

Two types of deverbal activity nouns in French

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Abstract

1 Introduction

The following analysis aims at identifying and representing the aspectual properties of French nominalizations (i.e. of deverbal nouns). Aspectual distinctions are here considered to be lexically encoded (Rothstein S., 2004); our basic hypothesis is that they should be represented in lexical entries. We will thus try to determine how the aspectual properties of French nominalizations can be represented in a formal framework such as the Generative Lexicon.

Our analysis relies on the Vendlerian classification of eventualities into states, activities, accomplishments and achievements (Vendler Z., 1967). We will assume that deverbal nouns have aspectual properties, i.e. that the lexical features of dynamicity, boundedness and durativity should be represented not only in the lexical entries of verbs, but also in the lexical entries of nominalizations. We will thus maintain that deverbal nouns may refer to states, accomplishments, achievements, or activities. Moreover, we will argue for a subdivision of the class of nominalizations derived from activity verbs. Our aim is to show that two kinds of activities have to be distinguished, depending on whether they are unbounded, denoting habits (*braconnage* [*poaching*], *jardinage* [*gardening*]) or bounded, denoting occurrences (*discussion* [*discussion*], *manifestation* [*demonstration*]) (Flaux N. and Van de Velde D., 2000), (Haas P. et al., 2008), (Heyd S. and Knittel M.L., 2008), (Haas P. and Huyghe R., forthcoming).

First, the above-mentioned classes of deverbal nouns, and the linguistic tests that justify

our classification, are presented. Then a formal representation of the aspectual properties of these classes is proposed in the framework of the Generative Lexicon (Pustejovsky J., 1995). This representation refines the hierarchy that is already available in this framework, thanks to the introduction of a new operator.

2 A classification of deverbal nouns in French

The following sections are devoted to the aspectual properties of French deverbal nouns. These properties are motivated by a series of linguistic tests. The definition of distinct aspectual categories of French nominalizations is thus justified.

2.1 Stativity / Dynamicity

We will argue that the aspectual distinction between stativity and dynamicity, which structures the Vendlerian classification of verbs, applies to nouns as well (*signification* [*meaning*], *connaissance* [*knowledge*] vs. *présentation* [*presentation*], *jardinage* [*gardening*]). The difference between stative and dynamic deverbal nouns is marked in particular in their relative compatibility with temporal expressions (Haas P. et al., 2008). French deverbal nouns may be analyzed as dynamic if they are compatible with one of the following structures:

- The noun can be used in the phrases *un N en cours* [*an ongoing N*] / *en cours de N* [*the N under way*] (Anscombe J.C., 2005), (Anscombe J.C., 2007).

en cours de réparation / *une réparation en cours*

[*an ongoing mending* / *a mending under way*]

- The noun can be the object of a light verb construction, and is then near-synonymous with the verb it is derived from (Giry-Schneider J., 1978), (Gross G., 1996).

procéder à un atterrissage (\cong *atterrir*)
[to perform to a landing (\cong to land)]

- The noun may have a complex argument structure including an agentive complement introduced by *par* [by] (Grimshaw J., 1990), (Alexiadou A., 2001).

la présentation du rapport par Sophie
[the presentation of the report by Sophie]

As the previous examples show, the opposition between stative and dynamic deverbal nouns should be taken into account in the classification and representation of French deverbal nouns. It allows us to differentiate nouns referring to **states** from nouns denoting **actions**.

2.2 Bounded/Unbounded

The classification of dynamic nouns has to include the parameter of the individuation of the referent. Distinct classes of dynamic nouns can be defined depending on whether they can be individuated, i.e. whether they can be located in space and time. Only some of the deverbal nouns denoting actions are compatible with the constructions *la date du N* [the time of the N] and *le lieu du N* [the place of the N], and can be the subjects of *avoir lieu* [take place].

la date/le lieu de la manifestation
[the time/the location of the demonstration]

**la date/*le lieu de la natation*
[the time/the place of the swimming]

Une manifestation a eu lieu à Paris hier.
[There was a demonstration in Paris yesterday.]

**Une natation a eu lieu à Paris ce matin.*
[A swimming took place in Paris this morning.]

Nouns such as *manifestation* [demonstration], *réparation* [mending] or *découverte* [discovery] differ from nouns such as *natation* [swimming], *braconnage* [poaching], *jardinage* [gardening] in that the former are count nouns, while the latter are mass nouns.

deux ou trois manifestations
[two or three demonstrations]

**deux ou trois natations*
[two or three swimings]

un peu de natation
[some swimming]

**un peu de manifestation*
[some demonstration]

The countable vs. uncountable status of nouns is related to the boundedness of their referent. Count nouns such as *manifestation* [demonstration] denote bounded actions, i.e. individualized instances of a process. We will call them **occurrences**. On the other hand, mass nouns such as *natation* [swimming] denote unbounded actions. Such nouns do not refer to specific occurrences, but tend to denote **habits**. This explains why they are often the complements of *faire du/de la N* [practice/regularly do N].

Pierre fait de la natation.
[Peter practices swimming.]

Besides, their default interpretation, when introduced by the definite determiner, is generic.

La natation c'est agréable.
[Swimming is fun.]

Marc est un adepte de la natation.
[Mark loves swimming.]

We will therefore argue that a bounded/unbounded feature should be represented in the lexical entries of French deverbal nouns.

2.3 Culminating/Non-culminating

Another feature enables us to define different classes of nouns referring to occurrences: the fact that the event they refer to does – or does not – have a natural endpoint (i.e. involves a culmination).

Some nouns refer to events whose structure includes a culminating point, which corresponds to the completion of the action. Other nouns denote homogeneous, non-culminating actions: the existence and specification of their endpoint is not intrinsic to the occurrence referred to.

This difference between culminating and non-culminating events is revealed by the “imperfective paradox” (Dowty D., 1979):

La réparation du toit a été interrompue.
[The mending of the roof was interrupted.]

does not entail

Ils ont réparé le toit.
[They mended the roof.]

La manifestation a été interrompue.
[The demonstration was interrupted.]

entails

Ils ont manifesté.
[They demonstrated.]

The distinction between culminating and non-culminating actions (which is traditionally used to differentiate activity verbs from accomplishment and achievement verbs) is therefore also necessary in the analysis of French deverbal nouns. It motivates the differentiation between nouns referring to **processes** (*manifestation* [demonstration], *promenade* [walk], *discussion* [discussion]) and nouns referring to **transitions** (*réparation* [mending], *construction* [construction], *découverte* [discovery]).

2.4 Durative/punctual

The class of French deverbal nouns referring to transitions is not homogeneous. More specifically, two subclasses may be defined, according to the durative/punctual character of the event referred to. Some dynamic, culminating nominalizations are not compatible with structures describing duration. These nouns, which refer to punctual transitions, cannot have a durative complement. Furthermore, they cannot be the subjects of the verbs *durer* [last], or *se dérouler* [proceed]:

**une découverte de six mois*
[a six-month discovery]

une réparation de dix minutes
[a ten-minute mending]

**La découverte a duré six mois.*
[The discovery lasted six months.]

La réparation a duré dix minutes.
[The mending took ten minutes.]

**La découverte s'est déroulée correctement.*
[The discovery proceeded correctly.]

La réparation s'est déroulée correctement.
[The mending proceeded correctly.]

Nouns such as *découverte* [discovery], *assassinat* [murder] and *noyade* [drowning] can therefore be analyzed as denoting punctual events, i.e. **achievements**, differing from nouns like *réparation* [mending], *traversée* [crossing] or *renovation* [renovation], which denote durative culminating occurrences, i.e. **accomplishments**.

2.5 Hierarchy

Our analysis of French deverbal nouns relies on four aspectual features, and has led us to define five aspectual classes of deverbal nouns. The distinctions and subclasses discussed above are summarized in figure 1 below.

Five classes of deverbal nouns are represented in the preceding hierarchy. Now, there are only four aspectual classes of verbs in traditional classifications. Our analysis thus leads us to postulate a discrepancy between traditional verb types and the nominal categories we defined. One verbal category (activity verbs) corresponds to two categories of deverbal nouns (processes and habits)¹. The following section tackles the question of how this distinction can be represented in a formal framework such as the generative lexicon.

¹Some nouns derived from activity verbs, such as *danse* [dance] or *randonnée* [hiking], are ambiguous with regard to the bounded/unbounded feature. They can either denote occurrences (*la randonnée qui a eu lieu ce matin.* [the hiking that took place this morning.]) or habits (*faire de la randonnée* [to go hiking]). Besides, the issue of the description of polysemic lexical items (like *danse* [dance], mentioned in footnote 1) is certainly significant, and should be examined in future research.

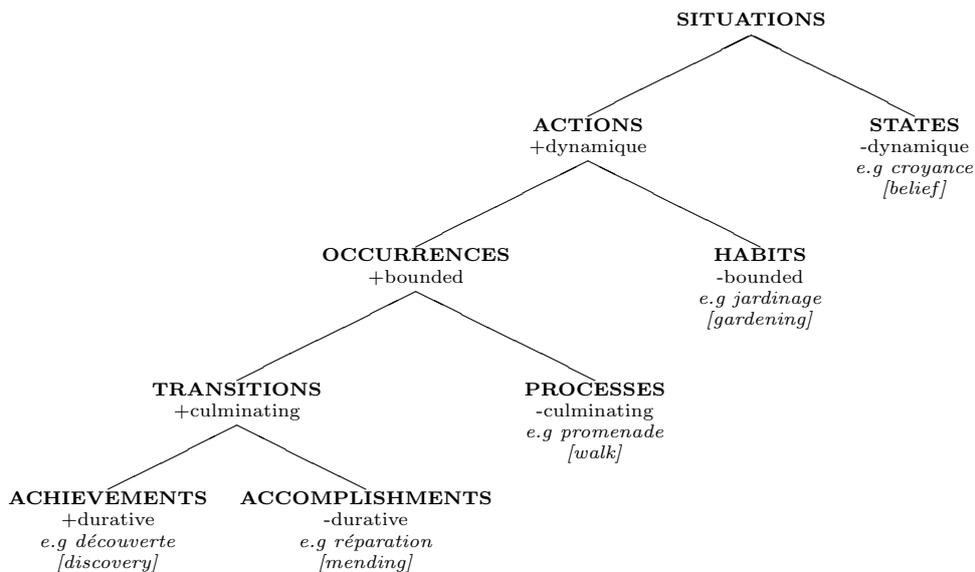


Figure 1: Aspectual hierarchy of French nominalizations

3 Lexical representation

Our formal representation of the classification of nominalizations will be based on a formalization suggested in Pustejovsky’s Generative Lexicon, reproduced in 3.1. We then show that it is necessary to refine existing classifications, more particularly to account for the aspectual distinction between lexical items that denote habits and items that denote occurrences (3.2).

3.1 The analysis of nominalizations in the generative lexicon

In the Generative Lexicon theory (Pustejovsky J., 1995), three aspectual classes are differentiated: states, processes and transitions. States and processes correspond to the Vendlerian classes of states and activities respectively, while transitions include both accomplishments and achievements. The latter are discriminated thanks to the respective heads of their event structures.

Indeed, in the GL, lexical units are not assigned an aspectual class but rather a complex event structure. This complex event structure is interpreted as a tuple $\langle E, \preceq, <, \circ, \sqsubseteq, * \rangle$, where E is a set of events, \preceq is a partial order of *part-of*, $<$ is a partial order, \circ is overlap, \sqsubseteq is inclusion and $*$ designates the “head”, that is the most salient event in the set of events. For example, the verb *build* is an accomplishment containing two subevents, a process and

a resulting state. The first subevent, which is the head, precedes the second one. The interaction between the event structure and the argument structure is shown in the qualia structure, as illustrated in figure 2 below.

build	
argstr	$\left[\begin{array}{l} \text{arg1} = \quad x: \text{animate_individual} \\ \text{arg2} = \quad y: \text{artifact} \\ \text{D-arg1} = \quad z: \text{material} \end{array} \right]$
evenstr	$\left[\begin{array}{l} \text{E1} = \quad \text{e1: process} \\ \text{E2} = \quad \text{e2: state} \\ \text{Restr} = \langle \\ \text{Head} = \quad \text{e1} \end{array} \right]$
qualia	$\left[\begin{array}{l} \text{formal} = \quad \text{exist}(\text{e2}, y) \\ \text{agentive} = \quad \text{build_act}(\text{e1}, x, z) \end{array} \right]$

Figure 2: Entry for the english verb *build* in the Generative lexicon

This kind of lexical description is original in that the different levels of the lexical entry can be selected in the process of compositional interpretation, which accounts for semantic issues such as polysemy or coercion (Pustejovsky J. and Bouillon P., 1995), (Busa F., 1996). As we are mainly interested in the discrimination between aspectual classes, we will focus on the event structure of the Generative Lexicon entries.

In this lexical framework, states are ana-

lysed as consisting in a single subevent. Processes are defined as a succession of subevents (e_1, e_2, \dots, e_n), while transitions comprise two phases: a process that is followed by a resulting state. Given that nouns receive the same aspectual analysis as verbs, four classes of nominalizations can be represented. They are illustrated below:

1. Event structure of *belief*, which denotes a state :

$$\left[\begin{array}{l} \mathbf{belief} \\ \text{evenstr} \end{array} \left[\begin{array}{l} \text{E1} = \quad e_1:\text{state} \\ \text{Head} = \quad e_1 \end{array} \right] \right]$$

2. Event structure of *burning*, which denotes a process :

$$\left[\begin{array}{l} \mathbf{burning} \\ \text{evenstr} \end{array} \left[\begin{array}{l} \text{E1} = \quad e_1:\text{process} \\ \text{Head} = \quad e_1 \end{array} \right] \right]$$

3. Event structure of *construction*, which denotes a transition, more precisely an accomplishment; the first subevent (the process of constructing something) is the head :

$$\left[\begin{array}{l} \mathbf{construction} \\ \text{evenstr} \end{array} \left[\begin{array}{l} \text{E1} = \quad e_1:\text{process} \\ \text{E2} = \quad e_2:\text{state} \\ \text{Head} = \quad e_1 \end{array} \right] \right]$$

4. Event structure of *arrival*, which denotes another kind of transition, namely an achievement; the head corresponds to the second subevent, i.e. to the resulting state (here, the state of having arrived) :

$$\left[\begin{array}{l} \mathbf{arrival} \\ \text{evenstr} \end{array} \left[\begin{array}{l} \text{E1} = \quad e_1:\text{process} \\ \text{E2} = \quad e_2:\text{state} \\ \text{Head} = \quad e_2 \end{array} \right] \right]$$

Only four classes of nominalizations are thus represented in the Generative Lexicon. Now, we have defined five categories of deverbal nouns (section 2). We therefore have to refine the GL representations in order to represent the distinction between the two classes of French atelic nouns mentioned above.

3.2 Analysis of the two classes of deverbal atelic nouns

We have already mentioned that nouns such as *manifestation* [*demonstration*] differ from nouns such as *jardinage* [*gardening*] in that the former, being count nouns, designate events which, though non-culminating, are bounded, while the latter – being mass nouns – refer to unbounded and unspecific actions.

These two classes of nominalizations are derived from a single category of verbs, i.e. atelic “activity verbs”. They differ in the way they present the activity. While nouns such as *manifestation* [*demonstration*] denote individuals, nouns such as *jardinage* [*gardening*] do not discriminate different occurrences of the activity. The mass character of these nominalizations is correlated with the fact that they refer to an eventuality conceived as a multiplicity of underlying activities. Their denotation is based on an indefinite number of iterated occurrences of a given activity.

The elaboration of their interpretation is thus similar to that of generalizing sentences. These sentences “do not express specific episodes or isolated facts, but instead report a kind of general property, that is, report a regularity which summarizes groups of particular episodes or facts (...) some kind of generalization over events” (Carlson G. and Pelletier F., 1995).

Renée jardine.

[*Renée is doing some gardening (now).*]

or

[*Renée (usually) does some gardening.*]

Renée discute.

[*Renée is chatting.*]

and not

[*Renée chats.*]

The habitual interpretation involves a synthetic viewpoint on an unlimited series of reiterated activities (Kleiber G., 1987). We argue that the same semantic operation is at stake with nouns such as *jardinage* [*gardening*], i.e. habit nouns.

We therefore need to add a new element to the tuple that represents the extended event structure. This new element, $+^2$, applies to

²The operator $+$ refers to the regular expressions language, where this operator means “at least one oc-

the atelic nouns that denote habits and accounts for the fact that these nominalizations receive a habitual interpretation, and may explain their uncountable status.

$$\left[\begin{array}{l} \text{jardinage} \\ \text{evenstr} \end{array} \left[\begin{array}{l} \text{E1} = \quad e_1:\text{process}^+ \\ \text{Head} = \quad e_1 \end{array} \right] \right]$$

$$\left[\begin{array}{l} \text{promenade} \\ \text{evenstr} \end{array} \left[\begin{array}{l} \text{E1} = \quad e_1:\text{process} \\ \text{Head} = \quad e_1 \end{array} \right] \right]$$

It is important to note that the iteration operator we introduce does not apply directly to subevents but rather to sets of subevents, namely processes (which, in turn, are composed of subevents, as illustrated below.)

- process = e_1, e_2, \dots, e_n
- process⁺ = process₁, process₂, ..., process_n

Habits can thus be considered to be a derived category. This new aspectual category may in fact correspond to the lexicalization of a grammatical meaning (which can be expressed by *used to* at a sentential level)

4 Conclusion

In this paper, the aspectual features of French nominalizations have been described and formalized within the Generative Lexicon framework. In order to represent our hierarchy of nominalizations, which includes a new aspectual class (habits), we suggest the introduction of an iteration operator.

The event structures of verbs and of their corresponding deverbal nouns are usually assumed to be the same. Yet, our analysis shows that two classes of nominalizations are derived from what is usually analysed as a single category of verbs, i.e. “activity verbs”. Should we then postulate a mismatch between the verbal and nominal categories? Or do the properties of deverbal nouns in fact reveal that two types of activity verbs should be discriminated? The latter hypothesis may be supported by the above-mentioned distinction between the habitual and specific interpretations of sentences in the simple *currence of the argument*⁷.

present. Verbs from which habit nouns are derived easily get a habitual interpretation, contrary to verbs corresponding to process nouns.

Joe jardine/jongle/braconne.

[*Joe gardens/juggles/poaches.*]

or

[*Joe is gardening/is juggling/is poaching.*]

Mike manifeste/discute/se promène.

[*Mike is demonstrating/is discussing/is strolling.*]

and not

[*Mike demonstrates/discusses/strolls.*]

Verbs like *jardiner* [*do some gardening*], *jongler* [*juggle*] or *braconner* [*poach*] are more likely to get a habitual interpretation, as they usually describe habits and hobbies, i.e. endlessly repeatable processes. The formal representation we assigned to their nominalizations might then be used to define their own aspectual structure.

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