the adolescents SE depress

As pointed out by Hernanz (1991) and de Miguel (1992), this syntactic constraint may be explained as a consequence of Case assignment mechanisms.

2.1.3. *Free Adjuncts.* ASCs are not selected by the predicate of the main clause; they are free adjuncts. Therefore, it is not obligatory for them to precede the main clause, as evidenced in (5):

- (5) a. Una vez construida su casa, Juan se trasladó.  
       once built his house, Juan SE moved  
       b. Juan, una vez construida su casa, se trasladó.  
       Juan, once built his house, SE moved

2.1.4. *Agreement and Case Assignment.* The NP of an ASC must agree in number<sup>1</sup> with the past participle:

- (6) a. Desautorizado el presidente, ...  
       unauthorized-masc-sg the president-masc-sg  
       b. \*Desautorizados el presidente, ...  
       unauthorized-masc-pl the president-masc-sg  
       c. \*Desautorizado los presidentes, ...  
       unauthorized-masc-sg the presidents-masc-pl

This proves that NPs in ASCs receive nominative Case, as shown in (20), where we found pronominal NPs:

- (7) a. Desautorizado yo, la reunión se acabó.  
       unauthorized I, the meeting SE finished  
       b. \*Desautorizado mí, la reunión se acabó.  
       unauthorized me, the meeting SE finished

Nevertheless, the inclusion of personal pronouns in this kind of constructions is much more restricted than for ASCs headed by a gerund or an infinitive.

2.1.5. *Agent Complement.* If the predicate is transitive, an agent complement can be included in an ASC:

- (8) a. Destruído el litoral por el petróleo, ...  
       destroyed the seaboard by the oil  
       b. Detenido el ministro por la policía, ...  
       arrested the minister by the police

1. They must also agree in gender, but this constraint is not relevant now.

However, we can find numerous examples where an ASC makes it difficult for an agent complement to appear:

- (9) a. ?(Una vez) escrita la novela por ese profesor, la editorial  
 (once) written the novel by that professor, the publishing-house  
 decidió publicarla.  
 decided publish-INF-it
- b. ?(Una vez) descubierta la vacuna por un investigador,  
 (once) discovered the vaccine by a researcher,  
 se comercializará.  
 SE commercialize-FUT-3-sg

As can be observed in (10), these constructions are completely felicitous in the absence of an agent complement:

- (10) a. (Una vez) escrita la novela, la editoria decidió  
 (once) written the novel, the publishing-house decided  
 publicarla.  
 publish-INF-it
- b. (Una vez) descubierta la vacuna, se comercializará.  
 (once) discovered the vaccine, SE commercialize-FUT-3-sg

From these examples, we can conclude that ASCs, regardless of their passive character, show a strong resistance to agent complement inclusion.

2.1.6. *Specific NPs.* NPs direct internal arguments must be specific so as to be included in ASCs:

- (11) a. Construida la casa, ...  
 built the house
- b. \*Construida casa, ...  
 built house
- c. \*Construidas casas, ...  
 built houses

2.1.7. *Negation.* As pointed out by several authors (Hernanz (1991), de Miguel (1992), López (1994), among others), negation is incompatible with ASCs:

- (12) a. \*No disuelto el azúcar, ...  
 not dissolved the sugar
- b. \*No disuelto, el azúcar ...  
 not dissolved, the sugar

- (13) a. \*No arreglado el coche, ...  
not repaired the car
- b. \*No arreglado, el coche ...  
not repaired, the car

Nevertheless, contrary to the opinion of these authors, it is possible to find an adverb of negation in an ASC if this element coappears with adverbs such *aún* (*yet*) or *todavía* (*still*).

- (14) a. No disuelto {aún/todavía} el azúcar, ...  
not dissolved {yet/still} the sugar
- b. No disuelto {aún/todavía}, el azúcar, ...  
not dissolved {yet/still}, the sugar
- (15) a. No arreglado {aún/todavía} el coche, ...  
not repaired {yet/still} the car
- b. No arreglado {aún/todavía}, el coche, ...  
not repaired {yet/still}, the car

In our opinion, the explanation of this phenomenon is related to the presuppositional information this kind of adverbs contain (see section 4.4.).

## 2.2. Two Types of ASCs

There is disagreement among researchers as to the characterization of the role of the NP subject in ASCs.

As mentioned above, López (1994) considers the NP subject in ASCs as being optional, whereas Hernanz (1991) affirms that ASCs must have a lexical NP subject.

Concerning ASCs headed by a past participle, we state, contrary to Hernanz (1991), that sequences with empty NP subjects are also ASCs.

Following Dini (1994), we assume that two types of ASCs exist: those having a lexical NP subject —generally not coreferent with an NP in the main clause—, and those having an empty NP subject —generally coreferent with an NP in the main clause—.

*2.2.1. Sequences with Empty NP Subjects.* First, we can observe a great similarity between the following sentences:

- (16) a. La piscina, una vez vaciada, parecía más grande.  
the swimming-pool, once emptied seemed more big
- b. La piscina, una vez vaciada toda el agua, parecía más grande.  
the swimming-pool, once emptied all the water, seemed more big

- (17) a. La novela, (una vez) publicada, fue un éxito.  
 the novel, (once) published, was a success
- b. La novela, (una vez) publicada la primera edición, fue un éxito.  
 the novel, (once) published the first edition, was a success

It is hard to believe that (16b) and (17b) —both having a lexical NP— are ASCs, and that (16a) and (17a) —both having a phonetically unrealized NP— are not.

Second, ASCs with an empty NP subject are similar, but not equal, to some related sentences such as relative clauses. Let us compare the following examples:

- (18) a. La casa, construida en el acantilado, aguantaba los embates  
 the house, built on the cliff, withstand-IMP the lashings  
 del mar.  
 of-the sea
- b. La casa construida en el acantilado aguantaba los embates  
 the house built on the cliff withstand-IMP the lashings  
 del mar.  
 of-the sea
- (19) a. La casa, que estaba construida en el acantilado, aguantaba  
 the house, which be-IMP built on the cliff, withstood  
 los embates del mar.  
 the lashings of-the sea
- b. La casa que estaba construida en el acantilado aguantaba  
 the house which be-IMP built on the cliff withstood  
 los embates del mar.  
 the lashings of-the sea

In spite of the similarities between (18) and (19), there is an important difference: ASCs are free adjuncts while relative clauses are not. In (21), it is indicated that relative clauses, contrary to ASCs and other free adjuncts, cannot appear in absolute initial position:

- (20) a. Construida en un acantilado, la casa se divisaba desde la bahía.  
 built on a cliff, the house SE spy-IMP from the bay
- b. Talado el árbol, la casa se divisaba desde la bahía.  
 felled the tree, the house SE spy-IMP from the bay
- (21) a. \*Que estaba construida en un acantilado, la casa se divisaba  
 which be-IMP built on a cliff, the house SE spy-IMP  
 desde la bahía.  
 from the bay
- b. \*Que se taló el árbol, la casa se divisaba desde la bahía.  
 which SE felled the tree, the house SE spy-IMP from the bay

Third, as pointed out by Hernanz (1991), ASCs with a lexical NP subject have a tonal inflection that contributes to set them off from the main sentence. However, in our opinion, not only ASCs with a lexical NP subject, but also ASCs with an empty NP subject have this property.

Fourth, both Hernanz (1991) and de Miguel (1992) argue against considering the constructions with an empty NP subject as ASCs. They note that these constructions share the NP subject with another NP in the main sentence.

However, the NP subject of ASCs headed by a gerund has the same behavior, and we are quite sure about treating them as ASCs:

- (22) a. Jugando pro<sub>i</sub> al póker, Harvey<sub>i</sub> es el mejor.  
           playing to-the poker, Harvey is the best  
       b. Harvey<sub>i</sub>, jugando pro<sub>i</sub> al póker, es el mejor.  
           Harvey, playing to-the poker, is the best

Besides, the main sentence and the ASC with lexical NP subject can share, on some occasions, the NP:

- (23) a. Consultados los jueces<sub>i</sub>, pro<sub>i</sub> prefirieron no revelar el secreto.  
           consulted the judges, preferred-3pl not disclose-INF the secret  
       b. Interrogados los detenidos<sub>i</sub>, pro<sub>i</sub> acabaron confesando su crimen.  
           interrogated the inmates, ended-up-3pl confessing their crime

Finally, we can find examples where ASCs with an empty NP subject and the main sentence do not share the NP. In these cases, the referent appears in a preceding sentence of the discourse.

- (24) a. Aprobado finalmente con una única abstención, el Consejo  
           approved finally with a single abstention, the Council  
           pasó a discutir otro asunto.  
           went-on to discuss-INF another topic  
       b. Llegados al salón, S. M. pronunció unas palabras.  
           arrived at-the room, H. M. spoke some words

Examples such as (24) show that ASCs with an empty NP subject can appear completely separated from the sentence they modify.

2.2.2. *Aspectual ASCs and Predicative ASCs.* As far as ASCs headed by a past participle are concerned, we think, following Dini (1994), that there are enough arguments to conclude that two types of ASCs exist.

Dini (1994) distinguishes between Aspectual ASCs (henceforth, AASCs), that is, ASCs with a lexical NP subject, and Predicative ASCs (henceforth, PASCs), in other words, ASCs with an empty NP subject.

The main argument adduced by Dini (1994) is the different temporal interpretation these two types of constructions receive. Dini (1994) provides the following examples for Italian:

- (25) a. Insultatolo, il linguista si suicidò.  
'Mistreated him, the linguist committed suicide.'
- b. Insultato da tutti i professori, il linguista si suicidò.  
'Mistreated by all the professors, the linguist committed suicide.'
- (26) a. Interrogato il presidente dal Pubblico Ministero, i telespettatori  
scoppiarono a piangere.  
'Questioned the president by the State Prosecutor, the television  
viewers burst into tears.'
- b. Interrogato dal Pubblico Ministero, Silvio scoppiò a piangere.  
'Questioned by the State Prosecutor, Silvio burst into tears.'

AASCs such as (25a) and (26a) denote a time interval previous to the sentence they modify, whereas PASCs such as (25b) and (26b) can be previous or simultaneous to the main sentence. We find a similar behavior in Spanish:

- (27) a. Leído el discurso por el Señor Rosa, el público se rió.  
read the speech by the Mr. Pink, the public SE laughed
- b. Leído por el Señor Rosa, el discurso hizo reír al público.  
read by the Mr. Pink, the speech made laugh-INF to-the public

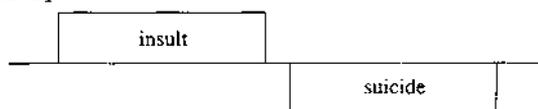
Only (28a) is an adequate paraphrase for (27a). This fact shows that the tense denoted by AASCs is previous to the tense denoted by the main sentence:

- (28) a. Después de que el Señor Rosa leyera el discurso,  
after of that the Mr. Pink read-IMP-SUBJ the speech,  
el público se rió.  
the public SE laughed
- b. Mientras el Señor Rosa leía el discurso, el público se rió.  
while the Mr. Pink read-IMP the speech, the public SE laughed

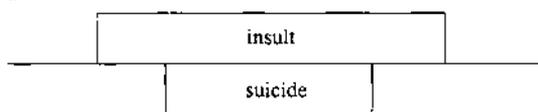
As mentioned above, PASCs have two possible temporal interpretations. In this sense, we can observe that both (28a) and (28b) are valid paraphrases from (27b).

Dini (1994) proposes the following diagrams to represent these two different time intervals:

- (29) [terminative]



- (30) [durative]



AASCs can only receive a terminative interpretation, while PASCs can receive both terminative and durative interpretation.

On the other hand, as pointed out by Dini (1994), the empty NP subject of PASCs must be coreferent with an external NP.<sup>2</sup> Without this coreference relation sequences become ungrammatical:

- (31) a. \*Saludado por todos, empezó a llover.  
cheered by everybody, started-3sg. to raining
- b. \*Odiado por los niños, la casa era un infierno.  
hated by the children, the house be-IMP a hell

Let us compare, in this sense, the ungrammaticality of (31) with the well-formedness of the following examples:

- (32) a. Saludado pro<sub>i</sub> por todos, el Señor Blanco<sub>i</sub> subió al  
cheered by everybody, the Mr. White climbed to-the  
escenario.  
stage
- b. Odiado pro<sub>i</sub> por los niños, la casa era para el Señor Marrón<sub>i</sub>;  
hated by the children, the house be-IMP for the Mr. Brown  
un infierno.  
a hell

Nevertheless, as we have shown in (24), we can also find this coreference with an NP in a previous sentence of the discourse, not only with an NP in the sentence that PASCs modify.

### 2.3. Some Aspectual Constraints

According to Hernanz (1991) and de Miguel (1992), not only syntactic constraints govern the grammaticality of ASCs.

As we can see, there are no syntactic reasons to accept (33) and to reject (34). Both (33) and (34) contain transitive verbs, and they fulfill all the requirements presented above with respect to well-formedness of ASCs: word order, agreement, Case assignment, specificity of the NP subject, and so forth.

- (33) a. Construida la casa, ...  
built the house
- b. Terminada la película, ...  
finished the film
- (34) a. \*Amada la mujer, ...  
loved the woman
- b. \*Sabido francés, ...  
known French

2. As for AASCs, this relationship of coreference hardly ever appears.

In section 4, we will demonstrate that there are aspectual constraints governing the well-formedness of ASCs. We will also see that the two types of ASCs described above are affected by different aspectual constraints. This fact further supports that the distinction between AASCs and PASCs is adequate.

But before dealing with these matters, it is necessary to present the theory of Aktionsart we will adopt.

### 3. A Compositional Analysis of Aktionsart

#### 3.1. Aspectual Classes

3.1.1. *Vendler (1967)*. The vast majority of studies devoted to Aktionsart are based on the aspectual classification proposed by Vendler (1967). This author distinguishes between states, activities, accomplishments and achievements:

- |         |                              |                  |
|---------|------------------------------|------------------|
| (35) a. | Madonna loves a bullfighter. | [state]          |
| b.      | Miguel is running.           | [activity]       |
| c.      | Quentin wrote the script.    | [accomplishment] |
| d.      | Melanie noticed Antonio.     | [achievement]    |

These four aspectual classes are obtained by means of two properties, processivity and telicity, as shown in the following table:

|      |                |              |          |
|------|----------------|--------------|----------|
| (36) |                | processivity | telicity |
|      | state          | -            | -        |
|      | activity       | +            | -        |
|      | accomplishment | +            | +        |
|      | achievement    | -            | +        |

Processive situations are composed of several stages, while non-processive predicates are composed of only one stage. On the other hand, telic predicates denote a situation with an implicit end, whereas atelic predicates lack this implicit end.

3.1.2. *Verkuyl (1989)*. Verkuyl (1989) considers that states, processes<sup>3</sup> and events are the only relevant aspectual classes, the distinction between accomplishments and achievements being unnecessary.<sup>4</sup>

These three aspectual classes can be obtained by means of two Boolean features: ADD TO, related to verbs, and SQA (Specified Quantity of A), related to NPs. ADD TO refers to the stative or dynamic nature of the verb, and SQA refers to the type of quantification denoted by the NP. Thus NPs including, for example, determiners (*a house*) are marked by [+SQA], whereas bare plurals (*houses*) are marked by [-SQA].

3. We will consider processes and activities as synonyms.

4. In Verkuyl's proposal, both accomplishments and achievements are included in the class of events.

The following table illustrates how the aspectual valence of a given predicate is compositionally obtained (Verkuyl (1989)):

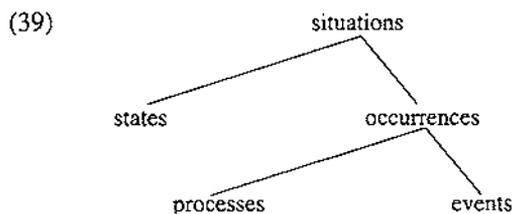
| (37)      | ADD TO (verb) | SQA (NP) |
|-----------|---------------|----------|
| states    | -             | +/-      |
| processes | +             | -        |
| events    | +             | +        |

As we can see in (37), the SQA value is the only difference between processes and events. In other words, an event is a process with an end. Thus, the same verb can form a processive or an eventive sentence, as illustrated in (38):

- (38) a. Judith ate a sandwich.  
 b. Judith ate sandwiches.

The treatment of Aktionsart we will adopt in this work is chiefly based on Verkuyl's theory. Nevertheless, as we will see, we disagree with Verkuyl on some relevant points as, for example, the most adequate level for the aspectual calculus, or the aspectual markedness of lexical entries.

*3.1.3. The Structure of Aspectual Classes.* The structure of aspectual classes we will adopt in this work is closely inspired by that proposed in Mourelatos (1978). In our opinion, it is this structure which most precisely captures the relationship between the different aspectual classes.



As we will remark in the next section, by means of a representation of aspectual classes as in (39), we account for the fact that processes share some properties with states and some others with events.<sup>5</sup>

*3.1.4. Two Boolean Features.* In order to obtain the three aspectual classes that we will include in our study, we will add to (39) two Boolean features: ADD TO and DELIMITEDNESS (DELIM). We use ADD TO in nearly the same sense as used in Verkuyl (1989). On the other hand, the DELIM attribute can be understood to some extent as synonymous of telicity.<sup>6</sup>

5. For a more detailed discussion, see Marín (1996).

6. The difference we want to point out when using delimitedness instead of telicity is related to the fact that the quantificational properties of NPs determine whether a predicate is delimited or not. So, we are not referring to the conceptual meaning of any aspectual class.

Our proposal is summarized in the next table:

| (40)      | ADD TO | DELIMITEDNESS |
|-----------|--------|---------------|
| states    | -      | -             |
| processes | +      | -             |
| events    | +      | +             |

By means of this procedure we can capture the relationship between states and processes (both are [-DELIM]), and between processes and events (both are [+ADD TO]). Therefore, we can reformulate the distinction stated by Verkuyl (1989) between processes and events: an event is a delimited process.

*3.1.5. Formal Properties of Aspectual Classes.* We can also provide a formal definition of these two features. On the one hand, Verkuyl (1989) defines ADD TO as follows:

- (I) If one verb has the feature [+ADD TO], then there exists a function  $s$  that takes an interval  $I=(a,b)$  and returns another interval  $I=(a,c)$ ; that is, another interval with the same initial point but with an end in a later point.

The interaction between ADD TO and SQA is carried out this way:

- (II) The ADD TO function adds process intervals to other process intervals indefinitely. If there is an NP [+SQA] then the process ends. If not, the process does not stop.

On the other hand, Dowty (1987) gives a formal definition of telicity that we can adapt so as to define delimitedness:

- (III) If  $\partial$  is a delimited predicate, then the truth of  $\partial(x_1, \dots, x_n)$  for interval  $I$  entails that  $\partial(x_1, \dots, x_n)$  is false for all proper subintervals  $I'$  of  $I$ .

As we can see, delimitedness is exactly the opposite of homogeneity (Krifka (1992)), so we can refer to homogeneous predicates (states and processes) in order to differentiate them from delimited predicates (events).

### 3.2. The Basic Level of Aspectual Analysis

Vendler (1967) proposes an aspectual classification based entirely on the aspectual labeling of lexical entries. However, this analysis has been rejected on the basis of the fact that, as pointed out by Verkuyl (1989) and Vidal (1992), among others, in a great number of cases it is necessary to know what kind of NP has the verb as a complement to determine the aspectual class of a predicate.

On the other hand, Verkuyl (1989) considers the sentence to be the most adequate level of the aspectual analysis. Related to this, Verkuyl (1989) argues

that not only internal arguments are involved in the aspectual calculus, but also the subject is.

In our opinion, the arguments adduced by Verkuyl (1989, 1993) do not prove that subjects are able to change the aspectual valence of a given sentence. Moreover, even if subjects were involved in the aspectual analysis (in languages such as Spanish they are not) their influence will be severely limited. Let us observe, in this sense, the eight cases examined in Verkuyl (1993):

|         |          |       |        |       |            |       |       |
|---------|----------|-------|--------|-------|------------|-------|-------|
| (41) a. | Judith   | [+ B] | ate    | [+ A] | a sandwich | [+ B] | [+ T] |
| b.      | Judith   | [+ B] | ate    | [+ A] | sandwiches | [- B] | [- T] |
| c.      | Judith   | [+ B] | wanted | [- A] | a sandwich | [+ B] | [- T] |
| d.      | Judith   | [+ B] | wanted | [- A] | sandwiches | [- B] | [- T] |
| e.      | Nobody   | [- B] | ate    | [+ A] | a sandwich | [+ B] | [- T] |
| f.      | Soldiers | [- B] | ate    | [+ A] | sandwiches | [- B] | [- T] |
| g.      | Nobody   | [- B] | wanted | [- A] | a sandwich | [+ B] | [- T] |
| h.      | Soldiers | [- B] | wanted | [- A] | sandwiches | [- B] | [- T] |

Note that only in (41e) does the subject play a crucial role in the aspectual calculus of a sentence.<sup>7</sup> Therefore, the analysis proposed by Verkuyl (1989, 1993) with respect to the influence of the subject ends up being, obviously, redundant.

Vidal (1992) contends that there are two levels of aspectual calculus: the level of the verbal predicate (the verb with all its internal arguments), and the level of the complete predication (the verb with all its arguments and the majority of the modifiers).

We agree with Vidal (1992) on the distinction between these two levels of aspectual analysis, but we believe that not all the internal arguments are relevant at the basic level of the aspectual calculus.

In our opinion, the arguments adduced by Tenny (1994) are strong enough to consider the direct object as being the only internal argument of the verb that takes part in the aspectual calculus of a given predicate.

At this point, we can summarize our proposal as follows:

- (i) We consider the VP (more precisely, the verb and the subcategorized direct object) as the basic level of aspectual calculus.
- (ii) NP subjects, adjuncts, negation, and other similar elements do not play any role in this basic level. In some cases, these elements are able to change the aspectual valence of a predicate. Therefore, they operate in a subsequent level of aspectual calculus.

7. Moreover, sentences like (41e), with a subject like *nobody*, can be analyzed as the negation of an event.

### 3.3. The Aspectual Labeling of Lexical Entries

As we have seen throughout this section, it is necessary to make explicit an analysis that allows us to obtain the aspectual markedness of a predicate starting from the aspectual information codified in the lexical entries.

Vidal (1992) proposes a classification of verbs on the basis of the aspectual information they contain. He distinguishes between eventized, uneventizable and eventizable verbs.

First, cases such as *tocar el timbre* (to ring the bell) or *estornudar* (to sneeze), that form eventive predicates regardless of the characteristics of their arguments, are eventized verbs. Second, verbs like *amar* (to love) or *utilizar* (to use), always forming homogeneous predicates, are uneventizable verbs. Finally, cases such as *construir* (to build) or *arreglar* (to repair), that can form eventive or non-eventive predicates depending on the value of their arguments, are considered eventizable verbs.

*3.3.1. Problems for Vidal (1992).* We agree with Vidal (1992) on the distinction between eventizable and uneventizable verbs. However, with respect to eventized verbs we disagree; in our opinion, there are not enough arguments to conclude that eventized verbs exist.

Firstly, some verbs considered as eventized by Vidal (1992) seem to be, in fact, eventizable verbs. As we can see, *tocar* can form not only eventive predicates as in (42a), but also non-eventive predicates as in (42b):

- (42) a. Juan tocó el timbre.  
           Juan rang the bell
- b. Juan tocó timbres.  
           Juan rang bells

Secondly, the aspectual labeling of verbs like *toser* (to cough) or *estornudar* (to sneeze), also treated as eventized by Vidal (1992), is not an easy task.

As we can see in the following examples, even in the punctual interpretation of these verbs<sup>8</sup> the *in x time* test is not sufficiently adequate:

- (43) a. Juan tosió           {?en/durante un minuto}.  
           Juan coughed    {in/for a minute}
- b. Juan estornudó {?en/durante un minuto}.  
           Juan sneezed    {in/for a minute}

In addition, both Moens and Steedman (1988) and Smith (1991) consider that these verbs form a group apart from other punctual verbs. Moens and Steedman (1988) distinguish between culminations (to win a match) and points (to cough, to sneeze).

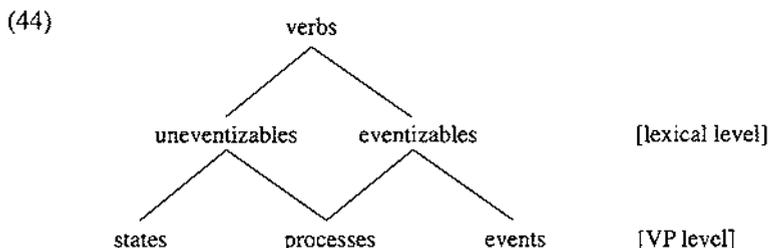
8. They can adopt frequentative interpretation as well.

Smith (1991) differentiates between accomplishments (*to win a match*) and semelfactives (*to cough, to sneeze*).<sup>9</sup>

3.3.2. *Our Proposal.* As far as the aspectual labeling of lexical entries is concerned, our proposal is based on the following points:

- (iii) Eventized verbs do not exist; that is to say, there are no verbs labeled in the lexicon as events regardless of the properties of their arguments.
- (iv) Uneventizable verbs are verbs labeled in the lexicon as states or processes regardless of the kind of NP subcategorized as direct object.
- (v) Eventizable verbs are verbs which can form VPs labeled as events depending on the properties of their arguments. If the NP is [-SQA], then these verbs will form processive VPs; if the NP is [+SQA], then these verbs will form eventive VPs.

The global procedure of aspectual labeling of lexical entries is presented in the following figure:



As a consequence of our proposal, we can establish an important link between syntax and semantics: eventizable verbs must be transitive or unaccusative. This syntactic restriction does not apply in the case of uneventizable verbs.<sup>10</sup>

## 4. Aspectual Properties of ASCs

### 4.1. AASCs

As shown in the previous section, the aspectual markedness of verbs is not enough to determine the aspectual class to which a predicate belongs. On the contrary, it is necessary to calculate the Aktionsart compositionally by means of the information given by the verb and the NP direct internal argument.

9. Smith (1991) considers, moreover, that semelfactives are punctual and atelic. Dini and Bertinetto (1995) reach a similar conclusion. In fact, there are not strong reasons to vinctuate the punctuality of a predicate to the class of events.
10. The behavior of some uneventizable verbs is especially interesting. So, we can find transitive verbs like *to caress, to push or to use* that always form a processive predicate.

As regards the aspectual constraints determining the good formation of AASCs, in Marín (1994) we proposed the following generalization:

- (vi) Only VPs aspectually marked as events can appear in AASCs.

It is hereby inferred that if a VP pertains to one of the classes *state* or *process*, it cannot appear in an AASC. It is worthwhile to compare the grammaticality of the sentences in (45) with the ungrammaticality of (46):

- (45) a. Construida la casa, ... [accomplishment]  
       built the house
- b. Descubierta la vacuna, ... [achievement]  
       discovered the vaccine
- (46) a. \*Acariciada su mujer, ... [process]  
       caressed his wife
- b. \*Amada su mujer, ... [state]  
       loved his wife

We have also shown, concerning the contribution of the NP direct object in the calculus of the Aktionsart, that VPs where the NP appears without specification, either singular or plural, cannot form AASCs. This is held for the examples in (47).

- (47) a. \*Construida casa, ...  
       built house
- b. \*Construidas casas, ...  
       built houses

However, we cannot conclude that the nominal specification on its own constitutes a good criterion in the analysis of AASCs. Although non-specific NPs cannot appear in this type of predications, some AASCs are ungrammatical when including specific NPs, as shown in (46).

In the previous section, the differences between uneventizable and eventizable verbs were stated. Uneventizable verbs are those verbs that will always form non-eventive VPs, with independence of their NP. This implies states (*to know, to fear*) and some of the processes (*to caress, to use*).

Eventizable verbs are those verbs (*to build, to discover*) that can form eventive and non-eventive predicates, depending on the value, plus or minus, of the feature SQA of the NP direct internal argument. For the sake of clarity, let us compare the examples in (48) and (49):

- (48) a. \*Amada su mujer, ... [uneventizable (state)]  
       loved his wife
- b. \*Acariciada su mujer, ... [uneventizable (process)]  
       caressed his wife

- (49) a. \*Construidas casas, ... [eventizable (process)]  
           built           houses  
       b. Construidas las casas, ... [eventizable (event)]  
           built           the houses

In order to incorporate these distinctions in our analysis, the generalization in (vi) could be reformulated in the following terms:

- (vii) Only VPs formed by an eventizable verb and an NP [+SQA] can appear in AASCs.

It is inferred from (vii) that neither a VP formed by an uneventizable verb and an NP [-SQA] nor a VP with an uneventizable verb can appear in an AASC.

With this approach, following either (vi) or (vii), one need not include the specificity of the NP in the syntactic characterization of AASCs. In addition, it is explained why some verbs cannot appear in AASCs even if they select specific NPs.

These arguments make our proposal more adequate when compared to others.<sup>11</sup>

#### 4.2. PASCs

As far as PASCs are concerned, the generalizations proposed above are not adequate: PASCs do not share the aspectual constraints described for AASCs. As we can see in the examples below, not only eventive predicates but also stative and processive ones, can form PASCs:

- (50) a. El decano, interrogado por la policía, se sintió abatido.  
           the dean, questioned by the police, SE felt dejected  
       b. La vacuna, (una vez) descubierta, resultó ser muy adecuada.  
           the vaccine, (once) discovered, turned-out be-INF very adequate  
       c. Madonna, amada por el torero, era feliz.  
           Madonna, loved by the bullfighter, be-IMP happy  
       d. Antonio, acariciado por Melanie, se excitó.  
           Antonio, caressed by Melanie, SE excited

Differences concerning aspectual constraints in AASCs and PASCs confirm the distinction between these two types of ASCs proposed in section 2.

As we have mentioned formerly, Dini (1994) observes that Italian PASCs can receive a durative or a terminative interpretation. In Spanish, we can observe a relationship between aspectual constraints and temporal interpretation: PASCs formed by an eventive predicate are ambiguous between a durative and a terminative interpretation, while PASCs formed by a non-eventive predicate can only receive

11. The aspectual analysis proposed by de Miguel (1992) does not take into account these syntactic specifications and, as a consequence, they have to be included as a characteristic. Moreover, de Miguel (1992) does not consider that not only the verb must be aspectually marked, but also the complete predicate.

a durative interpretation. This is shown in (51), where PASCs formed by a non-eventive predicate cannot cooccur with *una vez* (*once*), an adverb which forces a terminative meaning:

- (51) a. \*Madonna, una vez amada por el torero, era feliz.  
 Madonna, once loved by the bullfighter, be-IMP happy
- b. \*Antonio, una vez acariciado por Melanie, se excitó.  
 Antonio, once caressed by Melanie, SE excited

On the contrary, PASCs formed by eventive predicates can coappear with this adverb, as can be seen in (52):

- (52) a. El decano, una vez interrogado por la policía, se sintió abatido.  
 the dean, once questioned by the police, SE felt dejected
- b. El discurso, una vez leído por el presidente, hizo reír al público.  
 the speech, once read by the president, made laugh to-the public

Another test which allows us to argue that PASCs formed by eventive predicates can receive a double interpretation is observed in the following examples:

- (53) a. El decano, una vez que fue interrogado por la policía, se sintió abatido.  
 the dean, once that was questioned by the police, SE felt dejected
- b. El decano, siendo interrogado por la policía, se sintió abatido.  
 the dean, being questioned by the police, SE felt dejected

It should be noted that both (53a) and (53b) are valid paraphrases for (50a); however, (54b) is the only adequate paraphrase for (50c):

- (54) a. \*Madonna, una vez que fue amada por el torero, era feliz.  
 Madonna, once that was loved by the bullfighter, be-IMP happy
- b. Madonna, siendo amada por el torero, era feliz.  
 Madonna, being loved by the bullfighter, be-IMP happy

From the data analyzed throughout this section, we can extract the following generalizations:

- (viii) PASCs formed by an eventive predicate can denote a time interval previous or simultaneous to the main sentence.
- (ix) PASCs formed by a non-eventive predicate can only denote a time interval simultaneous to the sentence they modify.

In (55), the global results with respect to the temporal interpretation of both AASCs and PASCs are shown:

| (55)                    | terminative | durative |
|-------------------------|-------------|----------|
| AASCs                   | +           | -        |
| PASCs (eventive VP)     | +           | +        |
| PASCs (non-eventive VP) | -           | +        |

As we can observe in (55), a strong interaction between temporal meaning and aspectual labeling is found for Spanish.

#### 4.3. *The Generic Interpretation of ASCs*

Concerning the relevance of the NP direct object in the interpretation of the ASCs, it must be said that the ASCs with a non-definite NP can have a generic interpretation. This is demonstrated in the following examples:

- (56) a. Acabado un ciclo, comienza otro.  
 finished one cycle, begins another
- b. Una vez cometido un robo, te conviertes en un ladrón.  
 once committed a theft, you turn into a thief

However, this generic interpretation is only possible when the verb of the main sentence is in the present or the imperfect indicative tenses.<sup>12</sup> This is the reason why the examples of (57) are preferred to those of (58).

- (57) a. Acabado un imperio, empieza otro.  
 finished one empire, begins another
- b. Acabado un imperio, empezaba otro.  
 finished one empire, begin-IMP another
- (58) a. ?Acabado un imperio, empezó otro.  
 finished one empire, began another
- b. ??Acabado un imperio, ha empezado otro.  
 finished one empire, has begun another

The doubts about the grammaticality of the constructions in (58) make us think that the ASCs having a non-definite NP cannot complement a main sentence which is in the past tense.

12. The future can favor a generic interpretation too, but its behavior is not truly consistent, as it is the case with the present and the imperfect.

This behavior is shown in (59). If in the same examples the nature of the NP changes from non-definite to definite they become acceptable, as evidenced in (60):

- (59) a. ??Una vez acabada una película, Quentin se ha sentido muy  
 once finished a film, Quentin SE has felt very  
 satisfecho.  
 satisfied
- b. ?Detenido un ladrón de joyas, el comisario se sintió muy  
 arrested a thief of jewels, the police-chief SE felt very  
 satisfecho.  
 satisfied
- (60) a. Una vez acabada la película, Quentin se ha sentido muy satisfecho.  
 once finished the film, Quentin SE has felt very satisfied
- b. Detenido el ladrón de joyas, el comisario se sintió muy satisfecho.  
 arrested the thief of jewels, the police-chief SE felt very satisfied

The main reason for the grammaticality of (60) in contrast with the doubtful acceptability of (59) lies, in our opinion, on the generic interpretation that the ASCs with non-definite NP tend to receive.

#### 4.4. Negation

As mentioned in section 2, Hernanz (1991) and de Miguel (1992) contend that negative polarity elements cannot appear in ASCs.

- (61) a. \*No construida la casa, ...  
 not built the house
- b. \*No abierta la puerta, ...  
 not opened the door

Nevertheless, the constructions in (61) become acceptable if an adverb such as *aún* (yet) or *todavía* (still) is included:

- (62) a. No construida todavía la casa, ...  
 not built still the house
- b. No abierta aún la puerta, ...  
 not opened yet the door

In our opinion, the well-formedness of (62) is related to the presuppositional nature that these adverbs give to the ASC.<sup>13</sup>

13. See Marín (1996) for a more detailed discussion.

However, despite these considerations, the ungrammaticality of the examples in (61) is covered by the generalizations proposed formerly.

Negation turns a delimited predicate into a non-delimited one. Thus, *no construir una casa* indicates a non-eventive situation and, as a consequence, it cannot appear in an ASC. Once more, the aspectual analysis of basic predication proposed in our study shows a high degree of generalization. If we state that only the eventive predicates can appear in ASCs, we have a solution for the problem posed by negation and no other specification needs to be added.

## 5. An Analysis in HPSG

### 5.1. The Aspectual Information in HPSG

In section 3, we have seen that, although the VP is the appropriate level of the aspectual analysis, it is necessary to specify the aspectual information contained in lexical entries. This is especially relevant if we are interested in an implementation of our results in a linguistic model such as HPSG.

According to the analysis proposed, stative and processive predicates may be headed by uneventizable verbs. On the other hand, eventizable verbs can form processive or eventive predicates depending on the type of NP direct internal argument they select. These three kinds of predicates can be obtained by means of markedness with respect to ADD TO and delimitedness:

|      |           |        |               |
|------|-----------|--------|---------------|
| (63) |           | ADD TO | DELIMITEDNESS |
|      | states    | -      | -             |
|      | processes | +      | -             |
|      | events    | +      | +             |

As far as the treatment of Aktionsart in HPSG is concerned, our proposal can be synthesized as follows: aspectual information is contained in the AKTIONSART (AKTIO) attribute of the lexical entries which is part of the CONTENT attribute. The value of AKTIO is an object of the type *situation* which is defined by the DELIMITEDNESS (DELIM) and ADD TO Boolean features, as shown in (64):

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |                                                                                                                                                                                                                                                                                                                                                                                    |                       |                                                                                                                                          |                      |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| (64)                  | <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 10px;"><i>content</i></td> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;"><i>situation</i></td> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;">ADD TO <i>boolean</i></td> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;">DELIM <i>boolean</i></td> </tr> </table> </td> </tr> </table> </td> </tr> </table> </td> </tr> </table> | <i>content</i>        | <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;"><i>situation</i></td> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;">ADD TO <i>boolean</i></td> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;">DELIM <i>boolean</i></td> </tr> </table> </td> </tr> </table> </td> </tr> </table> | <i>situation</i>      | <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;">ADD TO <i>boolean</i></td> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;">DELIM <i>boolean</i></td> </tr> </table> </td> </tr> </table> | ADD TO <i>boolean</i> | <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;">DELIM <i>boolean</i></td> </tr> </table> | DELIM <i>boolean</i> |
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| <i>situation</i>      | <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;">ADD TO <i>boolean</i></td> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;">DELIM <i>boolean</i></td> </tr> </table> </td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ADD TO <i>boolean</i> | <table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="padding-right: 5px;">DELIM <i>boolean</i></td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DELIM <i>boolean</i>  |                                                                                                                                                                                                                                                                                                                                                                                    |                       |                                                                                                                                          |                      |
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| DELIM <i>boolean</i>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |                                                                                                                                                                                                                                                                                                                                                                                    |                       |                                                                                                                                          |                      |

In the case of uneventizable verbs, the treatment of aspectual information and the subsequent markedness of the predicate is not as difficult as in the case of eventizable verbs.

Stative predicates are headed by verbs containing both features [ADD TO -] and [DELIM -], and adopt the same aspectual information as these verbs:

$$(65) \quad \left[ \begin{array}{l} \textit{content} \\ \text{AKTIO} \left[ \begin{array}{l} \textit{state} \\ \text{ADD TO -} \\ \text{DELIM -} \end{array} \right] \end{array} \right]$$

Some processive predicates are formed by uneventizable verbs containing both features [ADD TO +] and [DELIM -] and adopt the same aspectual information as these verbs:

$$(66) \quad \left[ \begin{array}{l} \textit{content} \\ \text{AKTIO} \left[ \begin{array}{l} \textit{process} \\ \text{ADD TO +} \\ \text{DELIM -} \end{array} \right] \end{array} \right]$$

The analysis of eventizable verbs is slightly more complex. The information contained in lexical entries is not sufficient to obtain either the aspectual valence of eventive predicates or a great number of processive predicates. We have to take into account these two possibilities: 1) if an eventizable verb selects an NP [SQA -] as direct internal argument, then this verb will be the head of a processive VP; 2) if an eventizable verb selects an NP [SQA +] as direct internal argument, then this verb will be the head of an eventive VP.

A possible solution would consist of considering the DELIM attribute as having a disjunctive value:

$$(67) \quad \left[ \begin{array}{l} \textit{content} \\ \text{AKTIO} \left[ \begin{array}{l} \textit{occurrence} \\ \text{ADD TO +} \\ \text{DELIM + v-} \end{array} \right] \end{array} \right]$$

If we adopt this representation of lexical entries, it would be possible to compositionally obtain the aspectual valence of processive and eventive VPs in this way:

$$(68) \quad \left[ \begin{array}{l} \text{PHON } \langle \rangle \\ \text{SYNSEM | LOC | CONTENT | AKTIO} \left[ \begin{array}{l} \text{ADD TO +} \\ \text{DELIM } f \left( [1], [2] \right) \end{array} \right] \\ \text{DTRS} \left[ \begin{array}{l} \text{HEAD-DTR:} \left[ \begin{array}{l} \text{PHON } \langle \rangle \\ \text{SYNSEM | LOC | CONTENT | AKTIO} \left[ \begin{array}{l} \text{ADD TO +} \\ \text{DELIM } [1] + v- \end{array} \right] \end{array} \right] \\ \text{COMP-DTRS} \left\langle \left[ \begin{array}{l} \text{PHON } \langle \rangle \\ \text{SYNSEM | LOC | CONTENT | AKTIO} \left[ \text{SQA } [2; ] \right] \end{array} \right] \right\rangle \end{array} \right] \end{array} \right]$$

In the case of eventive predicates, for example, we would obtain the following representation:

(69)

$$\left[ \begin{array}{l} \text{PHON } \{ \textit{construir la casa} \} \\ \text{SYNSEM } | \text{LOC} | \text{CONTENT} | \text{AKTIO} \left[ \begin{array}{l} \text{ADD TO } + \\ \text{DELIM } + \end{array} \right] \\ \text{DTRS} \left[ \begin{array}{l} \text{HEAD-DTR} \left[ \begin{array}{l} \text{PHON } \{ \textit{construir} \} \\ \text{SYNSEM } | \text{LOC} | \text{CONTENT} | \text{AKTIO} \left[ \begin{array}{l} \text{ADD TO } + \\ \text{DELIM } + \text{v-} \end{array} \right] \end{array} \right] \\ \text{COMP-DTRS} \left\langle \left[ \begin{array}{l} \text{PHON } \{ \textit{la casa} \} \\ \text{SYNSEM } | \text{LOC} | \text{CONTENT} | \text{AKTIO} \left[ \text{SQA } + \right] \end{array} \right] \right\rangle \end{array} \right] \end{array} \right]$$

However, this analysis is not adequate in HPSG. There are relevant technical reasons that exclude it. Firstly, lexical entries cannot hold an attribute with a disjunction as value.

Secondly, as postulated in the *Content Principle*, the CONTENT of the semantic head is token-identical to the CONTENT of the mother. Obviously, (65) and (66) violate this principle because the information contained in the CONTENT of the mother is different from the information of the CONTENT of the head-daughter.<sup>14</sup>

We can solve these two problems by means of a lexical rule as in (67):

$$(70) \left[ \begin{array}{l} \text{AKTIO} \left[ \begin{array}{l} \textit{occurrence} \\ \text{ADD TO } + \\ \text{DELIM } + \text{v-} \end{array} \right] \\ \text{COMPS} \left\langle \text{NP} \left[ \begin{array}{l} \text{SQA } [1] \\ \text{CASE } \textit{acc} \end{array} \right] \right\rangle \end{array} \right] \rightarrow \left[ \begin{array}{l} \text{AKTIO} \left[ \begin{array}{l} \textit{occurrence} \\ \text{ADD TO } + \\ \text{DELIM } [1] \end{array} \right] \\ \text{COMPS} \left\langle \text{NP} \left[ \begin{array}{l} \text{SQA } [1] \\ \text{CASE } \textit{acc} \end{array} \right] \right\rangle \end{array} \right]$$

The use of this rule respects the requirements of the Content Principle: the DELIM attribute adopts a fixed value —positive or negative— in the lexical level. This implies that the semantic information does not change between the lexical level and the phrasal level.

As we can observe in (67), the DELIM attribute takes the same value as SQA. Thus, for example, if the SQA attribute has a negative value, then the DELIM value will be negative too, and the subsequent VP will be processive.

Nevertheless, given that in HPSG the information contained in the COMPS list is accessible to the head, the lexical rule in (70) is not necessary. We can offer a more accurate analysis as in (71):

14. We would be able to solve this problem proposing a modification of the Content Principle. Related to this, we believe that increasingly there are arguments to treat semantic information in a configurational way, like syntactic information.

(71)

$$\left[ \begin{array}{l} \text{AKTIO} \left[ \begin{array}{l} \textit{process} \\ \text{ADD TO +} \\ \text{DELIM -} \end{array} \right] \\ \text{COMPS} \left\langle \text{NP} \left[ \begin{array}{l} \text{SQA -} \\ \text{CASE acc} \end{array} \right] \right\rangle \end{array} \right]$$

The lexical entry of eventizable verbs that form processive predicates is illustrated in (71). Eventizable verbs that can head an eventive VP have the following lexical entry:

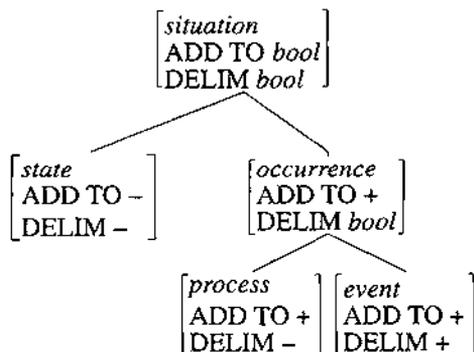
(72)

$$\left[ \begin{array}{l} \text{AKTIO} \left[ \begin{array}{l} \textit{event} \\ \text{ADD TO +} \\ \text{DELIM +} \end{array} \right] \\ \text{COMPS} \left\langle \text{NP} \left[ \begin{array}{l} \text{SQA +} \\ \text{CASE acc} \end{array} \right] \right\rangle \end{array} \right]$$

Note that the CASE value of the NP selected by the verb is *accusative*. It accounts for the fact that only NP direct internal arguments are involved in the aspectual calculus of predicates.

As far as a general treatment of Aktionsart is concerned, results obtained in this section allow us to propose the following type-hierarchy:

(73)



Observe that by means of this type-hierarchy the relationship between processes and events is captured (Verkuyl (1989)).

### 5.2. The Temporal Information in HPSG

In order to deal with the adverbial interpretation of the ASCS and, more specifically, with the temporal relation between these constructions and the main sentence, Dini (1994) includes in his work the analysis of tense developed by Reichenbach (1947)<sup>15</sup> as well as later applications such as Hornstein (1977, 1990) and van Eynde (1991).

15. Acero (1990) provides an examination of Reichenbach (1990)'s proposal especially useful for the analysis of Spanish.



In addition, TEMP-R and ASP-R contain the feature RELATION (RELN), where the possible temporal and aspectual relations between different linguistic items are specified; for instance, between the auxiliary and the main verb of a sentence.

### 5.3. Aspectual and Temporal Properties of ASCs in HPSG

In our analysis, we adopt the proposal of Dini (1994). Nevertheless, in the treatment of ASCs it is only necessary to take into account the feature ASP-R. More specifically, the temporal relation between the ASC and the main sentence is determined in the feature RELATION (RELN), which appears in the attribute ASP-R.

According to Dini (1994), the behavior of Italian ASCs can be explained by means of the two rules presented in (77) and (78):

(77)

$$\left[ \begin{array}{l} \left[ \begin{array}{l} \text{CONTENT} \left[ \begin{array}{l} \text{ASP-R} \left[ \begin{array}{l} \text{loc-sit} \\ \text{tpsoa} \\ \text{RELN asp-rel} \\ \text{E [1]} \\ \text{R [2]} \end{array} \end{array} \right] \end{array} \right] \\ \text{CAT [MOD nil]} \end{array} \right] \end{array} \right] \rightarrow \left[ \begin{array}{l} \text{loc-sit} \\ \left[ \begin{array}{l} \text{CONTENT} \left[ \begin{array}{l} \text{ASP-R} \left[ \begin{array}{l} \text{loc-sit} \\ \text{tpsoa} \\ \text{RELN terminative} \\ \text{E [1]} \\ \text{R [2]} \end{array} \end{array} \right] \end{array} \right] \\ \text{CAT [MOD S [CONTENT | ASP-R [tpsoa] E [2]]]} \end{array} \right] \end{array} \right]$$

As we can see, the value adopted by the feature RELN is *terminative*; that is, the meaning of the AASC is  $E < R$ . In an AASC, the time of the event (E) is previous to the time of reference (R). This temporal interpretation is adequately covered by means of the coindexation of the feature E in the main sentence (represented by the attribute MOD) with the feature R.

The rule presented in (77) explains the behavior of AASCs. In (78) a rule for PASCs is shown:

(78)

$$\left[ \begin{array}{l} \left[ \begin{array}{l} \text{CONTENT} \left[ \begin{array}{l} \text{ASP-R} \left[ \begin{array}{l} \text{loc-sit} \\ \text{tpsoa} \\ \text{RELN [3]} \\ \text{E [1]} \\ \text{R [2]} \end{array} \end{array} \right] \end{array} \right] \\ \text{CAT [MOD nil]} \end{array} \right] \end{array} \right] \rightarrow \left[ \begin{array}{l} \text{loc-sit} \\ \left[ \begin{array}{l} \text{CONTENT} \left[ \begin{array}{l} \text{ASP-R} \left[ \begin{array}{l} \text{loc-sit} \\ \text{tpsoa} \\ \text{RELN [3]} \\ \text{E [1]} \\ \text{R [2]} \end{array} \end{array} \right] \end{array} \right] \\ \text{CAT [MOD S [CONTENT | ASP-R [tpsoa] E [2]]]} \end{array} \right] \end{array} \right]$$

It can be noted in (78) that the value of RELN lacks any specification, indicating that PASCs are ambiguous with respect to their temporal interpretation: they can either be previous or simultaneous to the time indicated by the main sentence.

Note as well that in the two rules presented, the feature ASP-R appears both in the feature CONTENT of the main sentence and in the feature CONTENT of the ASC. The value E of the main sentence is thus identified with the value R of the ASC. This identification is done by means of structure sharing.

As we have shown in our study, the two types of ASCs have different temporal relationships with the time of the main sentence. In short, whereas AASCs indicate a time previous to the time of the main sentence, PASCs formed by eventive predicates can indicate a time either previous or simultaneous to the sentence they modify, and PASCs formed by non-eventive predicates indicate a time simultaneous to the main sentence.

At this point, we can combine our aspectual analysis with the temporal analysis proposed by Dini (1994). Firstly, we have the following rule for Spanish AASCs:

(79)

$$\left[ \begin{array}{c} \left[ \begin{array}{c} \text{CONTENT} \left[ \begin{array}{c} \text{ASP-R} \left[ \begin{array}{c} \text{loc-sit} \\ \text{tpsoa} \\ \text{RELN asp-rel} \\ \text{E [1]} \\ \text{R [2]} \end{array} \right] \\ \text{AKTIO [3]} \left[ \begin{array}{c} \text{ADD TO +} \\ \text{DELIM +} \end{array} \right] \end{array} \right] \\ \text{CAT [MOD nil]} \end{array} \right] \end{array} \right] \rightarrow \left[ \begin{array}{c} \left[ \begin{array}{c} \text{loc-sit} \\ \text{CONTENT} \left[ \begin{array}{c} \text{ASP-R} \left[ \begin{array}{c} \text{loc-sit} \\ \text{tpsoa} \\ \text{RELN terminative} \\ \text{E [1]} \\ \text{R [2]} \end{array} \right] \\ \text{AKTIO [3]} \end{array} \right] \\ \text{CAT [MOD S [CONTENT | ASP-R [tpsoa E [2]]]} \end{array} \right] \end{array} \right] \end{array} \right]$$

As we can see in (79), AASCs indicate a time previous to the time of the main sentence.

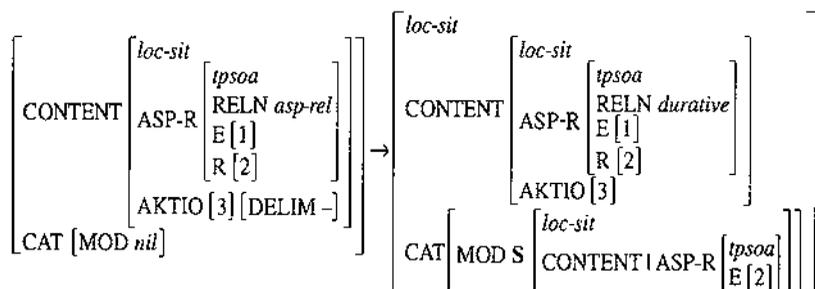
Secondly, the rule presented in (80) covers the behavior of PASCs formed by eventive predicates:

(80)

$$\left[ \begin{array}{c} \left[ \begin{array}{c} \text{CONTENT} \left[ \begin{array}{c} \text{ASP-R} \left[ \begin{array}{c} \text{loc-sit} \\ \text{tpsoa} \\ \text{RELN [3]} \\ \text{E [1]} \\ \text{R [2]} \end{array} \right] \\ \text{AKTIO [4]} \left[ \begin{array}{c} \text{ADD TO +} \\ \text{DELIM +} \end{array} \right] \end{array} \right] \\ \text{CAT [MOD nil]} \end{array} \right] \end{array} \right] \rightarrow \left[ \begin{array}{c} \left[ \begin{array}{c} \text{loc-sit} \\ \text{CONTENT} \left[ \begin{array}{c} \text{ASP-R} \left[ \begin{array}{c} \text{loc-sit} \\ \text{tpsoa} \\ \text{RELN [3]} \\ \text{E [1]} \\ \text{R [2]} \end{array} \right] \\ \text{AKTIO [4]} \end{array} \right] \\ \text{CAT [MOD S [CONTENT | ASP-R [tpsoa E [2]]]} \end{array} \right] \end{array} \right] \end{array} \right]$$

Finally, for PASCs formed by stative predicates ([ADD TO -] and [DELIM -]) and PASCs formed by processive predicates ([ADD TO +] and [DELIM -]) we have to design an additional rule in which the ASP-R value is durative:

(81)



Observe that in this case it is not necessary to include in the rule the attribute ADD TO, given that by means of {DELIM -} we can refer to the group formed by stative and processive predicates.

## 6. Conclusions

We have demonstrated, contrary to the opinion of Hernanz (1991) and de Miguel (1992), that sequences formed by a past participle and an empty NP-subject are ASCs as well as those formed by a past participle and a lexical NP-subject.

Nevertheless, they constitute two different types of ASCs. According to Dini (1994), ASCs formed by a past participle and a lexical NP are aspectual ASCs (AASCs) and ASCs formed by a past participle and an empty NP are predicative ASCs (PASCs).

As shown by Dini (1994) for Italian, in Spanish there is also a different temporal interpretation of these two types of constructions. Thus, whereas the temporal meaning expressed by PASCs can be previous or simultaneous to the main sentence, AASCs can only denote a time interval previous to the sentence they modify.

In Spanish, there is an aspectual constraint with respect to the predicates that are able to constitute an ASC. Only eventive predicates can form AASCs. This constraint does not apply to PASCs.

As far as Aktionsart is concerned, we have proven that a strictly compositional analysis, ranging from lexical entries to the sentence, is a precise approach to Aktionsart. It is clear that non-compositional treatments of Aktionsart are usually not explicit enough to deal with the main aspects related to Aktionsart.

We have also established the VP (a verb and its direct internal argument) to be the basic level of aspectual calculus. In order to obtain the aspectual markedness of a given predicate, we have distinguished between uneventizable and eventizable verbs.

Finally, as regards our account of aspectual information within HPSG, we have seen that it is possible to obtain the three aspectual classes taken into account

in our study (states, processes and events) by means of two Boolean attributes: ADD TO and DELIM. Related to this, we have demonstrated that a lexicalist analysis to Aktionsart within HPSG is appropriate.

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