DEVERBAL CATEGORIES AND THE SPLIT *v*P HYPOTHESIS

Petra Sleeman

Abstract: The goal of this paper is to independently motivate the assumption made by Sleeman and Brito (forthcoming) and Sleeman (2007a,b) that both for nominalizations and for participles five readings can be distinguished. In Sleeman and Brito's (forthcoming) and Sleeman's (2007a,b) syntactic approach to morphology, these different readings are reflected in different syntactic structures for each of the five types, more specifically in different features attributed to *v*P and AspP, and in the presence/absence of *v*P and AspP, dominating the lexical root of the deverbal category. In this paper I show that the verbal root of the five types corresponds to five different combinations of Ramchand's (2008) split *v*P, which is composed of functional heads representing certain features of AspP and *v*P used in earlier analyses of nominalizations and participles.

Keywords: split *v*P, participles, nominalizations, deverbal categories

1. Introduction

Deverbal categories, such as nominalizations and passive participles, can have more than one reading. Wasow (1977) distinguishes two kinds of passives: verbal passives and adjectival passives. In the same spirit, Grimshaw (1991) distinguishes two types of nominalizations: complex event nouns, in which the properties of the verbal base are still transparent, and result nouns, in which the properties of the verbal base are not transparent anymore. Sleeman (2007a,b) and Sleeman and Brito (forthcoming) argue that more than two readings can be distinguished for nominalizations and passive participles. They distinguish five readings for each of these categories.

Building on Larson's (1988) analysis of double object constructions, within a cartographic approach to the left periphery of the *v*P phase, Ramchand (2008) proposes that *v*P can be split up in various functional projections: Initiator Phrase, Process Phrase and Result Phrase. In this paper I argue that this split *v*P hypothesis can account for the various readings of nominalizations and passive participles, within a syntactic approach to morphology.

The paper is organized as follows. In section 2, I present Ramchand's split analysis of the *v*P and the verb classes that in Ramchand's analysis lexicalize one or more parts of the split *v*P. In section 3, I argue that Sleeman and Brito's (forthcoming) distinction of five types of nominalization can be motivated on the basis of the split *v*P hypothesis, the verbal root of each type of nominalization lexicalizing a different part of the split *v*P. In section 4, I do the same for participles. Finally, in section 5, I summarize the results.

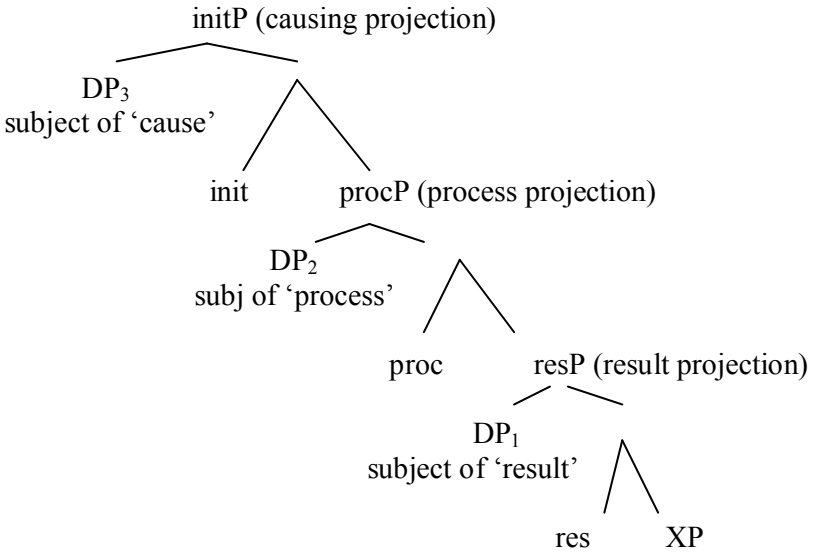
2. Split *v*P

One of the debates of the last twenty years has been the division of labour between the Lexicon and Syntax. Following Hale & Keyser (1993) and subsequent related literature, Ramchand (2008) assumes that words are built in Syntax, and that the Lexicon is eliminated as a module with its own special primitives and modes of combination, although she does not deny that there is encyclopedic information that has to be listed/memorized. Since there is no Lexicon and thus no argument structure, selectional restrictions have to be encoded in another way. Ramchand adopts the view that the syntactic projection of arguments is based on event

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structure, associated to the verbal meaning, which she decomposes in three subevental components: a causing subevent, a process denoting subevent and a subevent corresponding to a result state. These subevents depend on the particular lexical item that projects and can be associated to the contribution of constants in the lexical decompositional system of Levin & Rappaport Hovav (1995). Each of these subevents is represented as its own projection, ordered in a hierarchical embedding relation:

(1)



ProcP is the heart of the dynamic predicate. It is present in every dynamic verb. The initP exists when the verb expresses a causational or initiational state that leads to the process. The resP only exists when there is a result state explicitly expressed by the lexical predicate. Using the copy theory of movement, copying heads, Ramchand accounts for the presence of several subevents at the same time present in one verb:

(2) Karena drove the car. (Initiation-Process verb)
(3) Alex ran. (Initiation-Process verb)
(4) The ice melted. (Process verb)
(5) Michael arrived. (Process-Result verb)
(6) The glass broke. (Process-Result verb)

Intransitives can become transitive by merging an initP on top of procP:

(7) The sun melted the ice.

Sometimes a verb is ambiguous in interpretation. Semelfactives like *jump* are a case in point. They can be [init, proc, res], in which case they are punctual and describe a transition ('Michael jumped into the water'), or they can be [init, proc], in which case they are atelic and describe a durative, indefinitely iterated process ('Michael was jumping all the time in the water'):

Each of the subevents licenses an argument in its specifier position. InitP licenses the external argument ('subject of cause' = Initiator), procP licenses the entity undergoing change or process ('subject' of process = Undergoer), and resP licenses the entity that comes to hold the result state ('subject' of result = Resultee):

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(8) *John* persuaded Mary. (Initiator)
(9) *The key* opened the lock. (Initiator)
(10) Karena drove *the car*. (Undergoer)
(11) *The ball* rolled. (Undergoer)

(12) Alex handed *her homework* in. (Resultee)
(13) Michael threw *the dog* out. (Resultee)

The resultees in the previous examples are at the same time undergoers. Using the copy theory of movement, copying arguments, Ramchand's system can account for composite roles of arguments:

(14) *Karena* ran to the tree. (Undergoer-Initiator)
(15) Katherina broke *the stick*. (Resultee-Undergoer)

In the next section, I argue that the combination of various subevents can account for the various readings of nominalizations, but first I motivate the readings that I distinguish.

3. Nominalizations

Deverbal categories such as nominalizations can have more than one reading. Grimshaw (1990) distinguishes two types of nominalizations: complex event nouns, in which the properties of the verbal base are still transparent, and result nouns, in which the properties of the verbal base are not transparent anymore. In this section, I argue, based on Sleeman and Brito (forthcoming) that Grimshaw's dichotomy process vs. result noun raises various problems (3.1). I argue, also following Sleeman and Brito (forthcoming), that five readings can be distinguished, which are connected not only to different aspectual readings but also to the expression of argument structure (3.2). In 3.3, I argue that Sleeman and Brito's distinction of five types of nominalization can be motivated on the basis of Ramchand's split *v*P hypothesis, the verbal root of each type of nominalization lexicalizing a different part of the split *v*P.

3.1 Arguments against the strict dichotomy process / result nouns

In the literature it has been shown that deverbal nominalizations are ambiguous between, at least, an event and a result reading, as exemplified by the following English examples:

(16) The translation of the book took ten years. (event)
(17) John's translation has been published recently. (result)

In a lexicalist view of morphology, Grimshaw (1990) claims that the distinction between an event reading and a result reading of nominalizations is associated with a difference in argument structure: whereas process nouns (i.e. complex event nouns) take internal arguments obligatorily, result nouns are like object/entity nouns and do not select arguments.

(18) the examination of the papers
(19) *the exam of the papers

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In order to reinforce her theory of nominalizations, Grimshaw proposes some diagnostics in order to distinguish event and result nominals:

(i) only result nouns can pluralize:

(20) two exams
(21) *two examinations of the papers

(ii) only result nouns can be preceded by an indefinite determiner:

(22) an exam
(23) *one examination of the papers

(iii) only result nouns can be preceded by a demonstrative determiner:

(24) that exam
(25) *that examination of the papers

(iv) result nouns combine with possessors, while event nouns combine with agents:

(26) the instructor's (possessor) examination
(27) a. the instructor's (agent) examination of the papers
b. the examination of the papers by the instructor (agent)

However, the situation is not so clear-cut and, in the two last decades, work on nominalizations in several languages allows to show that there are mixed cases that have to be considered if we want to build a general theory on nominalizations (see also Sleeman and Brito forthcoming):

(i) process nominals do not obligatorily take internal arguments:

(28) The discussion (of the problem) lasted two hours.

(ii) in Grimshaw's analysis, result nouns and object nouns are analyzed in the same way: they have no argument structure and no specific theta roles to discharge; they optionally take semantic participants with which they have rather loose relations. However, the following example shows that result nouns can optionally be combined with a complement, contrary to object nouns.

(29) La discussió de les dades es va publicar a la revista. (Picallo 1991)
'The discussion of the data was published in the journal.'

(iii) event nouns can pluralize:

(30) Die Besteigungen der beiden Gipfel dauerten 6 Wochen. (Bierwisch 1989 for German, *apud* Alexiadou 2001: 72)
'The climbings of the two tops took 6 weeks.'
(31) Tijdens de martelingen van de politieke gevangenen door de zwarte brigades moesten alle journalisten het gebouw uit. (van Hout 1991: 75 for Dutch)
'During the tortures of the political prisoners by the black brigades all the reporters had to leave the building.'

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(32) Os jornalistas estavam a assistir a várias destruições de pontes, quando chegaram as tropas. (Brito and Oliveira 1997: 61 for Portuguese)
'The journalists were watching several destructions of bridges, when the troops arrived.'

(iv) The arguments concerning the form of the determination of the event nominal are not so strong as Grimshaw proposes. Under certain contextual conditions, the nominal may be preceded by an indefinite determiner:

(33) Os jornalistas estavam a assistir a uma destruição da ponte, quando a bomba caiu. (Brito and Oliveira 1997: 60)
'The journalists were watching a/one destruction of the bridge, when the bomb fell.'

(v) The combination with a demonstrative with a contrastive effect is also possible:

(34) Os jornalistas estavam a assistir a essa destruição da ponte, quando a bomba caiu. (Brito and Oliveira 1997: 61)
'The journalists were watching that destruction of the bridge, when the bomb fell.'

(vi) Certain nominalizations can combine with a possessor instead of an agent, when they have an event interpretation, as observed by Van Hout (1991: 76) for Dutch:

(35) Ik heb alle uitvoeringen van Youri Egorov van het Schumann-programma bijgewoond. (event)
'I have attended all of Youri Egorov's performances of the Schumann program.' (event)

And the same happens in Portuguese with nouns like *tradução* (translation):

(36) A tradução da *Odisseia* de Frederico Lourenço demorou dois anos. (event)
'Frederico Lourenço's translation of the Odyssey lasted two years.'
(37) A tradução da *Odisseia* de Frederico Lourenço é magnífica. (result)
'Frederico Lourenço's translation of the Odyssey is very good.'

Furthermore, Brito and Oliveira (1997) show, for Portuguese, that a result noun may even be combined with a *by*-phrase expressing the agent (38-39), differently from concrete nouns (40), contrary to what Grimshaw claims:

(38) A análise do texto pelo aluno enriqueceu o conhecimento dos colegas. (result)
'The analysis of the text by the students enlarged the knowledge of the colleagues.'
(39) A construção do campo de jogos pelas autoridades trouxe benefícios para a comunidade. (result)
'The building of the playground by the authorities benefited the community.'
(40) *A construção do campo de jogos pelas autoridades é de boa qualidade. (concrete object)
the building of the playground by the authorities is of good quality

What these examples confirm is that result nouns may select arguments, and, in certain circumstances, may even be combined with a *by*-phrase; differently, concrete / entity nouns

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do not have argument structure. This is justified by the proposal that the result noun still has an event structure, as we will see later (see also Brito and Oliveira 1997 for Portuguese).

Summarizing this discussion, I have shown, contra Grimshaw (1990), that:

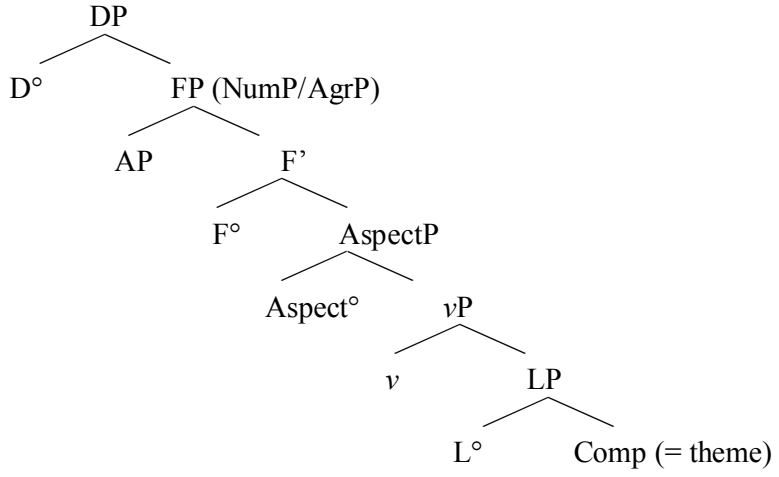
- process nominals do not obligatorily take internal arguments
- process nominals can pluralize and can combine with an indefinite determiner or a (contrastive) demonstrative
- some process nominals can combine with an *of*-phrase instead of a *by*-phrase
- result nouns can take internal arguments
- result nouns can combine with a *by*-phrase.

In this section, I have discussed Grimshaw's lexicalist view on the syntactic properties of nominalizations; according to her, syntactic properties of nouns, in particular the presence and form of argument structure, would be related to the presence or absence of Event in the lexical representation of the nominalization. In the next section, I will discuss the relation between aspect / event and the syntactic properties of nominalizations in Alexiadou's (2001) syntactic approach to morphology and I will propose a distinction in five types of nominalizations instead of two.

3.2 Five types of nominalizations

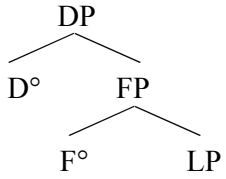
Arguing against the Lexicalist approach, various linguists (e.g. Picallo 1991, Borer 1998, Harley and Noyer 1998, van Hout and Roeper 1998, Alexiadou 2001), have proposed that nominalizations, being deverbal categories, are built in syntax. Just like Grimshaw (1990), Alexiadou (2001) assumes that whereas process / complex event nouns are eventive, result nouns are not. But whereas according to Grimshaw result nouns cannot take arguments because they are not eventive, Alexiadou (2001), following Picallo (1991), shows, on the contrary, that result nouns may take arguments. Alexiadou derives both process nouns and result nouns in Syntax, but claims that the difference between the two types is that whereas the lexical roots of process nouns are dominated by the functional projections *v*P and AspP (and DP), as in (41), the lexical roots of result nouns are not dominated by these functional projections, but are only dominated by DP, as in (42):

(41)



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(42)



Alexiadou argues that, due to the absence of these verbal functional projections, arguments of result nouns do not have to be projected obligatorily, but can be projected optionally. To account for the combination of result nouns with complements, Alexiadou, following Levin (1999), and just like Ramchand (see 2), assumes that Lexical Roots are constants, which means that the presence of arguments is guaranteed independently of the eventive character of the outcome of word-formation. When constants enter into a relation with event related projections, the presence of arguments becomes obligatory, i.e. they become structure participants in Levin's terms. Since with result nouns there are no *v*P and AspP, the projection of the arguments of the constants is not required, i.e. is optional. Although Alexiadou can account in this way for the fact that result nouns can combine with complements, there is still a relation between the presence of event and the projection of arguments, because Alexiadou relates the obligatoriness of complements with process nominals to the presence of an eventive functional head, and the optionality of complements with result nouns to the absence of an eventive functional head.

Sleeman and Brito reject Grimshaw's and Alexiadou's strict dichotomy between process nouns and result nouns, which is based on the presence vs. absence of event structure or event related functional projections. Whereas Grimshaw and Alexiadou seem to relate result nouns to object nouns such a *book*, Sleeman and Brito (forthcoming) distinguish the two types of nouns from each other. Since result nouns are the result of an event, result nouns are eventive in their view, whereas object nouns are not. Furthermore, they distinguish two types of eventive nominalizations: one type in which an agent is implied and another type which is not agentive. In this way, Sleeman and Brito distinguish five types of nominalizations: two types of eventive nouns (one licensing a *by*-phrase and the other one not), each with a corresponding result phrase, and the object noun as the fifth type.

Building on Alexiadou (2001), Sleeman and Brito associate the differences between the five types with a difference in the presence and nature of AspP and *v*P within DP. They distinguish three values, two eventive ones and one non eventive one, the eventive ones also having a corresponding resultative value. As a result of these values, the nominalizations behave as more or less verbal. Sleeman and Brito characterize this in a sort of scale:

(I) – In the most 'verbal' value of the nominalization, the Lexical Root takes two arguments (an obligatory thematic *of*-phrase and an optional *by*-phrase): *v* is agentive and eventive, AspP is present, and contains an (im)perfectivity feature.

In Alexiadou's approach, the obligatoriness of the complement results from the presence of *v*P. In Sleeman and Brito's approach, it results from the agentivity of *v*. As in the case of verbal passives, the agent does not necessarily have to be expressed:

(43) The destruction of the city (by the soldiers) took place in 1750.

Brito and Oliveira (1997) show, for Portuguese, that a result noun may be combined with a *by*-phrase expressing the agent (44-45), which shows that this reading is eventive and

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agentive. In Sleeman and Brito's analysis, this is the corresponding resultative reading of (43). They assume that in the corresponding resultative reading, Asp contains the feature Result instead of an (im)perfectivity feature, other things being equal to (I):

(44) A análise do texto pelo aluno enriqueceu o conhecimento dos colegas. (result)
'The analysis of the text by the students enlarged the knowledge of the colleagues.'
(45) A construção do campo de jogos pelas autoridades trouxe benefícios para a comunidade. (result)
'The building of the playground by the authorities benefited the community.'

(II) – The second value is as in (I), but the agent-like participant, when present, is expressed by a genitive: *v* has lost the feature Agentive. The Lexical Root takes optionally an internal argument.

Following Alexiadou, Sleeman and Brito assume that, as a constant, the Lexical Root can take an internal argument. Alexiadou relates its optionality to the absence of *v*P. In Sleeman & Brito's approach, *v*P is still present in this reading, which explains the possibility of the expression of an agent-like participant in the event by a genitive. They relate the optionality of the internal complement, as in (46), an example from Dutch taken from van Hout (1991), to the absence of the agentivity feature on *v*:

(46) Ik heb alle uitvoeringen (van Joeri Egorov) (van het Schumann programma) bijgewoond.
'I have attended all of Youri Egorov's performances (of the Schumann program).'

Just as in value (I), in value (II) Asp can also contain the feature 'Result', indicating that we are dealing with the result of an event, the difference with stage (I) being that *v* is not agentive in value (II). This is illustrated by the Catalan example (47), taken from Picallo (1991):

(47) La discussió de les dades es va a publicar a la revista. (result)
'The discussion of the data was published in the journal.'

(III) – The third value of the nominalizations is reflected by object/entity nouns (*this beautiful building*). There are no arguments, there is no *v*P, no AspP, just as with nouns like *book*.

Sleeman and Brito assume that in a type of eventive nouns distinguished by Grimshaw (1990), viz. nouns denoting a simple event (*trip*, *race*), the eventive meaning is part of the meaning of the Lexical Root itself. They are like object nouns: there are no arguments, there is no *v*P, and no AspP.

In this classification, Sleeman and Brito attribute the different properties of the nominalizations to the presence/absence and the various properties of *v*P and AspP, building on Alexiadou. In Alexiadou's approach *v* can have several properties at the same time. In Sleeman & Brito's analysis of nominalizations, *v* is eventive, can contain a feature that licenses a *by*-phrase and can license a complement. In addition, AspP contains an (im)perfectivity feature or the feature 'Result'. The values that Sleeman and Brito distinguish are summarized in table 1:

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	Asp [- result]	*Asp [+ result]*
vP [+ agentive]	*Process nouns with a by-phrase*	*Result nouns that admit a by-phrase*
vP [– agentive]	*Process nouns that admit two of-phrases*	*Result nouns with of-phrases*
No vP, no AspP	*Object nouns*	

Table 1. Values of deverbal nominalizations

In line with the splitting up of IP and CP in various functional projections (Pollock 1989, Rizzi 1997), Ramchand (2008) decomposes *v*P in various subcomponents: initP, procP and resP. In the next section, I will show that such a division of labour between various subparts of *v*P can account in a natural way for the five readings of nominalizations distinguished by Sleeman and Brito.

3.3 Nominalizations and the split vP hypothesis

For nominalizations, Bašić (2007) also adopts Ramchand's split *v*P hypothesis. Just like Ramchand, she assumes, following Caha (2007), that verbs can be associated to several functional heads at the same time. Bašić claims that with complex event nominals the verbal root lexicalizes InitP, ProcP and ResP at the same time, that with simple events the verbal root lexicalizes ProcP and ResP, and that with result nouns the verbal root lexicalizes only ResP.

In the previous section, I have discussed Sleeman and Brito (forthcoming), who argue that result phrases are still eventive in some sense, because they represent the result of an event. In Sleeman and Brito's analysis, this means that *v*P is still present, which distinguishes them from object nouns. This also distinguishes them from simple event nouns (*trip*, *race*), in their analysis, because they assume that the eventive meaning of these is part of the meaning of the Lexical Root itself. Sleeman and Brito distinguish two types of "complex" event nominals: one which can be combined with a *by*-phrase, and one which can only be combined with an *of*-phrase as the agent-like participant in the event. In total, Sleeman & Brito distinguish five readings of nominalizations.

In section 2, I showed that Ramchand distinguishes four readings for verbs and that these correspond to the combination of the three subcomponents of *v*P that she distinguishes, initP, procP, and resP, with procP being always present, being the heart of the dynamic predicate. These four verb types are: Initiation-Process verb, Initiation-Process-Result verb, Process verb, and Process-Result verb.

In this paper, I propose that the four nominalization types distinguished in the first two values of the nominalization process described in the previous section are based on the four types of verbs distinguished by Ramchand. Although according to Ramchand verbs can in principle not be ambiguous, apart from the semelfactives and verbs like *melt* (cf. ex. 4 and 7), see section 2, I assume that they can. The different readings of nominalizations result from the ambiguity of the root.

value I (non-resultative):

(48) The destruction of the city (by the soldiers) took place in 1750. (Initiation-Process) (=43)

value I (resultative):

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(49) A análise do texto pelo aluno enriqueceu o conhecimento dos colegas. (Initiation-Process-Result) (=44)
'The analysis of the text by the students enlarged the knowledge of the colleagues.'

Both cases are associated to an argument structure with a theme argument (= Undergoer) and an agent argument (= Initiator).

value II (non-resultative):
(50) Ik heb alle uitvoeringen (van Joeri Egorov) (van het Schumann programma) bijgewoond. (Process) (=46)
'I have attended all of Youri Egorov's performances (of the Schumann program).'

value II (resultative):
(51) La discussió de les dades es va a publicar a la revista. (Process-Result) (=47)
'The discussion of the data was published in the journal.'

InitP being absent, there is no *by*-phrase, but a possessor, which has an agentive flavor, because of the eventive character of the nominalization expressed by procP. The initiator of the event being absent, the merger in Spec, procP of the other participant in the event, the Undergoer, is not compulsory either.

For the nominalization of value III, I propose that it simply contains ResP. Although procP is the heart of the dynamic predicate and therefore is present in all of the four verb types that Ramchand distinguishes, I propose that procP can be absent in value III nouns, because they are not eventive. They are the 'less verbal' type of the five types. Since there is only resP, but no procP, there can be no Undergoer :

stage III (object noun)
(52) this beautiful building (Result)
(53) Read this publication on-line. (Result)

The distinction between five types of nominalizations is thus naturally motivated by Ramchand's split vP hypothesis. In the next section, I will also distinguish five types of passives, a distinction that I will also legitimate based on Ramchand's split *v*P hypothesis.

4. Passive participles

Arguing against a Lexicalist approach with respect to the analysis of passive participles (e.g. Wasow 1977, Williams 1981), various linguists (e.g. Embick 2004, Alexiadou and Anagnostopoulou 2007), have proposed that participles, being deverbal categories just like nominalizations, are also built in Syntax. I adopt this approach also for participles. I argue that not only nominalizations, but also participles, can have different values, which I also relate to various differences within *v*P.

4.1 Five types of passive participles

Embick (2004), building on Kratzer (1994), distinguishes three sorts of passives: besides verbal passives (*the door has been opened by John; the door opened by John*) he distinguishes two sorts of adjectival passives: resultatives, which denote the result of an event (*the door remained opened* (after having been opened by someone)) and statives, which do not express a result (*the door is closed*, cf. *the door is open* or *the door is black*).

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In Embick's analysis, verbal passives within (English) DPs are always postnominal. He states that it is standardly assumed in the literature that only "adjectives" are used prenominally and that eventive passive participles are therefore not possible in attributive position. The participle in (54) is not an eventive participle, but denotes a result in Embick's view: the door is in the opened state, the opening having taken place recently:

(54) the recently opened door

Sleeman (2007a,b) argues, however, that the participle modified by *recently* expresses simply an event that took place recently and not the result of an event. As a support she advances the fact that a participle modified by *recently* cannot function as a predicate (with a copular verb), contrary to resultatives:

(55) the recently opened door (eventive, ≠ resultative)
(56) a. *The door remained recently opened. (resultative)
b. *This document is recently copied. (resultative)

Sleeman distinguishes thus four types of participles: besides stative and resultative past participles (both adjectival participles in Embick's and Kratzer's terms) two kinds of eventive past participles are distinguished: prenominal and postnominal eventive past participles. Within a syntactic approach to morphology, Sleeman claims that these four types of participles can be distinguished with respect to their internal syntactic properties, reflected in the presence/absence and nature of *v*P and AspP:

(i) Postnominal passive participles are clausal complements of D, with the noun (i.e. the internal argument of the participle) raising to their specifier position (Kayne 1994): they involve the projection of a complete clausal structure including *v*P, AspP (perfectivity) and CP; *v* contains an event feature, and *v* is the locus of agentivity.

(57) $[_{DP}$ the $[_{CP}$ [book]$_i$ $[_{AspP}$ $[_{vP}$ [sent [t_i to John by Mary]]]]]]

(ii) Prenominal eventive passive participles are merged in the specifier of functional projections dominated by DP. There is no complete clausal structure, but only *v*P (event) and AspP (perfectivity).

(58) $[_{DP}$ the $[_{AspP}$ recently $[_{vP}$ [sent [book]]]]]

(iii) In the case of resultative (prenominal) participles there is no complete clausal structure either: only *v*P (dominating the feature 'become') and AspP (state).

(59) $[_{DP}$ the $[_{AspP}$ $[_{vP}$ carefully $[_{v}$ 'become' [closed [door]]]]]]

(iv) In the case of stative (prenominal) participles there is no event and thus no *v*P at all. There is only AspP (state).

(60) $[_{AspP}$ [astonished]]

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For passive participles Alexiadou and Anagnostopoulou (2007) propose, just like Sleeman (2007a,b) and Embick (2004), that resultatives in English involve a root dominated by *v*P (event) and AspP (result), cf. (59) and that statives (ending in *–tos* in Greek) involve a root dominated by a stative AspP, as in (61), cf. (60):

(61) [$_{AspP}$ –t- [anig]
anix-t-os
'open'

They distinguish two types of resultative participles in Greek: target and resultant state participles (Parsons 1990), both ending in *–menos* (Anagnostopoulou 2003). Target state participles describe states that are in principle reversible. They can be combined with the adverb 'still' (62). Resultant state participles introduce states that hold forever after the event that brings them about. They cannot be combined with 'still' (63). Resultant state participles are compatible with agent and instrument PPs (64) and agentive adverbials (65), while target state participles are not (66-67):

(62) Ta pedhia ine akoma krimena. (target state)
'The children are still hidden.'
(63) To theorima ine (*akoma) apodedigmeno. (resultant state)
'The theorem is (still) proven.'
(64) Ta keftedakia ine tiganismena apo tin Maria. (resultant state)
'The meatballs are fried by Mary.'
(65) Ta ruxa ine prosektika stegnomena. (resultant state)
'The clothes are cautiously dried.'
(66) *Ta lastixa ine akoma fuskomena apo tin Maria. (target state)
'The tires are still inflated by Mary.'
(67) *Ta lastixa ine akoma fuskomena me tin tromba. (target state)
'The tires are still inflated with the pump.'

Alexiadou and Anagnostopoulou propose that Greek target state *–menos* participles are, just like English resultatives, dominated by *v*P (event) and AspP (result), as in (68), whereas Greek resultant state *–menos* participles involve a root dominated by *v*P, VoiceP (*by*-phrase and other agentive properties) and AspP (result), as in (69), although Voice can be absent with verbs, such as unaccusatives, that can be indepently argued to lack Voice.

(68) [$_{AspPTargetState}$ –men- [$_{vP}$ [$_{v}$ [anig]]]]
anigmenos (target state)
'opened'

(69) [$_{AspPResultantState}$ –men- [$_{vP}$ AG [$_{v}$ [anig]]]]
anigmenos (resultant state)
'opened'

While Greek target state participles are analyzed as the English resultatives in (59), Greek resultant state participles do not have an English counterpart. This means that the Greek resultant state participle is a fifth type of participle that can be distinguished in addition to the four types distinguished for English at the beginning of this section.

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In the next section, I will show how Ramchand's split *v*P can account in a natural way for the existence of these five types of participles.

4.2 Passive participles and the split vP hypothesis

In the previous section I have distinguished five types of participles:

- postverbal eventive participles: root dominated by $AspP_{perf}$ and by eventive and agentive *v*P
- (resultant state) resultative participle: root dominated by $AspP_{ResultantState}$ and by eventive and agentive *v*P
- prenominal eventive participle: root dominated by $AspP_{perf}$ and by eventive *v*P
- (target state) resultative participle: root dominated by $AspP_{(TargetState)}$ and by eventive *v*P
- stative participle: root dominated by $AspP_{state}$

These values are schematized in Table 2:

	Asp [- result]	*Asp [+ result / target]*
vP [+ agentive]	*Postverbal eventive participles*	*(Resultant state) resultative participles*
vP [−agentive]	*Prenominal eventive participles*	*(Target state) resultative participles*
No vP, no AspP	*Stative participles*	

Table 2. Values of participles

In section 3.3, I have shown that four of the five types of nominalizations that Sleeman and Brito (forthcoming) distinguish can naturally be analyzed on the basis of the four verb types that Ramchand distinguishes: Initiation-Process verb, Initiation-Process-Result verb, Process verb, and Process-Result verb. For the fifth type, the object noun, I have argued that it only involves ResP, because it is not eventive, and therefore does not have to be analyzed as the projection of ProcP.

For the five types of passive participles, I propose a similar analysis. I propose that the verbal root of postnominal participles lexicalizes InitP + ProcP, as in (70), or InitP + ProcP + ResP, as with the Greek resultant state participle in (71):

(70) the book sent to John by Mary
(71) Ta keftedakia ine tiganismena apo tin Maria.
'The meatballs are fried by Mary.'

The verbal root of prenominal eventive participles in English lexicalizes ProcP, as in (72), or ProcP + ResP, as with the English resultative in (73) or the Greek target state participle in (74):

(72) the recently sent book
(73) the sloppily combed hair
(74) Ta mallia mu ine akoma atsala htenismena.
'My hair is still sloppily combed.'

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Finally, the verbal root of participles can also lexicalize ResP alone, as with the stative participles in (75-76):

(75) a very astonished person
(76) to anihto parathiro
'the open window'

Just as was the case for the nominalizations, the distinction between five types of passive participles is thus naturally motivated by Ramchand's split *v*P hypothesis.

5. Conclusion

In this paper I have argued that Ramchand's split *v*P hypothesis can naturally account for five types of nominalizations and five types of passive participles that I have distinguished.

Ramchand distinguishes four verb types, which lexicalize one, two or three heads of the split *v*P: Initiation-Process verb, Initiation-Process-Result verb, Process verb, and Process-Result verb. I have shown that four types of nominalizations and four types of participles have each of these four verb types as a lexical root. For the fifth type of nominalization and participle, which is not eventive, I have argued that it only involves ResP.

Ramchand's split *v*P hypothesis thus naturally motivates the existence in human language of the five types of nominalizations and participles distinguished in this paper, although languages do not always possess all five types.

Petra Sleeman
Department of Romance Linguistics
& Amsterdam Center for Language and Communication (ACLC)
University of Amsterdam
p.sleeman@uva.nl

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