

Non epistemic perception and subeventive structure*

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ABSTRACT. States and null transition processes are the two types of events that are excluded from the infinitive clauses embedded to the Spanish verb *ver*, 'to see'. The reason is that none of them provide changes of properties or locations that can be perceived. This is the lexical requirement that the visual perception verb imposes to its complements. In this paper, they are examined the conditions under which certain null transition processes can appear in non-epistemic or direct perception contexts: (a) the existence of external boundaries; (b) the inexistence of presupposed states related to the asserted states; and (c) the possibility that null transition (macro)processes are analyzed in terms of non-null transition (micro)processes.

KEY-WORDS. Non-epistemic perception, subeventive structure, pseudocopulative verbs, aspectual periphrases

1. Introduction

In this paper, we will pay attention to some examples of non-epistemic perception in which there are infinitive clauses embedded to the Spanish verb *ver*, 'to see'. As in previous work, we will assume following Dretske (1969: 32) that in this kind of contexts *to see* means to perceive a change of state. The italics are ours:¹

I mean that the percipient must see A *at the time it passes from state S1 to S2* and A's being in state S1 must look different to him that A's being in state S2. There must be some visual differentiation between *the temporally successive states whose succession constitute the event*.

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¹ For the syntax and semantics of the perception verbs, consult Kirsner & Thompson (1976), Akmajian (1977), Suñer (1978), Barwise (1981), Barwise & Perry (1983), Willems (1983), Asher & Bonevac (1985), Mittwoch (1990), Dik & Hengeveld (1991), Guasti (1993), Safir (1993), Borgonovo (1996), Boivin (1998), Di Tullio (1998), Santos (1998), Felser (1999), Higginbotham (1999), Rizzi (2000), Rodríguez Espiñeira (2000), Cipria (2002, 2003), Miller & Lowrey (2003), Hornstein, Martins & Nunes (2006), Enghels (2007), Gisborne (2010), Carrasco Gutiérrez & González Rodríguez (2011), and Arteaux (2012), among many others.

In addition, we will adopt the events classification of Moreno Cabrera (2003). This author distinguishes three basic types of events: *states*, *processes*, and *actions*.² Briefly, states are relations between entities and properties (*attributive states*), or between entities and locations (*locative states*) (see 1):

- (1) STATES:
- a. El cajón está abierto.
the drawer ESTAR-PRES 3.SG open
'The drawer is open.'
- b. El cajón está allí.
the drawer ESTAR-PRES 3.SG there
'The drawer is there.'

Processes are conceived as relations of transition between at least two states which involve the same entity. These transitions can be either *null* transitions or *non-null* transitions. The transitions are non-null if the states related represent different properties or different locations of the same entity. The transitions are null if the states related represent the same property or the same location.³ See Table I. The formulations in Table I are taken from Moreno Cabrera (2003: 138): *p* stands for the property of being open, $\sim p$ stands for the property of not being open, and *T* stands for *transition*:

TABLE I – Two type of processes⁴

NON-NULL TRANSITIONS	El cajón se abrió. the drawer SE opened-3.SG 'The drawer opened.'	$\sim pTp$
	El cajón se cerró. the drawer SE closed-3.SG 'The drawer closed.'	$pT\sim p$

² See Moreno Cabrera (2003: 171-198) for a critical review of the proposals of McCawley (1968), Jackendoff (1972, 1990), Dowty (1979), Pustejovsky (1991, 2000), Levin & Rappaport Hovav (1995), Mateu Fontanals (1997), and Van Valin & LaPolla (1997).

³ As Moreno Cabrera (2003: 141) suggests, non-null transition processes are not states: (The translation is ours.)
The first sentence [*Juan sigue en Madrid*, 'Juan is still in Madrid'] means something more than *Juan está en Madrid*, 'Juan is in Madrid'. In effect, in order Juan to be still in Madrid it is necessary that John has been in Madrid before the time referred to in the sentence. Thus, there are at least two states [...] related by the fact that they are true with respect to two different moments of the same interval [...] We can see, then, that to understand the meaning of *Juan sigue en Madrid*, 'Juan is still in Madrid', it is necessary to propose at least two locative states that are temporally related in a way analogous to the way in which the two or more locative states of a displacement process are related. From all of this we conclude that *Juan está en Madrid*, 'Juan is in Madrid', denotes a state, and that *Juan sigue en Madrid*, 'Juan is still in Madrid', denotes a process.

⁴ For the concept of *transition*, see von Wright (1963).

NULL TRANSITIONS	El cajón <i>sigue</i> abierto. the drawer continues [to be] open 'The drawer is still open.'	pTp
	El cajón <i>se mantiene</i> cerrado. the drawer SE remains closed 'The drawer remains closed.'	~pT~p

Finally, actions are agentivity or causativeness relations between entities and processes. In (2), for example, Juan is the entity that originates, controls or is responsible for the process to occur:

- (2) ACTION:
 Juan abrió el cajón.
 Juan opened-3.SG the drawer
 'Juan opened the drawer.'

Now, consider the following sentences:

- (3) a. Vimos {abrirse/cerrarse} el cajón.⁵
 saw-1.PL open-SE/close-SE the drawer
 'We saw the drawer open/close.'
 b. *Vimos {seguir abierto/mantenerse cerrado} el cajón.
 saw-1.PL continue [to be] open/remain-SE closed the drawer
 'We saw the drawer be still open/remain closed.'
 c. *Vimos estar abierto el cajón.
 saw-1.PL ESTAR open the drawer
 'We saw the drawer be open.'

The events denoted by the embedded predicates are distinct. In (3a) and (3b) we have processes. The entity responsible for the processes to occur is not specified, if there is any. In (3c) we have a state. The state is excluded due to its homogeneity, that is, there is no change or progression in the property it denotes that can be perceived. The processes in (3b) are also excluded. The Table I shows that these processes are examples of null transition relations between properties. i.e. the properties related are identical. So again, the embedded event does not satisfy the lexical requirement of

⁵ In English, it is also possible to find a full infinitive in the complement clause, i.e. a root verb with the infinitival marker *to*. For its interpretation and its more restricted use, see Felser (1999) and the references cited there.

the perception verb in the main clause. The only events that satisfy this lexical requirement of providing a change of state are those denoted by the embedded predicates of (3a). These events relate different properties of the same entity (see Table I).

Non finite states can be embedded to the Spanish perception verb if they are modified by temporal expressions like *hasta que llegó María*, ‘until María arrived’. These temporal expressions act as external boundaries, and in doing so they mark the transition to a new state:

- (4) Lo vimos estar abierto hasta que llegó María.
it saw-1.PL ESTAR open until that arrived-3.SG María
‘We saw it be open until María arrived.’

In this paper, we are interested in examples such as (3b). In the embedded clauses there are null transition processes that can be identified by the presence of the Spanish pseudo-copulative verbs *seguir*, ‘to be still’, and *mantener*, ‘to remain’ (see Moreno Cabrera 2003: 138-412, 193).⁶ Our aim is to give an explanation of two kinds of contrasts. The first contrast is illustrated in (5):

- (5) a. *Lo vimos *seguir* abierto hasta que llegó María
it saw-1.PL continue [to be] open until that arrived-3.SG María
‘We saw it be still open until María arrived.’
b. Lo vimos *mantenerse* abierto hasta que llegó María
it saw-1.PL remain-SE open until that arrived-3.SG María
‘We saw it remain open until María arrived.’

These sentences show that *seguir* and *mantener* do not behave in the same way when they are modified by temporal expressions like *hasta que llegó María*, ‘until Mary arrived’. We can find predicates headed by *mantener* in the infinitive clause (see 5b), but the predicates headed by *seguir* are excluded (see 5a). In order to explain this contrast, we will demonstrate that the states related by *mantener* are asserted, and thus can be perceived whenever the context provides external boundaries. On the contrary,

⁶ The meaning of the Spanish pseudo-copulative verb *permanecer*, ‘to stay’, is very close to the meaning of *mantener*, ‘to remain’. Although this verb does not appear in the examples of null transition processes in Moreno Cabrera (2003), we think that it would be necessary to explore its behaviour. We will leave this task for future investigation.

seguir connects states that are asserted with states that are presupposed. The presupposed states cannot be the object of non-epistemic perception.

The second contrast is illustrated in (6):

- (6) a. Vimos *seguir* *abriéndose* solo el cajón muchos días (hasta
saw-1.PL keep opening-SE by itself the drawer several days until
que lo arreglaron definitivamente).
that it fixed-3.PL definitely
'We saw the drawer keep opening by itself for several days (until it was
fixed definitely).'
- b. Juan tiró levemente del cajón y todos lo vimos *seguir* *abriéndose*
Juan pulled-3.SG gently of-the drawer and all it saw-1.PL go on opening-SE
solo (hasta que su contenido quedó completamente al descubierto).
by itself until that its contents remained-3.SG completely to-the uncovered
'Juan pulled the drawer gently and we all saw it go on opening by itself
(until its contents were completely uncovered).'

In (6a) and (6b), the embedded predicates are not headed by the pseudo-copulative verb *seguir*, but by the auxiliary of a periphrastic construction. Nevertheless, the embedded events appear to be null transition processes, as the events of (3b) and (5a) (see Moreno Cabrera 2003: 142). Then, the question is why the infinitive headed by the auxiliary *seguir*, 'to keep/to go on', can be embedded to the verb of visual perception. Null transition processes relate identical properties or locations of the same entity. Consequently, they do not provide any change of state that can be perceived. For this reason, the predicates that denote null transition processes lead to ungrammaticality in non-epistemic perception contexts.

In the last part of the paper, a distinction will be made between *static* and *dynamic* null transition processes, following Moreno Cabrera (2003). The sentence (6a) will be considered as an example of a dynamic null transition process. We will show that what is really perceived in (6a) are the non-null transition microprocesses which constitute the dynamic null transition macroprocess. With regard to the event denoted by the embedded predicate of (6b), we believe that it should not be classified as a null transition process. Our purpose is to suggest that in (6b) the auxiliary *seguir* does not relate identical states, but different states of the same process.

For simplicity, we will focus our attention exclusively on the telic predicates of the sentences above. The paper is organized as follows. Section 2 is devoted to make some distinctions in the events classification of Moreno Cabrera (2003), and, in particular, to introduce the concepts of *path* and *attributive path*. These concepts will be necessary to change the formulations in Table I. In section 3, we will pay attention to the pseudo-copulative verb *seguir*, ‘to be still’, in the contexts of non-epistemic perception. In section 4, the periphrastic construction *seguir + gerundio*, ‘to keep/to go on + gerund’, will be taken into consideration. The main conclusions of the paper will be summarized in section 5.

2. The attributive path

After the introductory section, we need to return to the formulations in Table I. These formulations may be suitable to describe the meaning of instantaneous processes. However, they can clearly be improved as descriptions of the meaning of non-instantaneous processes like those denoted by *abrir/cerrar*, ‘to open/to close’. In this section, we will propose alternative semantic structures for them, but before we must also introduce some concepts related to the subeventive structure of the processes proposed by Moreno Cabrera (2003).

To begin with, let us consider the example (7). The process in (7) differs from the others in the lack of intermediate states between the initial state (s_0) and the final state (s_n). The lack of intermediate states, or what is the same, the temporal contiguity relationship between the initial and final states is the reason why these processes are conceived as non durative, i.e. as instantaneous. The symbol \mathfrak{P} stands for *transition*:

- (7) *marcar un gol*, ‘to score a goal’
 $s_0 \Rightarrow s_n$

In (8), it is shown that instantaneous events are not compatible with the progressive construction *estar + gerundio*, ‘to be + gerund’:

- (8) *Cuando se fue la luz, el equipo de casa estaba marcando un gol.
 when SE went-3.SG the light the team from home ESTAR-PAST.3.SG
 scoring a goal
 ‘When the power went out, the home team was scoring a goal.’

The processes in (9) and (10) are not instantaneous. This means that they include intermediate states (s_1, s_2, \dots, s_{n-1}). Moreno Cabrera (2003) calls the intermediate states *path*. There are processes oriented to the path, i.e. without specific initial and final states, as the one in (9), and there are also processes not oriented to the path, i.e. with specific initial and final states, as the one in (10):

- (9) *correr por el parque*, 'to run through the park'
 $s_1 \text{ P } s_2 \text{ P}, \dots, \text{ P } s_{n-1}$
- (10) *abrir/cerrar*, 'to open/to close'
 $s_0 \text{ P } s_1 \text{ P}, \dots, \text{ P } s_n$

Observe in (11) that the events that are not instantaneous are compatible with the progressive construction *estar + gerundio*, 'to be + gerund':

- (11) a. Cuando se fue la luz, Juan *estaba corriendo* por el parque.
when SE went-3.SG the light Juan ESTAR-PAST.3.SG running through the park
'When the power went out, Juan was running through the park.'
- b. Cuando se fue la luz, el cajón *estaba abriéndose*.
when SE went-3.SG the light the drawer ESTAR-PAST.3.SG opening-SE
'When the power went out, the drawer was opening.'

In addition, the example (12a) shows that the events oriented to the path cannot be modified by temporal expressions like *en dos minutos*, 'in two minutes', unlike events not oriented to the path (see 12b). *En dos minutos*, 'in two minutes', can also modify instantaneous events (see 12c). Note, however, that it has a different function. In (12b), the temporal expression measures the path. In other words, two minutes is the time between the initial state (the drawer is not open) and the final state (the drawer is open). In (12c), two minutes is the time that it is needed for the only transition between the initial state (the goal has not been scored) and the final state (the goal has been scored) to occur:

- (12) a. *Juan *corrió* por el parque *en dos minutos*.
Juan ran-3.SG through the park in two minutes
'Juan ran through the park in two minutes.'

- b. El cajón se abrió en dos minutos.
the drawer SE opened-3.SG in two minutes
'The drawer opened in two minutes.'
- c. El equipo de casa marcó un gol en dos minutos.
the team from home scored-3.SG a goal in two minutes
'The home team scored a goal in two minutes.'

Finally, the examples in (13) illustrate the different interpretations of the three types of events in combination with the approximative adverb *casi*, 'almost':

- (13) a. El cajón *casi* se abrió. [Factual (√). Counterfactual (√).]
the drawer almost SE opened-3.SG
'The drawer almost opened.'
- b. Juan *casi* corrió por el parque. [Factual (#). Counterfactual (√).]
Juan almost ran-3.SG through the park
'Juan almost ran through the park.'
- c. El equipo de casa *casi* marcó un gol. [Factual (#). Counterfactual (√).]
the team from home almost scored-3.SG a goal
'The home team almost scored a goal.'

The sentence with the event oriented to the path admits two interpretations (see 13a). One of these interpretations is counterfactual: the drawer did not open. The other one is not. In the second interpretation, there are some transitions between the states that constitute the path, but the final state is not reached. The sentence with the event not oriented to the path and the sentence with the instantaneous event only admit the counterfactual interpretation: Juan did not run through the park (see 13b), and the home team did not score a goal (see 13c).

The equivalences between the events classification of Moreno Cabrera (2003) and the classical typology based in the work of Vendler (1957) can be established without difficulty. Both proposals are put together below:

TABLE II – Moreno Cabrera (2003) vs. Vendler (1957)⁷

MORENO CABRERA (2003)	VENDLER (1957)
States	States
Instantaneous processes (or actions)	Achievements
Non instantaneous processes (or actions):	
Path-oriented	Activities
Not oriented to the path	Accomplishments

The data in (11), (12) and (13) demonstrate that the events denoted by *abrir/cerrar*, ‘to open/to close’ are not instantaneous. They involve a path, that is, intermediate states. These intermediate states can be independently modified by adverbs such as *apenas*, ‘barely’, *poco*, ‘slightly’, *medio*, ‘half’, and *casi*, ‘almost’, as we can see in (14). This path is not included in the formulations in Table I. That is why we think that the formulations should be revised:

- (14) a. El cajón está *apenas* {abierto/cerrado}.⁸
 the drawer ESTAR-PR.3.SG barely open/closed
 ‘The drawer is barely open/closed.’
- b. El cajón está *poco* {abierto/cerrado}.
 the drawer ESTAR-PR.3.SG slightly open/closed
 ‘The drawer is slightly open/closed.’
- c. El cajón está *medio* {abierto/cerrado}.
 the drawer ESTAR-PR.3.SG half open/closed
 ‘The drawer is half open/closed.’
- d. El cajón está *casi* {abierto/cerrado}.
 the drawer ESTAR-PR.3.SG almost open/closed
 ‘The drawer is almost open/closed.’

Moreno Cabrera (2011) applies the adjective *attributive* to the path constituted by resultative states as the ones in (14). This is the kind of path that corresponds to the processes to which we are paying attention in this

⁷ Actions inherit the aspectual structure of processes: *Juan marcó un gol*, ‘Juan scored a goal’, would be an action of achievement, *Juan corrió por el parque*, ‘Juan ran through the park’, would be an action of activity, and *Juan abrió el cajón*, ‘Juan opened the drawer’, would be an action of accomplishment. See Moreno Cabrera (2011: 10).

⁸ See Moreno Cabrera (2011: 13), sentences in (16).

paper.⁹ So, (14a) and (14d), for example, can be understood as the resultative states of the processes in (15a) and (15b), respectively:

- (15) a. El cajón *apenas* {se abrió /se cerró}.
the drawer barely SE opened-3.SG/ SE closed-3.SG
'The drawer barely opened/closed.'
- b. El cajón *casi* {se abrió /se cerró}.
the drawer almost SE opened-3.SG/SE closed-3.SG
'The drawer almost opened/closed.'

The examples (16a) and (16b) show that it is also possible to establish null transition relations between the states of the attributive path:

- (16) a. El cajón sigue *apenas* abierto.
the drawer continues [to be] barely open
'The drawer is still barely open.'
- b. El cajón sigue *medio* cerrado.
the drawer continues [to be] half closed
'The drawer is still half closed.'

The proposal of Moreno Cabrera (2011) is to use the algebraic structure of group $(Q, +)$, i.e. the set of the rational numbers (Q) with the addition operation, to model the attributive paths. We will make use of the same tools to provide the semantic structure of the events denoted by *abrir/cerrar*, 'to open/to close'. Consider (17):

- (17) *abrir*, 'to open'
 $P^0(i) \Rightarrow \underline{P^{1/10}(i)} \Rightarrow \underline{P^{1/2}(i)} \Rightarrow \underline{P^{9/10}(i)} \Rightarrow P^1(i)$

The attributive path is underlined. The symbol \Rightarrow represents the transition between two states. The capital letter P stands for *property*, the lowercase letter i stands for *entity*. The number 0 represents the initial state (e.g. the drawer is not open), The number 1 represents the final state (e.g. the drawer

⁹ An attributive path can be constituted by resultative states, but it cannot be constituted by episodic states (Moreno Cabrera 2011: 12). Resultative states can be conceived as the final states of a process. Episodic states cannot. Consider (i). In the acquisition of the property denoted by *caro*, 'expensive', there are not intermediate states. Thus, the adverbs *apenas*, 'barely', *poco*, 'slightly', *medio*, 'half', and *casi*, 'almost', would render the sentence ungrammatical:

(i) El cajón está (*{*apenas/poco/medio/casi*}) caro.
the drawer ESTAR-PR.3.SG barely/slightly/half/almost expensive
'The drawer is barely/slightly/half/almost expensive.'

is open). The property denoted by the past participle *abierto*, ‘opened’, is segmented into ten parts conventionally. The superindex 1/10 represents the first intermediate state of the attributive path of the event denoted by *abrir*. The superindex 9/10 represents the last intermediate state. The superindex ½ represents the middle of the attributive path.

In (18), we give the semantic structure of the event denoted by *cerrar*:

- (18) *cerrar*, ‘to close’
 $P^1(i) \Rightarrow \underline{P^{9/10}(i)} \Rightarrow \underline{P^{1/2}(i)} \Rightarrow \underline{P^{1/10}(i)} \Rightarrow P^0(i)$

In (19) it is represented the meaning of two null transition processes headed by the pseudo-copulative verb *seguir*:

- (19) a. *seguir abierto*, ‘to be still open’
 $P^1(i) \Rightarrow P^1(i)$
b. *seguir cerrado*, ‘to be still closed’
 $P^0(i) \Rightarrow P^0(i)$

Notice that if we change the superindex of the states involved in the subeventive structure, it is possible to locate the process in different points of its path:

- (20) a. *apenas abrir*, ‘to open barely’
 $P^0(i) \Rightarrow P^{1/10}$
b. *casi cerrar*, ‘to close almost’
 $P^1(i) \Rightarrow P^{9/10}(i) \Rightarrow P^{1/2}(i) \Rightarrow P^{1/10}(i)$
c. *seguir medio abierto/cerrado*, ‘to be still half open/closed’
 $P^{1/2}(i) \Rightarrow P^{1/2}(i)$

The semantic structures introduced in the last pages will be used hereafter to give an account of the contrasts illustrated in the first section. Recall that the purpose of this paper is twofold. Firstly, we will give an explanation of the different behaviours of the infinitive clauses headed by the pseudo-copulative verbs *seguir*, ‘to be still’, and *mantener*, ‘to remain’, when embedded to the Spanish verb *ver*, ‘to see’. Secondly, we are interested in explaining why the periphrasis *seguir + gerund*, ‘to keep/go on + gerund’, does not lead to ungrammaticality in contexts of non-epistemic perception. The next section will be devoted to the first topic.

3. The pseudo-copulative verb *seguir* in the contexts of non-epistemic perception

For simplicity, we will repeat the sentences in (5) below. The pseudo-copulative verb *mantener*, ‘to remain’, can be embedded to *ver*, ‘to see’, in the contexts of non-epistemic perception whenever the predicate it heads is modified by temporal expressions like *hasta que María llegó*, ‘until Mary arrived’ (see 5b). The pseudo-copulative verb *seguir*, ‘to be still’, cannot (see 5a). As we know, these temporal expressions add an external boundary to the null transition process:

- (5) a. *Lo vimos *seguir* abierto hasta que llegó María.
it saw-1.PL continue [to be] open until that arrived-3.SG María
‘We saw it be still open until María arrived.’
- b. Lo vimos *mantenerse* abierto hasta que llegó María.
it saw-1.PL remain-SE open until that arrived-3.SG María
‘We saw it remain open until María arrived.’

Both of the processes in (5) relate states which are identical and are located in different points of the same temporal interval. Our hypothesis is that the contrast illustrated above is due to a crucial difference between the null transition processes headed by *mantener* and by *seguir*. The former verb would connect identical properties or locations that are all asserted. The latter verb would connect properties or locations that are asserted with properties or locations that are presupposed.

To support this hypothesis, we will display four arguments. The first argument is that the presupposed character of the properties and locations connected by *seguir* can be maintained in non assertive contexts: negative sentences (see 21a), interrogative sentences (see 21b), or conditional sentences (see 21c). In all of them, we can say that the drawer was or is open before the assertion time:

- (21) a. El cajón no siguió abierto.
the drawer not continued-3.SG [to be] open
‘The drawer was not still open.’
- b. No sé si el cajón siguió abierto.
not know-1.SG whether the drawer continued-3.SG [to be] open
‘I do not know whether the drawer was still open.’

- c. Si el cajón sigue abierto, el niño se tropezará con él.
if the drawer continues [to be] open the boy SE will stumble with it
'If the drawer is still open, the boy will stumble over it.'

Compare the sentences in (21) with the sentences in (22). In none of them it is possible to say that the drawer was or is open:

- (22) a. El cajón no se mantuvo abierto.
the drawer not SE remained-3.SG open
'The drawer did not remain open.'
- b. No sé si el cajón se mantuvo abierto.
not know-1.SG whether the drawer SE remained-3.SG open
'I do not know whether the drawer remained open.'
- c. Si el cajón se mantiene abierto, el niño se tropezará con él.
if the drawer SE remains open the boy SE will stumble with it
'If the drawer remains open, the boy will stumble over it.'

The second argument is that only *mantener* is compatible with the phasal adverbs *todavía no*, 'still not', and *ya*, 'already':¹⁰

- (23) a. El cajón todavía se mantiene abierto.
the drawer still SE remains open
'The drawer still remains open.'
- b. El cajón todavía no se mantiene abierto
the drawer still not SE remains open
'The drawer still does not remain open.'
- c. El cajón ya se mantiene abierto.
the drawer already SE remains open
'The drawer already remains open.'
- d. El cajón ya no se mantiene abierto.
the drawer already not SE remains open
'The drawer does not remain open any more.'

¹⁰ For the second and third arguments, consult Morimoto & Pavón (2007: 31-33). There, the lecturer will find different grammaticality judgements and another point of view with respect to the verb *mantener*.

Compare (23b) and (23c) with (24b) and (24c):

- (24) a. El cajón *todavía* sigue abierto.
the drawer still continues [to be] open
'The drawer still continues to be open.'
- b. *El cajón *todavía no* sigue abierto.
the drawer still not continues [to be] open
'The drawer still does not continue to be open.'
- c. *El cajón *ya* sigue abierto.
the drawer already continues [to be] open
'The drawer already continues to be open.'
- d. El cajón *ya no* sigue abierto.
the drawer already not continues [to be] open
'The drawer does not continue to be open any more.'

In Muller (1975) we find the idea that the adverbs like *todavía*, 'still', *ya*, 'already', and their negative counterparts presuppose a phase that is anterior to the phase asserted. Both phases are connected with a possible, but not obligatory posterior phase (see also Garrido 1991, 1993). The meanings of these adverbs is shown in Table III, which we take from García Fernández (2000: 131):

TABLE III – *Todavía* (no), *ya* (no)

	PREVIOUS PHASE	ASSERTED PHASE	POSSIBLE POSTERIOR PHASE
<i>Todavía</i> , 'still'	Positive	Positive	Negative
<i>Todavía no</i> , 'still not'	Negative	Negative	Positive
<i>Ya</i> , 'already'	Negative	Positive	Positive
<i>Ya no</i> , 'no more/no longer'	Positive	Negative	Negative

Consider (23b), *El cajón todavía no se mantiene abierto*, 'the drawer still does not remain open'. According to the meaning of *todavía no*, above, the drawer does not remain open in the present (asserted phase: negative), nor in the past (previous phase: negative), but it is possible that it will remain open in the future (posterior phase: positive). Consider (23c), *El cajón ya se mantiene abierto*, 'the drawer already remains open'. According to the meaning of *ya*, the drawer remains open in the present (asserted phase: positive), the drawer will probably remain open in the future (posterior phase: positive), but it

did not remain open in the past (previous phase: negative). The formulations below represent these interpretations, besides the interpretations of (23a), *El cajón todavía se mantiene abierto*, ‘the drawer still remains open’, and (23d), *El cajón ya no se mantiene abierto*, ‘the drawer does not remain open any more’. Negative phases appear crossed out hereafter:

TABLE IV – The meaning of sentences in (23)

	PREVIOUS PHASE	ASSERTED PHASE	POSTERIOR PHASE
<i>Todavía</i> , ‘still’	$P^1(i) \Rightarrow P^1(i)$	$P^1(i) \Rightarrow P^1(i)$	$P^+(\ddot{i}) \Rightarrow P^+(\ddot{i})$
<i>Todavía no</i> , ‘still not’	$P^+(\ddot{i}) \Rightarrow P^+(\ddot{i})$	$P^+(\ddot{i}) \Rightarrow P^+(\ddot{i})$	$P^1(i) \Rightarrow P^1(i)$
<i>Ya</i> , ‘already’	$P^+(\ddot{i}) \Rightarrow P^+(\ddot{i})$	$P^1(i) \Rightarrow P^1(i)$	$P^1(i) \Rightarrow P^1(i)$
<i>Ya no</i> , ‘no more/no longer’	$P^1(i) \Rightarrow P^1(i)$	$P^+(\ddot{i}) \Rightarrow P^+(\ddot{i})$	$P^+(\ddot{i}) \Rightarrow P^+(\ddot{i})$

The meanings of the sentences headed by the pseudo-copulative *seguir*, ‘to be still’, are very different. The reason is that just one of the properties related by this verb is part of the sentence assertion. *Seguir* connects asserted properties with presupposed properties. In the following Tables, both of them are made coincide with adverbial phases. Thus, the presupposed property must appear in an anterior phase. We have represented it within brackets.

Consider the formulation for (24a), *El cajón todavía sigue abierto*, ‘the drawer still continues to be open’, in Table V (1). The asserted state, i.e. the drawer is open, is located in the present. But the drawer must also be open in a previous moment. This requirement imposed by the pseudo-copulative verb is compatible with the meaning of the adverb *todavía*. As we can see in Table III, above, both the asserted phase and the previous phase should be positive. That is why the sentence (24a) is grammatical:

TABLE V (1) – The meaning of (24a)

	PREVIOUS PHASE	ASSERTED PHASE	POSTERIOR PHASE
<i>Todavía</i> , ‘still’	$[P^1(i) \Rightarrow]$	$P^1(i)$	$P^+(\ddot{i})$

The example (24d), *El cajón ya no sigue abierto*, ‘the drawer does not continue to be open any more’, is also grammatical. See Table V (2). The drawer is not open in the present (asserted phase: negative), and it will not probably be open in the future (posterior phase: negative). However, the

drawer was open in two different moments of a past interval. Again, there is no contradiction between the meaning of the process headed by the pseudo-copulative verb and the meaning of the phasal adverb *ya no*:

TABLE V (2) – The meaning of (24d)

	PREVIOUS PHASE	ASSERTED PHASE	POSTERIOR PHASE
<i>Ya no</i> , ‘no more/no longer’	[P ¹ (i) ⇒] P ¹ (i)	P ¹ (i)	P ⁺ (-i)

Whenever there is a conflict between the meaning of the process headed by the pseudo-copulative verb and the meaning of the phasal adverb, the sentences are excluded. To our view, that is the case in (24b) and (24c). Let us see.

Consider (24b), **El cajón todavía no sigue abierto*, ‘the drawer still does not continue to be open’. According to the meaning of *todavía no*, the drawer will probably be open in the future. This state is connected by the pseudo-copulative verb with a presupposed state that is identical. As we can see in Table V (3), the presupposed state is located in the asserted phase. But note that the state is crossed out because the asserted phase is negative. The contradiction is there: if we attend to the presupposition associated to the phasal adverb *todavía no*, we should understand that the drawer is not open in the present. But if we attend to the presupposition associated to the pseudo-copulative verb, we should understand the opposite, i.e. that the drawer is open in the present:

TABLE V (3) – The meaning of (24b)

	PREVIOUS PHASE	ASSERTED PHASE	POSTERIOR PHASE
<i>Todavía no</i> , ‘still not’	P ⁺ (-i)	[P⁺(-i) ⇒]	P ¹ (i)

To finish, consider (24c), **El cajón ya sigue abierto*, ‘the drawer already continues to be open’. According to the meaning of *ya*, the drawer is open in the present. This state is connected by the pseudo-copulative verb with a presupposed state that is identical. As we can see in Table V (4), the presupposed state is located in the previous phase. This previous phase is negative. In consequence, the presupposed state is crossed out. The ungrammaticality of the sentence is due to the contradictory meanings of the presupposition associated to the phase adverb *ya*, i.e. that the drawer is not open in the past, and the presupposition associated to the pseudo-copulative verb, i.e. that the drawer is open in the past:

TABLE V (4 – The meaning of (24c)

	PREVIOUS PHASE	ASSERTED PHASE	POSTERIOR PHASE
Ya, 'already'	{P ⁺ -(i) ⇒}	P ⁺ (i)	P ⁺ (i)

The third argument to demonstrate that the semantics of the two pseudo-copulative verbs is not the same are the different grammaticality judgements that their sentences deserve if the Spanish adverb *últimamente* is added. See sentences in (25):

- (25) a. *Últimamente*, el cajón se mantiene abierto.
 lately the drawer SE remains open
 'Lately, the drawer remains open.'
- b. **Últimamente*, el cajón sigue abierto.
 lately the drawer continues [to be] open
 'Lately, the drawer is still open.'

This adverb allows to establish a contrast between the time of the event and a time anterior to it. Consider (25a). The time of the event is the present. So, we can say that in the present the drawer remains open. But there would be the inference that the drawer did not remain open in a time anterior to the present. In (25b), this inference conflicts with the presupposition associated to *seguir*. In (25b) the asserted state is also located in the present. As we propose, *seguir* connects an asserted state with an identical presupposed one. This presupposed state is located in (25b) in a time anterior to the present. Therefore, the drawer should be open in the past in order the drawer to be still open in the present to be true.

The last argument is that temporal expressions which set a left boundary render the sentences with the pseudo-copulative *seguir* ungrammatical. Compare (26a) with (26b):

- (26) Desde que el golpe de Juan lo desenchajara,
 since that the hit of Juan it disengaged-3.SG
 'Since Juan's hit disengaged it,'
- a. el cajón se ha mantenido abierto.
 the drawer SE has remained open
 'the drawer has remained open.'

- b. *el cajón ha seguido abierto.
the drawer has continued [to be] open
'the drawer has been still open.'

The beginning of the null transition process in (26b) cannot be modified by the temporal sentence introduced by *desde*, 'since', because this part of the process is not visible. This part coincides with the presupposed state.

From the arguments presented above we conclude that the crucial difference between the Spanish pseudo-copulative verbs *mantener* and *seguir* is that only with regard to the latter it can be affirmed that there are presupposed properties or locations involved in the null transition process.

We can now come back to the contrast in (5):

- (5) a. *Lo vimos *seguir* abierto hasta que llegó María.
it saw-1.PL continue [to be] open until that arrived-3.SG María
'We saw it be still open until María arrived.'
- b. Lo vimos *mantenerse* abierto hasta que llegó María.
it saw-1.PL remain-SE open until that arrived-3.SG María
'We saw it remain open until María arrived.'

(5a) is ungrammatical, as **Vimos seguir abierto el cajón*, 'We saw the drawer be still open', (in 3b). The reason is that the embedded process cannot be perceived. The embedded process consists of two states. One of these states is not asserted, but presupposed, and, consequently, it cannot be the object of non-epistemic perception.

The process denoted by the predicate headed by *mantener* consists of two identical asserted states. So in principle, they can be perceived. The ungrammaticality of sentences like **Vimos mantenerse abierto el cajón*, 'We saw the drawer remain closed' (in 3b), is due to the fact that null transition processes do not involve changes of states. On the contrary, (5b) is grammatical for the same reason as (4), *Lo vimos estar abierto hasta que llegó María*, 'We saw it be open until María arrived', i.e. because the temporal sentence provides an external boundary. External boundaries introduce a new state. Remember that we are assuming that in direct perception contexts to see means to perceive a change of state (see Dretske 1969).¹¹

¹¹ There is another important difference between the pseudo-copulative verbs that explains the following (un)grammaticality judgements. Only *mantener* can be used whenever there is an entity responsible for the process:

In the next section we will pay attention to the behaviour of the auxiliary *seguir*, ‘to keep/to go on’, in the same contexts of non-epistemic perception. We are interested in sentences like (6a) and (6b). Observe that both are grammatical:

- (6) a. *Vimos seguir abriéndose solo el cajón muchos días (hasta saw-1.PL keep opening-SE by itself the drawer several days until que lo arreglaron definitivamente).*
that it fixed-3.PL definitely
‘We saw the drawer keep opening by itself for several days (until it was fixed definitely).’
- b. *Juan tiró levemente del cajón y todos lo vimos seguir abriéndose Juan pulled-3.SG gently of-the drawer and all it saw-1.PL go on opening-SE solo (hasta que su contenido quedó completamente al descubierto).*
by itself until that its contents remained-3.SG completely to-the uncovered
‘Juan pulled the drawer gently and we all saw it go on opening by itself (until its contents were completely uncovered).’

We will devote subsection 4.1 to examples like the one in (6a), and subsection 4.2 to examples like the one in (6b). The reason is that they illustrate different uses of the auxiliary.

4. *Seguir* + gerundio in the contexts of non-epistemic perception

4.1. *Seguir* as head of dynamic null transition processes

In the examples of Moreno Cabrera (2003), *seguir* is followed by adjectives, past participles, and prepositional phrases. The sentence (27) is the only exception:

-
- (i) *La he visto mantener abierto el cajón.*
her have-1.SG seen keep open the drawer
‘I have seen her keep open the drawer’
- (ii) **La he visto seguir abierto el cajón.*
her have-1.SG seen continue [to be] open the drawer
‘I have seen her be still open the drawer’

What is interesting in (i) is that there are not temporal expressions that introduce external boundaries. Carrasco Gutiérrez & González Rodríguez (2011) think that the process is bounded in sentences like (i) by the time of the control exerted by the entity denoted by *la*, ‘her’. The drawers are inanimate objects. Thus, they can remain open indefinitely. This indeterminacy with respect to the extension of the null transition process would also extend to the physic event of visual perception. This is the cause of the ungrammaticality of **Vimos mantenerse cerrado el cajón*, ‘We saw the drawer remain closed’, (in 3b). On the contrary, the entity denoted by the pronoun *la*, ‘her’, is animate. Her will, her purpose or her strength will determine the extension of the control over the process. Consequently, both the null transition process and the perception event are implicitly bounded.

- (27) El tronco siguió rodando (gracias a la pendiente).
the trunk kept-3.SG rolling thanks to the slope
'The trunk kept rolling thanks to the slope.'
[Example (30b) in Moreno Cabrera (2003: 142).]

This sentence is an example of a *dynamic* null transition process. The dynamic null transition processes let act the dynamic tendency of the entities or counteract their static tendency. The example (27) has the second interpretation: "the trunk tendency to be at rest is counteracted by the slope, which makes it keep moving", p. 142 (the translation is ours). The sentences of section 3 would be examples of *static* null transition processes. Their characteristic is the opposite: they let act the static tendency of the entities or counteract their dynamic tendency (see Talmy 2000).

Notice that the classification of *seguir rodando* as a null transition process should have to do with the presence in (27) of the same verb of the examples in section 3. But the question is whether (27) is really the same kind of example. In the examples of section 3, the past participles *abierto*, 'open(ed)', and *cerrado*, 'closed' represent the property that it is attributed to the same entity in two different temporal intervals. In (27) *seguir* is followed by a verb of way of displacement. *Rodar* denotes neither a property nor a location, but a process of change of place. In consequence, if following Moreno Cabrera (2003) we assume that *seguir* also connects two distinct temporal moments, we must say that the assertion of sentence (27) is that in two distinct temporal moments the trunk is involved in the same process of displacement. There would not be a change, what is the characteristic of a null transition process. However, *seguir* would not relate states.

The semantic structure of (28) is our attempt to apply this reasoning to the process of one of the examples in which we are interested, (6a):

- (28) El cajón siguió abriéndose solo muchos días hasta que lo arreglaron
the drawer kept-3.SG opening-SE by itself several days until that it fixed-3.PL
definitivamente.
definitely
'The drawer kept opening by itself for several days until it was fixed definitely.'
[$P^0(i) \Rightarrow P^{1/10}(i) \Rightarrow P^{1/2}(i) \Rightarrow P^{9/10}(i) \Rightarrow P^1(i) \Rightarrow$] $P^0(i) \Rightarrow P^{1/10}(i) \Rightarrow P^{1/2}(i) \Rightarrow P^{9/10}(i) \Rightarrow P^1(i)$

Observe that both to the left of the underlined symbol \Rightarrow and to its right there are the semantic structures corresponding to two non-null transition

processes. But note that those processes are identical. The null character of the transition would strictly derive from this fact. In other words, we can say that the transitions are not null at the level of the processes which are related, let us call them *microprocesses*. In spite of that, we can also say that *seguir* heads a predicate that denotes a null transition event at the level of the process constituted by the microprocesses, let us call it *macroprocess*.¹²

As in the examples in section 3, the microprocess to the left is not asserted, but presupposed. That is why it is represented within brackets. With respect to the microprocess to the right, the sentence assertion is that the drawer has been involved in it more than once. Recall that *abrir*, ‘to open’, denotes a non instantaneous event with an initial state, a final state, and a path. Thus, if the drawer has been involved in this process more than once, that means that more than once the drawer has gone from not being open to having at least the property represented by the first state in the attributive path. We will leave for future research the problem of how to give account of the iteration of the process in the semantic structure of (28).

Now, consider again the sentence (6a):

- (6) a. *Vimos seguir abriéndose solo el cajón muchos días (hasta
saw-1.PL keep opening-SE by itself the drawer several days (hasta
que lo arreglaron definitivamente).
that it fixed-3.PL definitely
‘We saw the drawer keep opening by itself for several days (until it was
fixed definitely).’*

To our view, (6a) is an example of perception of a dynamic null transition process. We propose that in (6a) the objects of perception are the microprocesses. The subeventive structure of these microprocesses is constituted by states related by non-null relations. There are changes of states, and thus the lexical requirement that the perception verb imposes to its complement is satisfied. As we know, the perceived microprocesses constitute a null transition macroprocess with the presupposed one. Nevertheless, the grammaticality of (6a) demonstrates that this fact is absolutely compatible with the lexical requirement imposed by *ver*, ‘to see’.

¹² See Bertinetto (1994) for the original concepts of *macro* and *microevent*.

We will finish this paper with an explanation of the grammaticality of (6b) in the next section.

4.2. *Seguir* as head of non-null transition processes

Compare the example (28) above with the example (29). In (29) the drawer is involved in the non instantaneous process denoted by *siguió abriéndose* just once:

- (29) (Primero Juan empujó levemente el cajón, pero después) el cajón *siguió abriéndose solo hasta que todo su contenido quedó al descubierto.*
First Juan pulled-3.SG gently the drawer but after the drawer went-3.SG on opening-SE by itself until that all its contents remained-3.SG to-the uncovered
'First Juan pulled the drawer gently, but later the drawer went on opening by itself until its contents were completely uncovered.'

In the examples with static null transition processes *seguir* connects states. In the examples with dynamic null transition processes *seguir* connects microprocesses. The question to which we will try to answer in this section is what is the function of *seguir* in (29). Our proposal is that the auxiliary verb heads a predicate that denotes a non-null transition process.

In (29) it is asserted that the drawer was involved in an initial part of the process of going from having the property of not being open to having at least the property of being barely open. The initial part of the process is presupposed. In other words, in order the drawer to go on opening it should happen that in a time anterior to the time of the sentence the drawer has already gone from not being open to being at least barely open.

The semantic structure of (30) reflects this interpretation. Observe that *seguir* relates distinct phases or parts of the same process:¹³

- (30) $[P^0(i) \Rightarrow P^{1/10}(i) \Rightarrow \dots, \cong] \dots, \Rightarrow P^{9/10} \Rightarrow P^1$

¹³ We have the same interpretation in (i). Properly, there are no parts or phases because *correr*, 'to run', does not denote a process with initial and final states. Consequently, the intermediate states of the path are not ordered. The sentence (ii) would be the equivalent to (28). We must investigate further into this matter:

- (i) Después de cruzarnos, él *siguió corriendo* dos horas.
after of to cross-US he kept-3.SG. running two hours
'After we crossed each other on the way, he kept running for two hours.'
(ii) A pesar del diagnóstico, él *siguió corriendo* muchos años.
in spite of-the diagnosis, he kept-3.SG running several years
'In spite of the diagnosis, he kept running for several years.'

To the left of the underlined symbol \Rightarrow , we find the presupposed part of the process. The asserted part is to the right. It is an intermediate part. The process can reach the final state depending on the context, as in (29).

With this semantic structure in mind, we can, finally, explain the grammaticality of (6b):

- (6) b. Juan tiró levemente del cajón y todos lo vimos seguir abriéndose
Juan pulled-3.SG gently of-the drawer and all it saw-1.PL go on opening-SE
solo (hasta que su contenido quedó completamente al descubierto).
by itself until that its contents remained-3.SG completely to-the uncovered
'Juan pulled the drawer gently and we all saw it go on opening by itself
(until its contents were completely uncovered).'

Our conclusion is that what we have in the embedded sentence of (6b) is neither a dynamic nor a static null transition process. It is a non instantaneous process of change in just one occasion of the property of not being open to the property of being open. In consequence, the grammaticality of (6b) is not an exception. It is comparable to the grammaticality of (3a), *Vimos {abrirse/cerrarse} el cajón*, 'we saw the drawer open/close'. There is only one difference: due to the presence of *seguir* we must understand that what is perceived is just one part of the process of change of state.

5. Conclusions

Our goal in this paper has been to answer two questions related to the conditions to embed infinitive clauses headed by *seguir* and *mantener* to the Spanish perception verb *ver*.

Firstly, we have maintained that the null transition process denoted by the predicate headed by the pseudo-copulative *mantener* behaves as a state. It can be embedded to *ver* whenever it is modified by temporal expressions that introduce external boundaries. On the contrary, the null transition process denoted by the predicate headed by the pseudo-copulative *seguir* cannot be embedded to *ver*, no matter if it is modified by temporal expressions that introduce external boundaries or not. This is due to its complex nature. *Seguir* connects properties or locations that are asserted with identical properties or locations that are presupposed. The presupposed properties or locations cannot be the object of non-epistemic perception.

Secondly, we have proposed three different semantic structures for the events denoted by the predicates headed by *seguir*: *static* null transitions processes (see Table I, *El cajón sigue abierto*, ‘the drawer is still open’), *dynamic* null transitions processes (see 28, *El cajón siguió abriéndose solo aún muchos días hasta que lo arreglaron definitivamente*, ‘the drawer kept opening by itself for several days until it was fixed definitely’), and *non-null* transition processes (see 29, *(Primero Juan empujó levemente el cajón, pero después) el cajón siguió abriéndose solo hasta que todo su contenido quedó al descubierto*, ‘first Juan pulled the drawer gently, but later the drawer went on opening by itself until its contents were completely uncovered’). Only the static null transition processes headed by the pseudo-copulative verb are excluded from the contexts of non-epistemic or direct perception. They are not excluded neither the dynamic null transition processes nor the non-null transition ones. In both cases the states that constitute their subeventive structure are not identical, i.e. there are changes of properties or locations. That is the lexical requirement that infinitival complement of visual perception verbs must satisfy.

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