

## The role of Aktionsart in deverbal nouns: State nominalizations across languages<sup>1</sup>

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Most of the literature devoted to the study of deverbal nominalizations concentrates on the complex event reading (e.g. *La concentración de partículas tiene lugar a temperatura ambiente* ‘The concentration of particles takes place at room temperature’) and the object reading (e.g. *El paciente tenía concentraciones de calcio en el hombro* ‘The patient had calcium concentrations in the shoulder’), while nominalizations denoting states (e.g. *La concentración de Sherlock Holmes duró cinco horas* ‘Sherlock Holmes’ concentration lasted five hours’) have remained, in general, understudied. In this paper we present their empirical properties and argue that, despite the empirical differences, state nominalizations and event nominalizations can receive a unified account. We show that in Spanish, Catalan, French, English and German the question of whether a deverbal nominalization denotes a state or an event, or is ambiguous between both readings depends on independent properties of the verbal base, allowing us to propose a unified account of both classes of nominalizations: the productive nominalizers in these languages can only denote the aspectual notions contained in the base’s Aktionsart. We further argue that other languages, like Slovenian, have productive nominalizers that can operate over the external aspect of the predicate; in these cases, the nominalization can denote aspectual notions not contained in the base’s Aktionsart.

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The following abbreviations are used in this paper: 3 = third person; ACC = accusative case marking; ADJ = adjectivizer; AUX = auxiliary verb; GEN = genitive case marking; INF = infinitive marker; NOM = nominalizer; PART = participle marker; PF = perfective stem; PL = plural number; PT = particle; SG = singular number; THV = theme vowel.

## I. THREE CLASSES OF NOMINALIZATIONS

Most studies of deverbal nominalizations, starting from Chomsky (1970) and including Grimshaw (1990), have mainly concentrated on the classes illustrated in (1), known as complex event nominals, and (2), simple event nominals or event nouns.

- (1) the building of the bridge by the British soldiers
- (2) the arrival of the British soldiers

In the literature, these two classes are opposed to so-called ‘result nouns’, a cover term that refers to the nouns that denote participants – arguments or otherwise – more or less tightly connected with the event that the base verb denotes, as seen in (3). For explicitness, and to avoid terminological confusion, we will call these nouns ‘object nouns’, where ‘object’ means a participant not belonging to the aspectual domain.

- (3) a stone building that weighs three tons

In this paper, we will concentrate on a third class of deverbal nouns, which we will characterize as state nouns, whose grammatical properties are distinct from the two aforementioned classes. Example (4) is a nominal that unambiguously denotes a state.

- (4) John’s preoccupation with the economy

As a first approximation to justify this third class of nominalizations, consider two differences with respect to the two major classes discussed in the literature and exemplified in (5)–(7).

- (5) (a) The building of the bridge took place during the Second World War.  
(b) the constant building of bridges
- (6) (a) \*John’s preoccupation with the economy took place last summer.  
(b) John’s constant preoccupation with the economy
- (7) (a) \*The stone building took place in the 16th century.  
(b) \*the constant stone building

Event nouns (5) and object nouns (7) contrast in that only the former can be subjects of the predicate *take place*, which locates events in space and time ((5a) vs. (7a)). In this property, state nouns (6a) pattern with object nouns. Another contrast between events and objects is that the latter do not allow time or aspect modification (adjectives such as *constant*). This is shown in (5b) and (7b). In this second property, state nominalizations pattern with event nominalizations. Summarizing, (6a) shows that nouns like *preoccupation* are non-eventive; (6b) shows that they have a temporal extension.

There is a general intuition that event nominalizations and state nominalizations form a natural class in opposition to object nominalizations.

The first two kinds of nominals can introduce argument structure (and therefore be Argument Supporting nominals in Borer's 2003 terminology), while the third class never can do so (they must be Result-nominals in Borer's terms). The question is whether this intuition can be integrated with the data; that is, whether nominalizations that denote eventualities – events and states – can receive a unified treatment despite their empirical differences, which we describe in Section 2. The line of research that we pursue in this paper is to show that both kinds of nominals can receive the same analysis, as their differences derive from independent properties of the verbal base they combine with; more specifically, the differences derive from Aktionsart. The relevant data are presented in Section 3, where we present contrasts in Spanish and other Indo-European languages showing that with a specific set of nominalizers, an AS-nominalization must always denote a part of the aspectual information contained in the Aktionsart of the base verb. This generalization is what we call the Aspect Preservation Hypothesis (APH): the productive nominalizers in Spanish, French, Catalan, English and German do not modify the aspectual information of the verbal base. In Section 4 we present an analysis of the data, showing that it is possible to capture the empirical generalizations presented in Sections 2 and 3, and at the same time give a unified account of all eventuality nominalizations; the productive nominalizers in the languages that we have considered merely change the category label of the base and can only access the aspectual information contained in the Aktionsart of the verb, ignoring all material external to it. The availability of a state nominalization in these languages depends, therefore, on the existence of a state subevent in the verbal base. The question of whether a nominalization denotes an event or a state, or is ambiguous between the two readings depends on the Aktionsart of the predicate, not on the properties of the nominalizer. Our analysis opens the possibility that some languages have nominalizers that can act at a later stage of the derivation, and therefore can access the external aspect of the predicate. In Section 5 we argue that this is the case in Slovenian, where there is a nominalizer *-ost* that can productively combine with an adjectival participle, which is semantically a stativizer, in order to give state nominalizations from verbs whose Aktionsart lacks this component.

Thus, this paper follows a line of research initiated by Grimshaw (1990): the range of nominalizations that a verb allows, and the properties of each class of nominalization, are determined by independent properties of the base verb's argument and aspectual structure.

## 2. IDENTIFYING AND DESCRIBING STATE NOMINALIZATIONS

First of all, we must be explicit about the definition of 'state' that we assume. This is a non-trivial matter because the proper definition of state is controversial.

As a working definition, we follow Dowty (1979) and Krifka (1989) in their proposal that states are homogeneous predicates which meet the SUBINTERVAL PROPERTY, namely that for any subinterval  $t'$  – no matter how small – included in the temporal interval  $t$  during which a predicate holds, it is also true that the predicate holds. From this definition, it can be seen clearly that, from the three classes briefly introduced in the last section, only a noun like *preocupación* fulfils the subinterval property. If we state that *John's preoccupation lasted from May to August*, the sentence entails that at any subinterval contained between May and August (say, the 3rd of July at 17:43:20) it is true that John was preoccupied. In contrast, if we take the time span during which the event of building a bridge occurs, it is clear that not every time interval inside that span qualifies as a time interval in which the predicate is true. Assuming this definition, among the nominalizations which are unambiguous states in Spanish we find those listed in (8).

- (8) *aburrimiento* ‘boredom’    *entretenimiento* ‘entertainment’  
*atención* ‘attention’        *preocupación* ‘preoccupation’  
*diversión* ‘amusement’

Other nominalizations are ambiguous between an event and a state reading. Among them we find those in (9).

- (9) *aburguesamiento* ‘burgeoisification’    *interrupción* ‘interruption’  
*concentración* ‘concentration’            *vinculación* ‘association’

Take, for example, the noun *vinculación* ‘association’. On one reading, exemplified by (10), this noun gives name to the action of associating two things and, as such, the nominalization involves the change-of-state meaning of the verb.

- (10) (a) En su estudio, Juan vinculó el crimen a la marginación  
in his study Juan associated the crime to the exclusion  
social.  
social  
‘In his study, Juan associated the crime with social exclusion.’  
(b) La vinculación del crimen con la marginación social  
the association of.the crime with the exclusion social  
tuvo lugar por primera vez en este  
took place for first time in this  
‘The association between crime and social exclusion took place for  
the first time in this study.’

The nominalization in (10b) is related to the sentence in (10a) and allows *tener lugar* ‘take place’ to appear (recall examples (5)–(7) above). On the state reading, exemplified by (11), the noun in (11b) denotes a state, giving

name to the static relation described in the sentence in (11a) and cannot co-occur with *tiene lugar* ‘takes place’.<sup>2</sup>

- (11) (a) La presencia de agua se vincula con la existencia  
 The presence of water SE associates with the existence  
 de vida.  
 of life  
 ‘The presence of water is associated with the existence of life.’  
 (b) la vinculación del agua con la existencia de vida  
 the association of.the water with the existence of life  
 (#tiene lugar...)  
 takes place

As an additional way of recognizing these nominalizations, note that, when a deverbal nominalization has a state reading, it can be paraphrased by a nominal infinitival construction that contains the verb plus the verb *estar*, the stage level copula in Spanish, as is shown in (12).

- (12) el aburrimiento de Juan = el estar aburrido Juan  
 the boredom of Juan the be bored Juan  
 ‘Juan’s boredom’ = ‘Juan’s being bored’

Despite this conceptual relation, we argue that the relation between the participle (e.g. *estar aburrido* ‘be/being bored’ in (12)) and the nominalization (*aburrimiento* ‘boredom’) is misleading at best and that both morphological forms must be kept distinct in order to capture the facts. We will return to this complex issue in Section 5 below.

### 2.1 Non-dynamicity

States are non-dynamic eventualities. In the English example in (6) and the Spanish example in (11b) above, we saw already that the predicate *take place* cannot take state nominals as subjects. Following Rothmayr (2009), we assume that the reason is that this predicate requires its subject to denote an action. Consider now (13), which we treat as further evidence that these nouns do not denote dynamic events. Adjectives such as *rápido* ‘fast’ and *lento* ‘slow’ qualify the way in which a dynamic predicate is performed and are thus compatible with events, as is illustrated in (13a). As (13b) shows, they are not compatible with state nouns.

[2] As is customary, the symbol # is used in (11b) and other examples in this paper to indicate that an expression is ungrammatical in the intended reading although in a different reading it can be grammatical.

- (13) (a) la construcción rápida del puente  
the construction fast of.the bridge  
‘the fast building of the bridge’  
(b) #el aburrimiento rápido de Juan  
the boredom fast of Juan  
‘the fast boredom of Juan’

Maienborn (2003) notes that, in the verbal domain, only events can be antecedents of the English expression *this happened*, which can be rendered in Spanish as *esto sucedió*. The example in (14b) shows that this is also a property of the Spanish nouns considered here.

- (14) (a) La construcción del puente fue larga. Esto sucedió  
the building of.the bridge was long this happened  
porque ...  
because  
(b) El aburrimiento de Juan fue grande aquella tarde. #Esto  
the boredom of Juan was big that evening this  
sucedió ...  
happened

If the antecedent of the neuter pronoun *esto* ‘this’ is a nominalization, the result is unacceptable because the verb *suceder* ‘to happen’ must have an event as its subject and the antecedent of the pronoun does not provide one.

## 2.2 Temporal extension

A second characteristic of states is that they are temporal entities. They occupy time spans and as such have temporal extension. We argue that this is precisely the most relevant difference between qualities and states: a quality is not mapped to a temporal extension, but a state is; both express properties that hold of individuals. In theories where the typology of states is more fine-grained than usual, such as Maienborn (2003, 2005), those states that are argued not to belong to the domain of Davidsonian eventualities – and are therefore closer to pure qualities – are defined as the instantiation of a quality in an individual during a time span. Thus, a state can be characterized as a quality plus temporal extension. This definition is consistent with the empirical facts: a state noun such as that in (15a) can be modified by a time expression, *de varios meses* ‘of several months’, whereas a quality noun such as that in (15b) rejects this same modifier; see also Martin (2009).

- (15) (a) una preocupación de varios meses  
a preoccupation of several months  
(b) \*una moderación de varios meses  
a moderation of several months

The PP modifiers which denote a temporal extension allow us to discriminate between the event and the state reading of some nouns that have both interpretations. These modifiers cannot modify a noun that denotes a change of state, because they would then be forced to measure the time span during which the change took place, and the change itself has to be instantaneous. Consider the nominalization *interrupción*, from *interrumpir* ‘to interrupt’, illustrated in (16) below. This noun can refer to the action of getting interrupted (as in (16a)) or to the state of being interrupted (as in (16b)), but only the latter allows a temporal modifier that measures a time interval while the state holds (say, between the moment in which communication is interrupted and the moment in which it is restored).

- (16) (a) La interrupción (\*de varias horas) de la comunicación  
 the interruption of several hours of the communication  
 tuvo lugar el lunes.  
 took place the Monday  
 ‘The interruption of the communication took place on Monday.’
- (b) La interrupción (de varias horas) de la comunicación  
 the interruption of several hours of the communication  
 causó grandes trastornos.  
 caused great troubles  
 ‘The interruption of the communication for several hours caused great trouble.’

Another test that shows that state nouns have temporal extension is provided by a consideration of adjectives such as *largo* ‘long’, *corto* ‘short’ and *infinito* ‘infinite’.

As noted by Martin (2009), such adjectives only allow a temporal reading when the noun denotes a state, as in (17a). If the noun denotes a quality, as in (17b), the adjective makes the expression ungrammatical or takes a degree reading, but does not denote the time interval during which the property holds. This, again, makes sense if qualities differ from states in not denoting a temporal extension.

- (17) (a) larga preocupación, corto enfado, infinito aburrimiento  
 long preoccupation short anger infinite boredom
- (b) \*larga moderación  
 long moderation

### 2.3 Absence of plurality

Consider a wider sample of state nominalizations, in (18), taken from those found in the set of data examined, and consider a sample of morphologically underived nouns also denoting states, in (19).

- |      |  |  |
|------|--|--|
| (18) | <i>aburrimiento</i> ‘boredom’          | <i>diversión</i> ‘amusement’           |
|      | <i>adormecimiento</i> ‘sleepiness’     | <i>entretenimiento</i> ‘entertainment’ |
|      | <i>agarrotamiento</i> ‘stiffness’      | <i>envaramiento</i> ‘deadness’         |
|      | <i>amodorramiento</i> ‘drowsiness’     | <i>excitación</i> ‘excitement’         |
|      | <i>apasionamiento</i> ‘passion’        | <i>frustración</i> ‘frustration’       |
|      | <i>atención</i> ‘attention’            | <i>inhibición</i> ‘inhibition’         |
|      | <i>concentración</i> ‘concentration’   | <i>irritación</i> ‘anger’              |
|      | <i>crispación</i> ‘tenseness’          | <i>preocupación</i> ‘preoccupation’    |
|      | <i>desatención</i> ‘lack of attention’ | <i>vinculación</i> ‘connection’        |
| (19) | <i>anhelo</i> ‘longing’                | <i>enfado</i> ‘anger’                  |
|      | <i>aprecio</i> ‘esteem’                | <i>entusiasmo</i> ‘enthusiasm’         |
|      | <i>asco</i> ‘disgust’                  | <i>interés</i> ‘interest’              |
|      | <i>cabreo</i> ‘fit’                    | <i>molestia</i> ‘discomfort’           |
|      | <i>desencanto</i> ‘disappointment’     | <i>odio</i> ‘hate’                     |
|      | <i>deseo</i> ‘desire’                  | <i>pasión</i> ‘passion’                |
|      | <i>disgusto</i> ‘being upset’          |  |

We consider the nouns in (18) derived deverbal nominalizations due to their morphological characteristics: they contain the suffixes *-miento* ‘-ment’ or *-ción* ‘-tion’, which productively build nouns from verbs, and contain traces of verbal morphology, including the presence of the theme vowel (ThV) that marks the conjugation class of the original verb, as is illustrated (20).

- |      |     |                          |   |                           |
|------|-----|--------------------------|---|---------------------------|
| (20) | (a) | <i>inhib-i-r</i>         | → | <i>inhib-i-ción</i>       |
|      |     | <i>inhibit-THV-INF</i>   |   | <i>inhibit-THV-tion</i>   |
|      | (b) | <i>frustr-a-r</i>        | → | <i>frustr-a-ción</i>      |
|      |     | <i>frustrate-THV-INF</i> |   | <i>frustrate-THV-tion</i> |
|      | (c) | <i>aburr-i-r</i>         | → | <i>aburr-i-miento</i>     |
|      |     | <i>bore-THV-INF</i>      |   | <i>bore-THV-ment</i>      |

In contrast to these derived state nominalizations, the nouns in (19) do not contain markers of verbal structure or nominalizers, which suggests that they are not derived from verbs. We claim that the nouns in (19) are the stative equivalents of the class of underived event nouns such as those in (21).

- |      |                                 |                               |
|------|---------------------------------|-------------------------------|
| (21) | <i>conferencia</i> ‘conference’ | <i>terremoto</i> ‘earthquake’ |
|      | <i>fiesta</i> ‘party’           | <i>tormenta</i> ‘storm’       |
|      | <i>guerra</i> ‘war’             |                               |

Together, the items in (19) and (21) form a class of words that are not derived from verbs – although they can be used to derive verbs – but denote aspectual notions, such as events and states.

Consider now the possibility of appearing in the plural form. This option is clearly available to nouns denoting objects, see (22a), and to nouns

denoting events, provided that they are telic and interpreted as ordered in temporal succession (22b). We illustrate the property in English, but Spanish behaves in the same way.

- (22) (a) several stone buildings  
 (b) the many destructions of Constantinople across history

In contrast to these two semantic notions, state nominalizations and state nouns systematically reject the plural form. When the nominalization (or the noun) allows a plural form, the state reading disappears and another meaning emerges: the noun denotes an event or an individual that participates in the event.

The complementary distribution between state properties and the presence of plural can be shown in the contrasts between (23a) and (23b) and between (24a) and (24b).

- (23) (a) dos roturas (\*de varias horas)  
 two breakings of several hours  
 ‘two breakings (of several hours)’  
 (b) una rotura (de varias horas)  
 one breaking of several hours
- (24) (a) dos enfados (\*de varias horas)  
 two angerings of several hours  
 (b) un enfado (de varias horas)  
 an angering of several hours

In both cases we have a noun which is ambiguous between an event reading, in (23a) and (24a), and a state reading, in (23b) and (24b). Both *rotura* ‘breaking’ and *enfado* ‘angering’ allow the two readings. When they denote an event, they mean ‘the action of getting broken/angry’. When they denote a state, they mean ‘the state of being broken/angry’. Notice that the possibility of having a PP temporal modifier is only available when the noun is in the singular. This is because the plural form forces the event reading, and, as the event denotes an instantaneous change of state, this reading rejects a PP denoting a temporal extension. In the plural, state nominalizations or nouns need to be recategorized as participants associated with the state, typically the object towards which a particular psychological state is directed (Target of emotion in Pesetsky 1995), as in *amores* ‘loves’, or the entity that triggers the state (Pesetsky’s Causer of emotion), as in *distracciones* ‘hobbies’, from *distraer* ‘to amuse’.

The generalization is that the state reading of the noun is not available in the plural form. This is not surprising, given that there is a connection between (un)boundedness of an eventuality and (non)countability (see Bach 1976, Mourelatos 1978). If states are represented as unbounded (Borer 2005) and there is a mapping between verbal aspect and nominal number, nouns

denoting states are not expected to pluralize, unless they are recategorized as some other notion.

As we have seen, parallels between mass nouns and states are tenable to some extent, but note that this comes with an important difference. Mass nouns can appear in the plural form, denoting mass in at least two situations: when the plural is interpreted as taxonomic – giving different classes of the same mass, as in (25a) – and in the so-called stylistic plural, as in (25b). At least in principle, state nouns do not appear in the plural form (*\*unas preocupaciones de varios días* ‘some preoccupations of several days’).<sup>3</sup> We will not be able to explore this difference here, as it goes beyond the limits of this paper.

- (25) (a) los vinos de España  
           the wines of Spain  
           ‘the different kinds of wine of Spain’  
       (b) las aguas  
           the waters

#### 2.4 *Argument structure*

States have an argument structure which minimally has to include an entity of which the state holds (the holder of the state). Such nominalizations pattern with event nouns. The sentence in (26), where the nominalization argument is missing, is ungrammatical if there is no preceding discourse which allows us to recover the arguments.

- (26) #El aburrimiento preocupaba a los profesores.  
           the boredom       worried       ACC the teachers

In addition to the holder of the state (in bold in the following examples), the argument structure of psychological states can include the Target of emotion (Pesetsky 1995), which is not compulsory in the nominalization, and hence is represented between parentheses.

- (27) (a) el aburrimiento **de los estudiantes** (con las matemáticas)  
           the boredom   of the students   with the mathematics  
       (b) la preocupación **del pueblo** (por la economía)  
           the preoccupation of.the people   with the economy

[3] Further research might show that the differences between mass nouns and state nouns in their availability of the plural are just superficial. An anonymous *JL* referee notes that *two breakings of several hours each* (Spanish *??dos roturas de varias horas cada una*) is at least marginally acceptable. In the interpretation where it is acceptable, it seems that we are categorizing states into classes (states of being broken classified by how long they last); while the states themselves cannot pluralize, perhaps if turned into maximal phases of states, they can be taken as classes of eventualities.

The difference between the argument structure of an event nominalization and that of a state nominalization is illustrated in (28) and (29) below. In an event nominalization, the agent, *los persas* ‘the Persians’, can remain in the argument structure, as is shown in (28b). In an state nominalization, even in those cases where the related verb allows for an agentive construal, the agent, *Luis* in (29a), cannot be preserved. Only causers, which are non-volitional triggers of the state, such as *la película* ‘the movie’ in (29b’), can occur in a state nominalization.

- (28) (a) Los persas invadieron Grecia.  
           the Persians invaded Greece  
       (b) la invasión de Grecia por los persas  
           the invasion of Greece by the Persians
- (29) (a) Luis cuidadosamente aburrió a su hijo para que  
           Luis carefully bored ACC his son so that  
           se durmiera.  
           SE fell.asleep.SUBJ  
           ‘Luis carefully made his son bored so that he would fall asleep.’  
       (a’) \*el aburrimiento de su hijo por Luis  
           the boredom of his son by Luis  
       (b) La película aburrió a Juan.  
           the movie bored ACC Juan  
       (b’) el aburrimiento de Juan con la película  
           the boredom of Juan with the movie

This distinction is very clear in French, where the preposition *par* ‘by’ is used only with agents. This preposition is unavailable in state nominalizations; *pour*, which introduces causers, has to be used instead.

- (30) la préoccupation de Jean {pour/\*par} l’économie  
       the preoccupation of Jean for/by the.economy

The property is not restricted to psychological verbs (contra Grimshaw 1990 and Pesetsky 1995), but is rather a property of states. This can also be seen in constructions with the Spanish verb *agarrotar* ‘to get stiff’. In (31a), a doctor (i.e. an agent) is forcing the leg to go stiff on purpose as part of an experiment. In (31c), the stiffness is produced by a non-volitional cause (cramp). Only the second reading remains in the nominalization: (31b) is ungrammatical, while (31d) is grammatical.

- (31) (a) El doctor agarrotó su pierna.  
           the doctor made.stiff his leg  
           ‘The doctor made the leg stiff on purpose.’  
       (b) el agarrotamiento de su pierna (\*por el doctor)  
           the stiffness of his leg by the doctor

- (c) El calambre agarrotó su pierna.  
 the cramp made.stiff his leg  
 ‘The cramp made the leg stiff.’
- (d) el agarrotamiento de su pierna por el calambre  
 the stiffening of his leg by the cramp

The state reading always rejects the agent. The noun *interrupción* ‘interruption’, which can denote a change of state or the related attained state, only allows the agent in the former reading, (32a). In (32b) we force the state reading with a temporal PP modifier.

- (32) (a) la interrupción de la negociación por parte del presidente  
 the interruption of the negotiation by part of.the president  
 ‘the interruption of the negotiation by the president’
- (b) \*su interrupción de varios meses por parte del presidente  
 its interruption of several months by part of.the president

The correlation between absence of an event and non-availability of an agent is well documented. A recent implementation of the restriction (Rothmayr 2009) involves associating the presence of an agent with a verb that contains the head DO. The presence of this head makes the verb dynamic. In contrast, a state contains the head CAUSE, which introduces non-volitional causers. Agents are unavailable with stative readings because the stative reading is incompatible with the presence of the head DO.

### 3. THE APH: THE RELATION BETWEEN VERBS AND STATE NOMINALIZATIONS

In this section we explore what properties a verb must have in order to produce a state nominalization. In Section 3.1 we argue that only verbs with a state component in their denotation can produce a state nominalization. The claim is made on the basis of Spanish data. In Section 3.2 we test this claim in Catalan, French, German and English, and will show that the data are compatible with what we found in Spanish, thus strengthening our empirical conclusion.

The working hypothesis that we argue for on the basis of these data is the so-called Aspect Preservation Hypothesis (henceforth APH). We develop the idea from Fábregas Marín & McNally (in press) that deverbal nominalizations that express any aspectual notion must inherit these notions from the base verb. The basic assumption is that aspect is mainly a verbal property, so the possibility of a noun expressing this notion is dependent on its base containing it. The expected consequence in this approach is that, *ceteris paribus*, a nominalization will only denote a state to the extent that the base on top of which it is formed also contains a state component. We will show that nominalizers like *-ción*, *-miento* and *-ura* in Spanish, German *-ung* or English *-(at)ion* do not change the aspectual properties of the base.

3.1 *Properties of verbs that give rise to state nominalizations*

We will show that only verbs that allow a measure phrase to signal how long a participant stays in a state give rise to state nominalizations. The verbs that do not allow this type of nominalization either reject the measure phrase or such a phrase has to be interpreted with them as denoting the duration of the event or as introducing a time interval during which the action takes place several times. In this discussion, for reasons of clarity, we will discuss separately verbs that contain a result state from atelic verbs that contain a state.

 3.1.1 *Telic verbs*

Let us first consider verbs that express a change of state. It can be argued that, pragmatically, all these verbs have the implication that, if a change of state has taken place, one of the arguments of the verb must be in a specific state. However, we will argue that not all change-of-state verbs actually codify this result state as part of their denotation: some denote it, some only imply it in the pragmatics.

- (33) (a) El ejército destruyó Dresden.  
           the army destroyed Dresden  
       (b) La tormenta averió las telecomunicaciones.  
           the storm broke.down the telecommunications  
       (c) La máquina trituró el libro.  
           the machine grinded the book

From a pragmatic perspective, all these verbs imply that there has been a change of state and after the event took place, the direct object is in a result state. However, we argue that only the verb in (33b) codifies this state grammatically in the denotation of the verb. Note the behaviour of a *durante*-phrase in each one of these cases, as presented in (34). In (34b), this aspectual modifier can give us the temporal extension of the result state of being broken down; that is, (34b) states that the telecommunications were down during the whole day. In (34a) and (34c), in contrast, to the extent that the *durante*-phrase is grammatical, it measures how long the change of state took to be achieved; that is, here the *durante*-phrase must modify the event part of the verb.

- (34) (a) #El ejército destruyó Dresden durante todo el verano.  
           the army destroyed Dresden for whole the summer  
           ‘The army destroyed Dresden for the whole summer.’  
       (b) La tormenta averió las telecomunicaciones durante  
           the storm broke.down the telecommunications for  
           todo el día.  
           whole the day  
           ‘The storm broke the telecommunications down for the whole day.’

- (c) #La máquina trituró el libro durante toda la tarde.  
 the machine grinded the book for whole the evening  
 ‘The machine grinded the book for the whole evening.’

Note that, for the *durante*-phrases in the result state reading to be acceptable, it is necessary for the state to be conceived of as reversible. Some change-of-state verbs seem to reject the *durante*-phrase in the relevant reading not for lack of a state component, but because in normal circumstances the attained state holds forever and it does not make pragmatic sense to measure it. However, once a context is set where that state can be reversed, speakers accept the PP modifier in the relevant reading. Death, in normal situations, is quite irreversible, but in the context of an operation, given that our world knowledge allows us to interpret a temporary stop of the heart as a kind of ‘(clinical) death’, the sentence in (35a) is grammatical, showing that the verb *morir* ‘to die’ can denote a result state and not only imply it. The same can be said of the verb *romper* ‘to break’ when it refers to an object that can be easily fixed, see (35b).<sup>4</sup>

- (35) (a) Juan murió durante tres minutos durante la operación.  
 Juan died during three minutes during the operation  
 ‘Juan died for three minutes during the operation.’  
 (b) La tubería se rompió durante tres horas esa tarde.  
 the pipe SE broke for three hours that afternoon  
 ‘The water pipe broke for three hours that afternoon.’

With verbs such as these, we claim that there is always a state component, but that the *durante* test does not give acceptable results in normal scenarios because these states are conceptualized as everlasting. In contrast, other change-of-state verbs (including *to destroy*) do not allow this *durante*-phrase in the relevant reading even when the context is carefully set so that the attained state is interpreted as reversible. Consider (36). We know that Dresden was destroyed, and that it did not remain destroyed forever and was reconstructed after some time. Thus, our knowledge of the world tells us that the state was reversible; still, the PP cannot be interpreted as measuring the time between the destruction and the reconstruction.

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[4] A terminological note is in order. In the study of participles, coming from Parsons (1990), the term ‘resultant state’ has been used to refer to the denotation of the participle when it means that a particular action has affected an object, as in, e.g. *This child is already born*. Resultant states are non-reversible by definition, as once an action has taken place nothing can change the fact that it has been performed (Kratzer 2000). This is not what is generally meant by ‘result state’ in the literature devoted to change-of-state predicates; in this context, the term ‘result state’ stands for the state attained after completion of a change. It is in this sense that we use the term ‘result state’ in our discussion. As we have argued, this state has to be reversible (given world knowledge), so it does not behave as the resultant state.

- (36) #El ejército destruyó Dresden durante todo el verano, pero  
 the army destroyed Dresden for whole the summer but  
 luego fue reconstruida.  
 then was reconstructed  
 ‘The army destroyed Dresden for the whole summer, but later on it  
 was reconstructed.’

Given the behaviour of the *durante*-phrase, we can differentiate between three classes of change-of-state verbs: a first class, which allows it to measure a result state (e.g. *averiar* ‘to break down’); a second class, which allows it to measure a result state but only when the context allows the state to be reversible (e.g. *morir* ‘to die’), and a third class, which does not allow this reading of the PP, even in contexts where a state can be reversed (*destruir* ‘to destroy’). We propose that this grammatical principle follows if the first two classes of verbs contain a state in their denotation, interpreted as the result of the change, but the third class only implies it pragmatically. The difference between the first two classes follows from the fact that it does not make any sense to measure the temporal extension of a state if this temporal extension is going to be unlimited.

Interestingly, only the verbs that allow the state reading of the *durante*-phrase can have a state nominalization:

- (37) (a) una avería de varias horas  
 a break.down of several hours  
 (b) \*una destrucción de varios meses  
 a destruction of several months  
 (c) \*un triturado de varios minutos  
 a grinding of several minutes

Given that the context is set in such a way that the state is reversible, the verbs in the second class also have a corresponding state nominalization:

- (38) (a) su muerte (clínica) de tres minutos  
 his death clinical of three minutes  
 ‘his clinical death for three minutes’  
 (b) su rotura de tres horas  
 its breaking of three hours  
 ‘its breaking for three hours’

The pattern recurs: when the measure phrase can modify the state, the verb can produce a state nominalization; otherwise, it is impossible. A few more example pairs are presented in (39).

- (39) (a) El médico sedó al paciente durante varias horas.  
 the doctor sedated ACC.the patient for several hours  
 (b) Una sedación de varias horas es necesaria para la operación.  
 a sedation of several hours is necessary for the operation

- (c) Sherlock se concentró durante varios días.  
 Sherlock SE concentrated for several days
- (d) Una concentración de varios días siempre da resultados.  
 a concentration of several days always gives results
- (e) \*El presidente inauguró el curso durante varios minutos.  
 the president inaugurated the course for several minutes
- (f) \*Una inauguración de varios minutos es demasiado corta.  
 an inauguration of several minutes is too short

Examples (39e) and (39f) would be acceptable only if the modifier were understood to measure the time extension of the preparatory stage that leads to the inauguration ('it took several minutes before the president inaugurated the course'). In Section 4 we will argue that for the measure phrase to modify the state component there must be a state component inside the Aktionsart of the verb. When this subevent is present, the nominalization can take it and the result is a state nominalization; in the absence of it, the nominalization is either impossible or has to denote an event. In the case of verbs without a state component, the measurer normally refers to the event component (as in *destroy*). If the event is instantaneous (as in *inaugurate*), they disallow the measurer unless it states the extension of a preparatory stage. Before we move to the analysis, let us consider atelic verbs and check if the data are confirmed in other languages.

### 3.1.2 *Atelic verbs*

From the perspective of the prediction made by the APH, atelic verbs should also have a state nominalization if they contain a state component in their denotation. In this class, we find psychological verbs of the class that Marín & McNally (2011) classify as non-punctual, because their aspectual behaviour shows the presence of a state component.<sup>5</sup> Consider, for example, the behaviour of these verbs with respect to the *durante*-phrase. In (40), this PP can be interpreted as measuring the extension of the state during which the children were kept amused or the students remained bored.

- (40) (a) La película divirtió a los niños durante unas horas.  
 the movie amused ACC the children for some hours
- (b) La charla aburrió a los estudiantes durante unas horas.  
 the talk bored ACC the students for some hours

[5] For example, these authors note that the progressive form with *estar* and a gerund are interpreted in punctual verbs as a preparatory stage ('being just about to'), as in *Está enfadándose* 'He is about to get angry'; in contrast, the same form is interpreted as an ongoing state with non-punctual verbs, as in *Está aburriéndose* 'He is bored'. The present tense of each of these classes has also a different interpretation: in punctual verbs, a habitual or repetitive reading appears (*Juan se enfada* 'Juan typically gets angry'); in non-punctual verbs, the repetition reading does not arise and it is possible to have a pure moment-of-speech reading (*Juan se aburre* 'Juan is bored now').

The ungrammaticality of (41) shows that these verbs are atelic.

- (41) \*Los niños terminaron de {divertirse/aburrirse}.  
 the children finished of get.amused/get.bored

The Spanish verb *terminar* ‘to finish’ can only select telic events that have a natural endpoint, as shown by the contrast in (42).

- (42) (a) Juan terminó de construir la casa.  
 Juan finished of build the house  
 ‘Juan finishing building the house.’  
 (b) \*Juan terminó de nadar.  
 Juan finished of swim  
 ‘Juan finished swimming.’

The nominalizations *diversión* ‘amusement’ and *aburrimiento* ‘boredom’ unambiguously denote states in Spanish.

Another class of atelic verbs that show evidence of the presence of a state component are dynamic verbs in their stative reading, like those in (43).

- (43) (a) El desempleo se vincula con la criminalidad.  
 the unemployment SE links with the criminality  
 ‘Unemployment is linked with criminality.’  
 (b) El agua se asocia con la presencia de vida.  
 the water SE associates with the presence of life  
 (c) \*El agua terminó de {asociarse/vincularse} con la vida.  
 the water finished of associate/link with the life

This reading can be successfully associated with a state nominalization, as witnessed by (44), constructed with the verbs *vincular* and *asociar* (both translatable as ‘to link’).<sup>6</sup>

- (44) (a) la vinculación de varios siglos entre el desempleo  
 the link of several centuries between the unemployment  
 y la criminalidad  
 and the criminality  
 ‘the century-long association between unemployment and  
 criminality’  
 (b) la asociación milenaria entre el agua y la vida  
 the association millenary between the water and the life  
 ‘the millenary association between water and life’

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[6] The type of temporal modifiers that state nominalizations coming from the stative reading of otherwise dynamic verbs is very restricted. This is presumably related to the fact that these stative readings in the verbal domain are interpreted as generic statements which, as such, should apply in all situations and thus it is pragmatically difficult to interpret them as linked to specific time spans. However, as can be seen in the examples, temporal modifiers meaning ‘always’ or denoting periods considered to be long enough are allowed.

3.2 *Testing our generalization in other languages*

In the previous section we presented the data obtained from our study of nominalizations in Spanish and, by exploring different telic and atelic classes of verbs in Spanish, we identified the generalization that only verbs that contain a state component in their denotation can give rise to a state nominalization. This is exactly what the APH predicts: the nominalization does not add any aspectual notions to those already present in the base.

Let us now briefly consider whether this generalization can be maintained in some other Indo-European languages or whether it has to be restricted to Spanish.

3.2.1 *Other Romance languages: French and Catalan*

Let us start with other Romance languages, French and Catalan. In these languages the situation is identical to Spanish. Consider the French examples in (45) first. In this language, only when the *pendant*-phrase can measure a state is it possible to have a state nominalization derived from that verb. This is the same generalization that we identified in Spanish.

- (45) (a) #Ils ont détruit Dresden pendant trois semaines.  
           they have destroyed Dresden for three weeks  
 (a') #la destruction de Dresden pendant trois semaines  
        the destruction of Dresden for three weeks  
 (b) Le medecin a sédé le patient pendant deux heures.  
        the doctor has sedated the patient for two hours  
 (b') la sédation du patient pendant deux heures  
        the sedation of.the patient for two hours  
 (c) #Le président a inauguré le cours pendant trois  
        the president has inaugurated the course for three  
        minutes.  
        minutes  
 (c') #l'inauguration du cours pendant trois minutes  
        the.inauguration of.the course for three minutes  
 (d) Le tissu a obstruit le vaisseau sanguin pendant  
        the cloth has obstructed the vessel blood for  
        trois ans.  
        three years  
 (d') l'obstruction du vaisseau sanguin pendant trois ans  
        the.obstruction of.the vessel blood for three years

Only in (45b) and (45d), where the *pendant*-phrase modifies a state, is it possible to have a state nominalization. In (45a) and (45c), where the same phrase modifies an event, the nominalization has to be interpreted as eventive.

Identical results are obtained in Catalan, exemplified in (46). When the *durant*-phrase does not modify the state, the nominalization cannot denote a state.

- (46) (a) #Van destruir Dresden durant tres setmanes.  
 have.3PL destroy Dresden for three weeks  
 (a') #la destrucció de Dresden durant tres setmanes  
 the destruction of Dresden for three weeks  
 (b) El metge va sedar el pacient durant dues hores.  
 the doctor has sedated the patient for two hours  
 (b') la sedació del pacient durant dues hores  
 the sedation of.the patient for two hours  
 (c) #El president va inaugurar el curs durant tres minuts.  
 the president has inaugurated the course for three minutes  
 (c') #la inauguració del curs durant tres minuts  
 the inauguration of.the course for three minutes  
 (d) El drap va obstruir el vas sanguini durant tres anys.  
 the cloth has obstructed the vessel blood for three years  
 (d') l'obstrucció del vas sanguini durant tres anys  
 the.obstruction of.the vessel blood for three years

### 3.2.2 Germanic languages: German and English

Now we will explore the situation in two Germanic languages, German and English. We will see here that the APH is confirmed, even if some independent lexical differences of the Germanic languages (having to do with the tendency of zero nominalizations not to have verbal properties in these languages) sometimes obscure the generalization.

Let us consider German, in (47), first. In this language, the situation is just as in Spanish: only the verbs that allow a *lang*-phrase to modify the extension of a state can have an *-ung* nominalization with a stative meaning (see Roßdeutscher & Kamp 2010 for a detailed analysis of the readings allowed by *-ung*).

- (47) (a) #Sie zerstörten Dresden drei Wochen lang.  
 they destroyed Dresden three weeks long  
 'They destroyed Dresden for three weeks.'  
 (a') #die dreiwöchige Zerstörung Dresdens  
 the three.week destruction Dresden.GEN  
 (b) Die Arzt betäubte den Patienten zwei Stunden lang.  
 the doctor sedated the.ACC patient two hours long  
 (b') die zweistündige Betäubung des Patienten  
 the two.hour sedation the.GEN patient

- (c) #Der Präsident weihte die Bahn drei Minuten  
the president inaugurated the course three minutes  
lang ein.  
long PT
- (c') #die dreiminütige Einweihung der Bahn  
the three.minute inauguration the.GEN course
- (d) Die Binde blockierte die Ader drei Jahre lang.  
the cloth obstructed the blood.vessel three years long
- (d') die dreijährige Blockierung der Ader  
the three.year obstruction the.GEN blood.vessel

The generalization holds: whenever the *lang*-phrase measures a state, the nominalization can denote a state. In (47a) and (47c), this is not the case, and as such the nominalization must be interpreted as an event, but not as a state.

The generalization is also valid in English *-(at)ion* nominalizations, as is shown in (48).

- (48) (a) #They destroyed Dresden for three weeks.  
(a') #the destruction of Dresden for three weeks  
(b) The doctor sedated the patient for two hours.  
(b') the sedation of the patient for two hours  
(c) #The president inaugurated the course for three minutes.  
(c') #the president's inauguration of the course for three minutes  
(d) The cloth obstructed the blood vessel for three years.  
(d') the obstruction of the blood vessel for three years

In (48a) and (48c), the state reading of the *for*-phrase is unavailable, and therefore the nominalizations cannot refer to the state of being destroyed or inaugurated; in (48b) and (48d) the state reading is available in the verbs and also in the nominalizations, which can refer to the state of being sedated or obstructed.

The variation attested in the comparison with these two Germanic languages generally involves cases where the related noun is not an *-ung* or a *-tion* nominalization. For example, with respect to the equivalent of the English verb *to break*, German has the bare noun *Bruch* while Spanish has a derived nominalization, *rotura*, involving the suffix *-ura*. Given the fact that, as is shown in (49), in English and German these are bare nouns, the stative reading of the nouns is somehow marginal, unlike in the Spanish case in (35b), where that reading is perfectly fine.

- (49) (a) ??the break of the pipe for two hours (English)  
(b) ??der zwei-stünd-ige Bruch des Rohres (German)  
the two-hour-ADJ break the.GEN pipe.GEN

This is probably related to the tendency of zero nominalizations in English and German to reject verbal properties, such as aspectual modification and a

real argument structure (Williams 2007). Compare the English zero nominalization in (50a) with its Spanish equivalent in (50b):

- (50) (a) a walk (\*by the park) (\*for a couple of hours) (English)  
 (b) un paseo por el parque durante un par de horas (Spanish)

Interestingly, in the five languages considered up to now, we have not attested a case in which the verb does not allow a state reading of a ‘for’-phrase and yet has a derived state nominalization.

#### 4. AN ANALYSIS: THE NATURE OF STATE NOMINALIZATIONS

At this point, given the cross-linguistic empirical generalization that we have obtained, we will consider the way in which it can be captured in an analysis. We will consider the ingredients of the verb’s event structure (Section 4.1), and we will argue that only the aspectual notions codified in the Aktionsart of the verb are available to the nominalization (Section 4.2). This will lead us to some properties of nominalizers (Section 4.3), and purely stative verbs (Section 4.4).

##### 4.1 *Verbal decompositions*

The first ingredient of our analysis has to be a decomposition of the different verb classes considered in our data. With respect to these decompositions, there is a very rich set of competing theories which offer different proposals on how the aspectual representation of verbs can be captured. Theories vary with respect to the level of analysis where the Aktionsart can be decomposed into smaller primitives: whether it is the lexical-conceptual structure (Levin & Rappaport 1998, 2005), a lexical-syntactic representation (Hale & Keyser 2002) or a syntactic structure (Ramchand 2008). Moreover, there is also a debate with respect to how many primitives need to be differentiated inside such a structure. Theories that propose a syntactic representation of the decomposition, developed by, for example, Folli & Harley (2005), express under a single head in the syntax the notions of initiation and process and differentiate them in the conceptual system, while Ramchand (2008) separates them already as distinct syntactic heads. Finally, theories also differ with respect to whether fine-grained differences in the Aktionsart of verbs and its connection to argument structure must be represented with the introduction of conceptually-specific primitives or by combining under-specified primitives in articulate structures. Jackendoff (1983, 1990), Harley (1995), Levin & Rappaport (1995, 1998) and Arad (2002) propose that primitives that build the Aktionsart of a verb can be conceptually quite specific, and differentiate primitives like BECOME, for changes of state; DO, for agentive activities; and STAY, for a dynamic activity without a change of state. In contrast, other theories, like Hale & Keyser’s (2002) and

Ramchand's (2008), use more underspecified primitives and let parts of the meaning be determined by the way in which these primitives combine. For instance, in Ramchand's system, the initiation of an event and the result state are, ontologically, the same primitive ('state') and differences are due to the configuration adopted by this primitive with respect to the process.

Given this debate and the fact that, to the best of our understanding, our analysis can be implemented in any theory that decomposes the Aktionsart into subevents at some level, the representations that we will propose are as specific as necessary to ground our analysis, but as neutral as possible to make them compatible with any of the existing versions of decompositional theories. In our representation, we will differentiate between three subevents (initiation, process and state), partially following Pustejovsky (1991) and Ramchand (2008). The question of whether this decomposition takes place in the lexicon, in syntax or in a post-syntactic conceptual component is orthogonal to the analysis. Moreover, we will assume that these three primitives can adopt a variety of conceptual interpretations and we will purposefully be neutral with respect to whether these interpretations are different varieties of primitives or just ways in which the same primitive can be interpreted at a different level of representation.

We have three basic kinds of verbs to consider. The first class are those telic verbs which contain a stative subevent, for example, Spanish *romper* 'to break'. In such verbs, the stative subevent is typically interpreted as the attained result. We are only concerned with the 'final' part of the Aktionsart, but for the sake of explicitness we give a full representation in (51) and subsequent cases. In these verbs, the process subevent is interpreted as BECOME and consequently the state is viewed as the state that results from a change.

- (51) *romper* 'to break'  
 [Initiation [Process [State]]]

The state subevent is bound by the measure phrase in the relevant reading. The state subcomponent is the part of the Aktionsart of the verb that a state nominalization selects; thus, only verbs that have this subevent can form state nominalizations.

Contrast this representation with the one for a verb like Spanish *destruir* 'to destroy', in (52), which, as noted in Section 3.1.1 above, lacks a state subevent.

- (52) *destruir* 'to destroy'  
 [Initiation [Process]]

Here, quite simply, the state subevent is missing. The two classes of verbs have other differences related to the initiation subevent: in *romper* the initiation can be caused either internally or externally, while in *destruir* external causation is necessary.

The third class of verbs to be considered here are the atelic verbs, which, as we have argued in Section 3.1.2 above, contain a state subcomponent that can be linked by a measure phrase.

We follow the spirit of Jackendoff's (1983) analysis and propose that these verbs use the same structure as the *romper* class; the difference is that in these cases the process is interpreted as STAY, and therefore there is no change that telicizes the verb and the state is not interpreted as coming as a result of a change, but is interpreted as being temporally coextensive with the process; see (53).

(53) [Process [State]]

The measure phrase can signal the duration of the state only when this is present inside the representation of the verb. If the measure phrase is a function that takes the temporal trace ( $\tau$ ) of a subevent ( $e$ ) and gives a value to it, we capture the fact that only verbs whose representations contain this component can have the measure phrase refer to the state. In (54) we give a simplified semantic representation of the measure phrase.

(54)  $\lambda e[\text{Measure-phrase}(\tau(e))]$

Thus, when the verb contains a state component, this state will have a temporal extension and the measure phrase will be able to modify it, see the simplified representation in (55); the state subevent has a temporal extension which the measure phrase can take.

(55)  $\lambda e[\text{State}(e) \ \& \ \text{Measure-phrase}(\tau(e))]$

If the verb contains several subevents, and therefore several temporal traces, the measure phrase will be able to take both (56a) and (56b). This is the case with a verb like *romper* 'to break'. However, if the verb only has a process subevent, e.g. *destruire* 'to destroy', the measure phrase will be forced to take this component, as is shown in (56c)'.

- (56) (a) Measuring of event: [Process( $e$ ) & State( $e'$ ) & Measure( $\tau(e)$ )]  
 (b) Measuring of state: [Process( $e$ ) & State( $e'$ ) & Measure( $\tau(e')$ )]  
 (c) [Process( $e$ ) & Measure( $\tau(e)$ )]

We assume that the process component in a verb like *inaugurer* 'to inaugurate', which rejects the measure phrase even when it refers to the event (recall (39e) above), is instantaneous and cannot have a proper temporal extension (see Kearns 2003).

Our proposal is that, when building a nominalization in the languages under consideration, the nominalizer must take the ingredients contained in the aspectual representation of the verb, and only those. A state nominalization is produced when the nominalizer selects the state subevent of the verb; in contrast, an event nominalization is produced when the highest

subevent selected is the process subevent. State and event nominalizations are built by basically the same procedure, whereby a nominalizer selects part of the internal event structure of the verb. The differences between the two classes depend entirely on the information that the nominalizer finds in the verbal base. Only if there is a state subevent is the state nominalization available. In the state nominalization (57a), only the state component is included in the structure taken by the nominalizer. In an event nominalization (57b), the process component is also included (and, depending on the verb, also a state subevent).

- (57) (a) State nominalization: [Nom [State]]  
 (b) Event nominalization: [Nom [Process ([State])]]

The proposal that the state nominalization only takes the state subevent, in the absence of any other subevent that might be present in the structure, automatically explains two of the empirical properties of our nominalizations.

In the first place, it explains why state nominalizations cannot take agents even if the original verb can take agents. If the presence of agents is associated to a primitive translated conceptually as DO (Folli & Harley 2005), and this primitive requires control over the dynamic part of the Aktionsart, it follows that when process is absent, agents will be automatically absent, because we have removed the dynamic component. In contrast, if causers require only a primitive like CAUSE and this primitive does not require the argument to be directly involved in the dynamic subevent, in the absence of process, causers will be allowed.

Secondly, if the process part could be present in the state nominalization, we would expect these nominalizations to allow a plural form in that reading, as we could potentially find cases where the sum of process and state gives us a bounded eventuality. However, if process must be absent, it follows that the remaining state will not be bounded, explaining thus the non-availability of pluralization.

#### 4.2 *Nominalizations can only take material internal to the verbal phrase*

As the second ingredient of our analysis, we need to determine exactly what parts of the aspectual structure of a verb a nominalization can select. We have seen in Section 3.2 above that the data suggest that in the Romance and Germanic languages considered, a nominalization can express different subevents inside the Aktionsart of the verb. Our proposal is that in these languages a nominalization that denotes an aspectual notion must operate over the ingredients introduced in the Aktionsart, excluding all possible aspectual material which is external to it. Evidence for this claim comes from the behaviour of the nominalizations related to verbs whose meaning alternates between dynamic and stative.

We have already shown that the verb *asociar* ‘to associate’ can be dynamic or stative (recall (10a) and (11a) above), and its nominalization can also denote an event (recall (10b)) or a state ((11b)). Consider, in contrast, the verb *decorar* ‘to decorate’. This verb also alternates between a dynamic (58a) and a stative (58b) reading in Spanish, but its nominalization only has a dynamic reading, see (59a) vs. (59b).

- (58) (a) Juan decoró el árbol de navidad.  
 Juan decorated the tree of Christmas  
 ‘Juan decorated the Christmas tree.’  
 (b) Las velas decoraban la tarta.  
 the candles decorated the cake  
 ‘The candles decorated the cake.’
- (59) (a) la decoración del árbol de navidad durante unas horas  
 the decoration of.the tree of Christmas for some hours  
 ‘The decoration of the Christmas tree for some hours.’  
 (b) #una decoración de la tarta de varias horas  
 a decoration of the cake of several hours  
 ‘a decoration for several hours’

In (58a) the only possible reading is the one in which the measure phrase signals how long it took to complete the decoration of the tree, not how long the decoration remained on the tree. The expression in (59b) is marginally acceptable only in this same event reading, and cannot mean that the decoration stayed on the cake for several hours.

The contrast is explained when we consider that, when the verb is dynamic, *asociar* ‘to associate’ allows a measure phrase modifying the state, while with the verb *decorar* ‘to decorate’ the measure phrase can only refer to how long the event took to be completed, see (60a) vs. (60b).<sup>7</sup>

- (60) (a) Juan asoció la presencia de caso acusativo a la  
 Juan associated the presence of case accusative to the  
 animacidad durante algunos minutos y luego lo descartó.  
 animacity for several minutes and then it ruled-out  
 ‘Juan associated the presence of accusative to animacity for some  
 minutes, and then ruled out the idea.’  
 (b) #Juan decoró el árbol con velas durante unos minutos.  
 Juan decorated the tree with candles for some minutes  
 ‘Juan decorated the tree with candles for some minutes.’

[7] In some of the literature (see Rothmayr 2009, especially pages 47–51 and 65–68), the difference between the dynamic and the stative reading of alternating verbs is generally accounted for by removing subeventive structure from the former to obtain the latter. Contrasts like that between (60a) and (60b) show that this kind of analysis can be right for some of them (those that behave like *asociar* ‘to associate’), but not all (the *decorar* ‘to decorate’ class).

What this tells us is that there is a state component inside the Aktionsart of the first verb, *asociar* ‘to associate’ but not inside the Aktionsart of the second verb, *decorar* ‘decorate’. This suggests that the stative reading of *decorar* is obtained by external aspect, not by activating any new subcomponent inside the Aktionsart of the verb. The fact that the nominalization cannot denote a state implies that the nominalization cannot select any material introduced above the level of structure where the Aktionsart is defined, at least in the languages that we have considered up to now.

The proposal that in this set of languages the nominalization is unable to select material which is external to the verb is supported by other data. Harley & Noyer (2000) and Sichel (2010) discuss the fact that facilitators, as opposed to agents and immediate causers, cannot be part of the argument structure of a nominalization. In the pair in (61), the subject is an agent in (61a) and a facilitator in (61b); notice that only the first can be preserved in the English nominalization.

- (61) (a) The teacher separated the children.  
 (b) Adultery separated John and Mary.
- (62) (a) the teacher’s separation of the children  
 (b) \*adultery’s separation of John and Mary

Facilitators are always available for all kinds of verbs, and, unlike agents, they are not selected by the conceptual meaning of the verbal stem. This suggests that they are introduced in a layer external to the verb; if nominalizations in the languages considered only access the material associated to the verb, and ignore external material, the contrast follows.

A relevant question is whether this is a general property of nominalizations cross-linguistically or whether we can find languages with ‘higher’ nominalizations that can include material external to the verbal phrase. The second possibility seems to be the case. In Section 5 we will shortly discuss the case of Slovenian and argue that its nominalizations, both in their semantics and in their morphology, show evidence that they contain a structure which includes external aspect and that therefore the nominalizations in this language are not strictly restricted to the subevents denoted in the Aktionsart of the verb.

#### 4.3 *The contribution of the nominalizer*

The next topic that we need to address in our analysis is the nature of the contribution of the Spanish nominalizers studied in this paper, mainly *-ción*, *-miento* and *-ura*, with their equivalents in the other languages considered here (recall Section 3.2 above). Our proposal is that these suffixes do not make any aspectual contribution to the verbal base. The denotation of the nominalization that they produce depends specifically on the information that they find in the Aktionsart of the verb they take as base.

The question is what is the role of these nominalizers, given that they do not incorporate any aspectual information to the base. Our proposal is that they merely act as category-changers, introducing a new category label for the base but not bringing with them any further information that extends the denotation of their bases. In the sense of Beard (1995), these suffixes produce morphological transpositions, as the denotation of the resulting word entirely depends on the properties of the base.

Given the above, it necessarily follows that the treatment of event and state nominalizations must be identical: they are not the result of two independent nominalization processes, but two possible outcomes that are obtained from the same nominalization operation acting on the available Aktionsart of the verbal base. A state nominalization is an operation that assigns a category label N (noun) to a structure whose highest subevent is a state, as in (63a), and an event nominalization is produced when the same operation assigns the category label to a structure whose highest subevent is process (with or without a state subevent), as in (63b).

- (63) (a) [N [State]]  
 (b) [N [Process]] or [N [Process [State]]]

Support for this conclusion comes from the fact that we have not found any case where the state and the event nominalization coming from the same verbal base is marked by a different affix; whenever the ambiguities are possible (as in *asociación* ‘association’ or *interrupción* ‘interruption’), the affix remains the same. This is consistent with the proposal that these affixes do not contain aspectual information, but take this information from the ingredients available in the verbal base.

It is worth mentioning, however, that our claim is not that there is any theoretical or empirical reason for a nominalizer suffix to be unable, by definition, to modify the aspectual information. It is, in principle, possible for one morphological item to cumulatively spell out nominal features and a verbal projection with aspectual information. General differences between grammatical categories suggest that the aspectual information is not represented morphosyntactically in the same head as the nominal features, but it is nonetheless possible that one single morphophonological segment spells out at the same time these two morphosyntactic heads. This is an empirical issue which has to be considered for each morphological process, and indeed recent studies have proposed that some exponents might spell out both nominal features and aspectual information (see Alexiadou, Iordăchioaia & Soare 2010).

#### 4.4 *On the exceptional nature of nominalizations derived from pure states*

A final aspect of our analysis that we need to consider is whether having a state inside the Aktionsart of the verb is a sufficient condition for producing

a state nominalization. One relevant domain to look at in order to answer this question is non-alternating stative verbs. This class has already been studied in detail by other authors (Spencer & Zaretskaya 2003), who have shown, in reference to Russian, that stative verbs which do not also have a dynamic reading seldom have a nominalization. The exceptions noted by these authors are psychological predicates (in their stative reading) and verbs of existence. Spencer & Zaretskaya's findings for Russian seem to be correct also for Spanish. Purely stative verbs in Spanish do not produce derived nominalizations, with some exceptions falling in the same classes as those singled out by these authors. Consider the Spanish examples in (64).

- (64) (a) Un peligro existió durante varias horas.  
           a danger existed for several hours  
 (a) la existencia de un peligro durante varias horas  
           the existence of a danger for several hours  
 (b) Los problemas abundaron durante todo el verano.  
           the problems abounded for whole the summer  
           'Problems abounded for the whole summer.'  
 (b) la abundancia de problemas durante todo el verano  
           the abundance of problems for whole the summer  
           'the abundance of problems for the whole summer'

Although some stative verbs can give derived state nominalizations, they seem to be the exception rather than the norm, and most of the verbs belonging to this class in the languages considered reject a nominalization. How can we account for this property? A possible line of research, already suggested by Spencer & Zaretskaya (2003), is that there are different degrees of stativity (*ibid.*, page 23, Section 5; also Mufwene 1984). Perhaps the conditions required by a state nominalization are incompatible with most kinds of stativity, with only a few subclasses satisfying the conditions; the distinction between Davidsonian and Kimian states (Maienborn 2003, 2005) or individual level and stage level states (Padučeva 1996) could be crucial in this case.

Although we believe that the strategy proposed in Spencer & Zaretskaya (2003) is likely to give interesting results, here we will provisionally suggest another explanation, which capitalizes on the fact that purely stative verbs have the most basic Aktionsart possible.<sup>8</sup> The idea, which is currently quite standard, is that purely stative verbs are the manifestation of a single primitive, which introduces a relation of some kind between two arguments (see Ramchand 2008 and Rothmayr 2009 for a recent implementation). In the English verb *own*, for instance, there is a single primitive which relates the possessor and the possessee to each other: [State].

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[8] This proposal is inspired by a comment by an anonymous *JL* referee, to whom we are grateful.

The Aktionsart does not have proper subparts also belonging to the aspectual domain. Now, if the nominalization for some reason tends to force the truncation of the Aktionsart of the verb it takes as base, the reason why most purely stative verbs cannot nominalize becomes apparent: their Aktionsart, not having subparts, cannot be truncated. When the verb has a more articulate Aktionsart with several primitives, truncating the aspectual structure still leaves us with some aspectual denoting primitive, but if the verb contains only a single subevent, truncation leaves us with no primitive that can express aspect.<sup>9</sup>

The question is, of course, whether or not there is some independent evidence that suggests that nominalizing generally involves truncating the aspectual structure of the verb. Consider, in this light, a fact frequently cited in connection with event nominalizations: the argument properties of event nominalizations correlate in several respects with those of passives (see e.g. Picallo 1991). According to this analysis, a nominalization like (66) would be grammatically closer to (65b) than to (65a). This is reflected in the well-known fact that the internal argument, but not the external argument, is compulsory in these nominalizations (66), and that, when expressed, the external argument generally receives the same argument as the agent in a passive construal (compare the preposition used to introduce *the army* in (65b) and (66)).

- (65) (a) The army destroyed the city.  
 (b) The city was destroyed by the army.
- (66) the destruction \*(of the city) (by the army)

These data follow if the nominalization removes the initiation subevent from a dynamic predicate, making the agent non-compulsory and forcing it to be introduced as an adjunct-like modifier. In a verb like *to destroy*, which contains an initiation subevent and a process subevent, this implies that the nominalization would take the process component, being therefore forced to denote an event.

A prediction made by this approach is that, in a verb that, in addition to the state, contains also an initiation component in its Aktionsart, the nominalization will allow two readings – one eventive and one stative – but not one in which the initiation component is denoted. A verb like this is *romper* ‘to break’, which as a causative includes an initiation subcomponent. The example in (67a) illustrates the event reading of the nominalization, which is

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[9] With respect to some of the exceptions, like *abundancia* ‘abundance’ and *existencia* ‘existence’, it might not be a coincidence that they typically appear with the suffix *-ncia* ‘-nce’. It could be thought that this suffix, unlike the more productive suffixes *-ción* and *-miento*, used in the vast majority of cases, contains some aspectual information which is added to the remainder of the verbal base, recovering the state information that was lost after truncation.

obtained if the result of the truncation is [Process [State]]; notice that the presence of the state – interpreted as a result – is shown by the possibility of introducing a result phrase with a locative preposition (Ramchand 2008: 75ff.). The example in (67b) illustrates the purely state reading, obtained when the only aspectual primitive left inside the nominalization is [State]. It is impossible to build as an eventuality nominalization the reading in which we refer to the origin of a breaking event.<sup>10</sup>

- (67) (a) la rotura del jarrón en tres pedazos  
           the breaking of.the vase in three pieces  
       (b) la rotura del diálogo durante unos días  
           the breaking of.the dialogue for some days

To summarize, this section has argued that the crucial factor that allows a deverbal nominalization to have a state reading is the internal decomposition of the verb's Aktionsart: with the suffixes that we have considered, only when the verb contains a state component is the nominalization able to denote a state. In the next section we will discuss an apparent counterexample to this generalization in Slovenian, and we will show that it can be handled if we assume that this language is able to build nominalizations on top of a bigger verbal constituent that also contains the external aspect. The next section is, therefore, devoted to the study of these 'high' nominalizations.

## 5. A LANGUAGE WITH HIGH NOMINALIZATIONS: SLOVENIAN

In Slovenian, a verb which, according to our tests outlined in Section 2 above, does not have a state component in its Aktionsart can produce a state nominalization with the suffix *-ost*. This is illustrated in (68).

- (68) (a) \*Dresden so uničili tri tredne.  
           Dresden AUX.PL destroy.PL.PF three weeks  
           'They destroyed Dresden for three weeks.'

[10] If this line of research can be pursued, it could help us understand also why psychological predicates only nominalize as states (Grimshaw 1990, Pesetsky 1995). Assume that the denotation of a psychological verb never contains an initiation subevent (see e.g. the denotation proposed by Marín & McNally 2011 for psychological verbs in Spanish) and that their causer or agent is always introduced externally to the verbal structure. If this claim is tenable, the proposal that the nominalization tends to truncate the Aktionsart of the verb explains why the nominalizations denote states. If (i) is the maximal Aktionsart of a psychological predicate like *aburrir* 'to bore' or *divertir* 'to amuse', the truncation forced by the nominalization leaves only the state component. Thus, the nominalization would denote only a state.

(i) [Process [State]]

However, this suggestion has to be explored in more detail and needs to be combined with an appropriate analysis of how the causer or agent is introduced with this class of verbs. The exploration of this problem will have to be left for further research.

- (a) unič-en-ost           Dresdna       tri       tredne  
 destroy-PART-NOM Dresden.GEN three weeks  
 ‘Dresden’s being destroyed for two years’
- (b) \*Doktor je           obvezal           pacienta dve uri.  
 doctor AUX.SG bandage.SG.PF patient two hours  
 ‘The doctor bandaged the patient for two hours.’
- (b') dvourna obvez-an-ost           pacienta  
 two.hour bandage-PART-NOM patient  
 ‘the bandaging of the patient for two hours’

In this final section, we will argue that this does not constitute a counter-example to the APH, but rather constitutes evidence that Slovenian – unlike the languages previously considered – can build a nominalization over the external aspect of the predicate, and thus is not restricted to the information contained in the Aktionsart of the verb.

An interesting property of Slovenian morphology is that some nominalizations have internal participle markers. When the nominalizing suffix *-ost* is used, it can be preceded by participial morphology. In fact, as can be seen in (69) below, the presence of the participial morphology correlates with the availability of the state nominalization reading with verbs like *porušiti* ‘to demolish’ and *uničiti* ‘to destroy’, which lack a state component in their Aktionsart.

- (69) (a) \*triletna   porušitev   Dresdna  
           three.year demolition Dresden.GEN
- (b) triletna   poruš-en-ost       Dresdna  
           three.year demolish-PART-NOM Dresden.GEN  
           ‘Dresden’s being destroyed for three years’
- (c) ?? triletna   unič-en-je       Dresdna  
           three.year destroy-PART-NOM Dresden.GEN
- (d) triletna   unič-en-ost       Dresdna  
           three.year destroy-PART-NOM Dresden.GEN  
           ‘Desden being destroyed for three years’

The example in (69a) is ungrammatical and the nominalization does not contain participial morphology. In contrast, the example in (69b), which contains this participial marker *-en* and uses the nominalizer *-ost*, is grammatical in the state reading. With respect to the pair in (69c) and (69d), both contain the participle marker, but only the second nominalization, with *-ost*, allows the stative reading for all speakers. This might indicate that, when two affixes are available for the same base, speakers can select a particular reading for each word. The nominalizer *-ost* in Slovenian – as in other Slavic languages – is typically used to form quality nouns from adjectives and adjectival participles; the fact that the nominalization with *-ost* allows time

modifiers (such as *triletna* ‘three-year long’ in our examples) shows that it can also denote states, which we have defined as qualities with temporal extension (see Section 2.2 above). Under competition, the suffix *-e* tends to have an event reading.<sup>11</sup>

Our analysis of these data, which contrast sharply with the data in the languages considered previously in this paper, is the following: Slovenian has nominalizers that can take as input the external aspect associated with a predicate. This accounts for the fact that in this language a verb without a state subevent can produce a state nominalization. This is so because the participle morphology provides the predicate with a state component at the level of the external aspect. Following Kratzer (2000) and Maienborn (2009), we treat the rule that builds an adjectival participle as a stativizer, a semantic function that takes any eventuality and produces a state.<sup>12</sup> The formalization in (70), taken from Maienborn (2009), represents the semantic contribution of the rule that builds an adjectival participle from a verbal participle. The semantics of the verbal participle is assumed by both Kratzer (2000) and Maienborn (2009) to be identical to the verbal stem, which is equivalent to treating verbal participles as inflectional forms.

(70)  $\lambda P\lambda x\lambda s\exists e[s: Q(x) \ \& \ \text{Result}(e, s) \ \& \ P(e)]$

This formula introduces a free variable for a property *Q* which holds of an individual *x* at a state; the property must be the result of an event *e*. The

[11] The Russian speakers interviewed report that the nominalization with *-ost* rejects any kind of temporal modification in this language. The Russian nominalization *razruš-enn-ost* ‘destroy-PART-NOM’ rejects for these speakers a modifier like *dvuxnedelnaja* ‘two-week long’, showing that its behaviour is closer to the one displayed by quality nouns like English *moderation*, which denote individual properties and not states. The consequence is that in Russian the presence of the participle morphology does not guarantee the state reading of the nominalization because the *-ost* nominalizer is strongly associated with a quality reading. As for the *-e* nominalization in Russian, it is, as in Slovenian, associated for most Russian speakers with an event reading; such nominalizations allow temporal modifiers to the extent that they refer to the time during which the event happens, as in (i).

- (i) *trexdnevnoe razruš-en-je starogo xrama*  
 three.week destroy-PART-NOM old.GEN temple.GEN  
 ‘the destruction of the old temple for three weeks’

However, as in Slovenian, some speakers seem to (marginally) allow the state reading in the *-e* nominalization; state readings of *razrušenje*, though extremely scarce and judged as marked by speakers, are documented, as in the following example, found in Google (we are grateful to Svetlana Sokolova for this information):

- (ii) *trexčasovoe razruš-en-je obslyživanija*  
 three.hour destroy-PART-NOM service.GEN  
 ‘the service being destroyed for three hours’

[12] We restrict our discussion to so-called adjectival participles (Wasow 1977) and will not attempt to give a unified semantic or morphological account of the different participle classes.

application of this function to a verb provides the semantic representation with a state at the external aspect level, independently of whether the verb had one in its Aktionsart. Because of this, verbs which lack a state component in their Aktionsart will be able to denote a state in their participle form. Considering cases from Spanish, the verbs *enfadar* ‘to anger’ or *destruir* ‘to destroy’ do not have a state in their Aktionsart (Marín & McNally 2011). However, as is shown in (71), they denote a state in the adjectival passive construction. With the adverb *todavía* ‘still’, we force the target-state reading of the adjectival participle.

- (71) (a) Juan, todavía enfadado, volvió a casa.  
 Juan still angered came.back.SG to home  
 ‘Juan, still angered, came back home.’  
 (b) Dresden, todavía destruida, recibió la visita de Truman.  
 Dresden still destroyed received.SG the visit of Truman  
 ‘Dresden, still destroyed, was visited by Truman.’

Thus, whether nominalization can be formed before or after the level where the adjectival participle is formed proves to be crucial.

In Slovenian, the existence of nominalizers that can take structure which already includes an adjectival participle makes it possible for verbs without states in their internal aspect to denote a state nominalization, because the notion of state has been added at the level of external aspect. In contrast, in Spanish, French, Catalan, German and English, suffixes belonging to the class of *-(at)ion* or *-ment* cannot be introduced so late in the structure; crucially, they can only build over the information internal to the verbal phrase. The hierarchy in (72) represents a potential ordering of operations.

- (72) (c) Stativizer <<sup>(b)</sup> Participle formation <<sup>(a)</sup> Verb meaning (Aktionsart)

Starting on the right of (72), the Aktionsart of the verb is defined first, then the participle form is built, and finally the stativizer function that builds an adjectival participle is introduced. Slovenian can introduce the nominalizer at two points: at the point marked as (a), that is, directly over the Aktionsart of the verb, or at the point marked as (c), that is, after the stativizer function. A nominalization like *porušitev* ‘demolition’ (as in (69a) above) arises from the nominalization being formed at the level at which (a) is built; due to this, its aspectual denotation must take strictly the ingredients contained in the Aktionsart, which does not include a state. In contrast, *poruš-en-ost* (as in (69b)) is built over the representation that results from the stage in (c); since the nominalization takes place after the stativizer is added, it can denote a state. In Spanish and the rest of languages considered in this paper, suffixes like *-miento* or *-ción* must be introduced before (b) is formed. Consequently, the aspectual denotation of their nominalizations is restricted to the ingredients of the verb’s Aktionsart.

## 6. CONCLUSIONS

The main empirical contribution of this paper is to provide a detailed description of state-denoting nominalizations, an area that is relatively understudied in comparison with event- and object-denoting nominals. We have shown that state nominalizations differ from the other two classes in a variety of grammatical properties, including dynamicity, temporal extension, availability of the plural forms, and argument structure. These properties are ones which we could expect from what we know about states in the verbal domain; for instance, the non-availability of plurals is presumably connected with the unbound nature of states.

On the theoretical side, our contribution is to show that, despite these empirical differences, it is possible to give a unified account of event- and state-denoting nominalizations which explains why they are the only kinds of derived nominals that introduce argument structure. We have argued that the range of readings available for the nominalization largely depends on the aspectual properties of the verbal base that the nominalizer combines with. The observed empirical differences between the two classes are explained by the ingredients of the aspectual information associated with the verb that the nominalizer combines with. In all the languages considered, except Slovenian, the nominalization must happen at an early stage, such that it only has access to the internal aspect of the base. Slovenian stands out in our set of languages because it has a productive nominalizer that can be added after the external aspect of the verb has been defined. All the suffixes studied in this paper display a behaviour that suggests that they are mere transpositors that do not alter the aspectual information contained in the base.

There are also some pending issues. One of them is the relation between the participle and the nominalization. This issue requires further research, and we have addressed it only superficially in this paper. Another problem that requires further investigation is the tendency of pure states not to nominalize. We have suggested that this might be due to the tendency of deverbal nominalizations to truncate the verbal structure. Despite some initial evidence that this line of research might be promising, we have not provided a full-fledged analysis of this in this paper.

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