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CHAPTER SEVEN

EVENT RELATED NOMINALS

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1. Introduction[1,2]

As has been widely argued for in the literature, deverbal nominals fall into two categories, depending on whether they retain the event from their verbal base or not. The original observation is due to Chomsky (1970); see also Lees (1960), Marantz (1997), Borer (2003). For English *-ation* and *-ing* nominals (e.g., *destruction, examination; forming, examining*) and for zero-derived nominals (e.g., *form, exam*), this has led to distinguishing two classes of nominals: complex-event vs. result nominals (CENs/RNs–Grimshaw 1990) or Argument-Supporting nominals (AS-Ns, cf. (1)) vs. Referential nominals (R-Ns, cf. (2)–Borer 1999):

(1) a. the destruction of the city by the enemy
b. the examination of the students by the teacher
c. their building new quarters

(2) a. a complete destruction
b. a difficult exam
c. an impressive building

The nominals in (1) have an event interpretation (hence, Grimshaw's 1990 label of CENs). The eventive interpretation has been noted to correlate with various syntactic properties, as, for instance, the (possible) presence of temporal/aspectual modifiers.

(3) a. They destroyed the city in two hours.
b. the destruction *(of the city) in two hours

The pattern in (3b) also has another important property, which is the obligatory realization of the arguments of the verbal base (hence the term Argument Supporting nominals; cf., Borer 1999, 2003). This property is compulsory when the event structure is activated in the presence of event-related modification (see Grimshaw 1990, Borer 1999, 2003, Alexiadou 2001, among others). The correlation between the event interpretation and obligatory realization of argument structure has been an important point since Grimshaw (1990). The fact that both go hand in hand has been claimed in the literature to show that both are realized grammatically and that eventivity and arguments are inherited from the verbal and/or aspectual structure present with AS-Ns but are missing with R-Ns (the latter being simply derived from bare roots)–cf. Borer (2003); Alexiadou (2001); van Hout and Roeper (1998). The syntactic approaches to word formation represented by these scholars take eventivity in AS-Ns to be correlated with the projection of syntactic functional layers detectable through argument structure projection and aspectual modifiers. The source of the eventive interpretation is the presence of a verbal base upon which AS-Ns are built. Nominalizations may thus inherit verbal properties, when (and only when) they involve a verbal / aspectual structure.

The term 'event' (or 'eventive') nominals, however, is often the subject of some misunderstanding, or at least suffers from variable definitions depending on whether it is taken in the syntactic tradition where eventivity is correlated with particular structural properties, or from a (lexical-)semantic point of view where a much larger class of nominals would be considered as 'eventive'.[3] For instance, Grimshaw's (1990) Simple Event nominals (SENs) fall into this class when semantically defined. Such nouns (e.g., *meeting, play*) are 'semantically' associated to an event interpretation but do not exhibit the common event related properties of AS-Ns described above. SENs cannot take typical verbal / temporal modifiers otherwise found with AS-Ns (even in cases where there is a related verb, with the relevant temporal-aspectual modifiers):

(4) a. They met / played for two hours.
b. the meeting / the play (*for two hours)

This suggests that SENs are not structurally derived from verbs, and hence if they involve an event, it cannot be inherited from a VP. Nevertheless, they do have an event interpretation which, it has been claimed in the

literature, cf., Haas et al. (2008), can be tested in the context of, e.g. the *take place* predicate. *Take place* requires an eventive subject, and is compatible with both AS-Ns and SENs subjects, while rejecting R-Ns, as expected:

(5) a. The destruction took place at noon. (AS-Ns)
b. The movie / meeting took place at noon. (SENs)
c. *The table / form took place at noon. (R-Ns)

Another problematic group of nominalizations is also often associated with an event interpretation, namely *-er* nominals (see Rappaport Hovav and Levin 1992, Alexiadou and Schäfer 2010, Roy and Soare (to appear)). *-Er* nominals differ from AS-Ns in that they denote individuals (e.g., *driver, teacher, scuba-diver*). However, recent works by Alexiadou and Schäfer 2010 and Roy and Soare (to appear) have shown that some of them at least are interpreted in association with an actual eventuality. Independently of the typology one accepts (whether retaining three groups: episodic / dispositional / instruments, as in Roy and Soare (to appear) or just two groups based on the episodic / dispositional contrast alone, as in Alexiadou and Schäfer (2010)), there is a common agreement that some *-er* nominals at least relate to particular events, arguably inherited from their verbal base again. For instance, as commonly noted for English, phrasal *–er* nominals as in (6a), entail that the individual denoted by the N has taken part in the action expressed by the related verb (i.e., saved lives); whereas such entailment does not exist with the compound nominals as in (6b). One could hypothesize that the source of the event-related meaning for (6a) resides in the presence of an underlying event, plausibly derived from a full verbal phrase.

(6) a. a saver of lives (has saved lives)
b. a life-saver (hasn't necessarily saved lives)

However, as for SENs, 'eventive' *-er* nominals do not take event modifiers otherwise possible with AS-Ns (compare (7) with (3) above):

(7) a. He drove the truck (for two hours).
b. the driver of the truck (*for two hours)

Evidently, while there is a strong sense in which both AS-Ns and episodic *-er* nominals refer to events or are related to an event interpretation, they do not do so in the same way, as the diagnostics for eventivity clearly

indicate. These facts further illustrate why in the present-day literature on nominalizations there is no consensus on the definition of eventive nominals and their variable properties.

The aim of this paper is to gain some understanding into the semantic relationship derived nominals entertain with their verbal base, and to provide a principled analysis of AS-Ns, SENs and (eventive) *-er* nominals that accounts for the different flavors in which the interpretation of a deverbal nominal is said to be 'event-related'. We offer an analysis that bears crucially on a difference between strong/grammatical eventuality and lexical/conceptual eventuality cast in terms of a semantic type difference between entity-denoting vs. event-denoting nominals.

This paper is organized as follows. Section 2 deals with 'event' nominals, i.e., AS-Ns and SENs, providing a summary of the literature that will serve as a starting base for our discussion, and argues for a first distinction between strong/grammatical events and lexical/conceptual events. Section 3 turns to a detailed discussion of the properties of eventive *-er* nominals, which manifest event properties in a different way from event-denoting nominals. We first show that these nominals are event-related in a strong/grammatical sense, and that a unified structural account is warranted, for event-denoting and for *-er* AS-Ns as well. We proceed in section 4 to a type semantic analysis of derived nominals that captures the differences between individual nominals and event nominals and the interaction of semantic types with the grammatical vs. conceptual events. In section 5, we extend our proposal to include SENs, and then conclude in section 6.

2. Event nominals

2.1. AS-nominals

The literature on deverbal nominalizations starting with Lees (1960); Chomsky (1970); Grimshaw (1990) pays special attention to the question of their ambiguity. Taking, as an illustration, *-ation* nominals (e.g., *examination, destruction, manifestation*), they may denote either an event or an entity (i.e., object), which may but must not be the result of an event. As stated above, this is commonly expressed in the literature under the form of the CENs / RNs distinction (initially proposed by Grimshaw 1990), and is implemented broadly in terms of a structural ambiguity, as we will see below.

An overview of the properties distinguishing CENs from RNs is summarized in Table 1. Given the observed correlation between argument

structure and eventive interpretation, in recent works on nominalizations (cf. Borer 1999, 2003; Alexiadou 2001, 2010a,b; Kornfilt and Whitman 2011, among others) the distinction has been restated in terms of Argument Supporting (or AS)-nominals and Referential (or R)-nominals (terminology from Borer 1999, 2003). The properties in the left column, including obligatory realization of the (internal) arguments and modification with aspectual modifiers, are generally seen as a hallmark for eventivity inside nominals. The properties are exemplified in (8) for AS-Ns and (9) for R-Ns.

	AS-Ns	**R-Ns**
(i)	event reading	no event reading
(ii)	obligatory arguments	arguments not obligatory
(iii)	compatible with aspectual modifiers like *in three hours*	not compatible with aspectual modifiers
(iv)	*constant, frequent* with the singular	*constant, frequent* possible only with the plural
(v)	*by*-phrase is an argument	*by*-phrase is not an argument

Table 1: properties of AS-nominals and R-nominals

(8) AS-Ns
   a. the examination of the students by the teachers
   b. the examination *(of the students) (by the teachers) (in three hours)
   c. the (frequent) examination of the students by the teachers

(9) R-Ns
   a. the form; the exam
   b. the exam (*by the teachers) (*in three hours)
   c. the frequent exam*(s)

As illustrated above in (8), in presence of event-related modifiers like *frequent, constant* adjectives or *in/for*-PPs, AS-Ns obligatorily realize their argument structure. Removing the arguments in the presence of the modifiers would give rise to ungrammaticality. This is not the case with R-Ns, which are noneventive and do not have arguments (9b). *Frequent/constant* modification is possible with R-Ns but in the plural

(9c), which gives rise to an iterative reading only ("frequently giving/taking exams"; compare with (8c)). *In/for*-PPs are impossible.

Furthermore, R-Ns can be selected by predicates that require an entity noun and not an eventive noun:

(10) a. *The examination of the patients was on the table.
b. The exam was on the table.

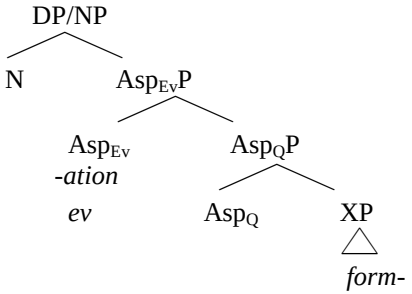
For ambiguous nominals, such as *assignment, painting, building, manifestation*, the compatibility with *be on the table* excludes the presence of arguments:

(11) a. *The assignment of the tasks to the participants was on the table.
b. The assignment was on the table.

The literature offers different views on the AS-N / R-N ambiguity. Lexicalist approaches take the ambiguity as being stored in lexical entries, and consequently assume the existence of *assignment-*$_{AS\text{-}N}$ / *assignment-*$_{R\text{-}N}$ pairs. This direction has been developed since Halle's (1973) lexical Word Formation Rules, and continued in Booij (1977), Aronoff (1976), Di Sciullo and Williams (1987), among many others. By opposition, structural/syntactic approaches reject the idea of rampant ambiguity in the lexicon, and see the AS-N/R-N contrast as corresponding to a systematic structural difference in the form of the nominalization. The latter position is argued for by Marantz (1997), Borer (1999), Alexiadou (2001), among others, which endorse a syntactic approach to word formation. Building on Grimshaw's criteria, it has been argued in this tradition that AS-Ns are derived on the basis of a full structure including verbal / aspectual layers; while R-Ns are simple, root-derived nominals. Syntactic approaches to deverbal nominals formation thus assume that the correlation between the eventive interpretation and the obligatory argument structure must be implemented by assigning different structural representations to the two classes of nominals. The correlation with the argument realization is therefore not accidental but derives from the internal syntactic properties of the relevant nominal expressions. The projection of argument structure inside deverbal nominals is also to be taken as a property of the verbal layers. These different layers have received different labels throughout the literature, from "Event Phrase" (van Hout and Roeper 1998), to different flavors of AspP (Borer 1999, 2003, 2005; Alexiadou et al. 2010); and different executions have been proposed. For instance, Borer (1999, 2003,

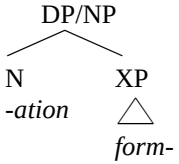
2005), implements the correlation between event structure and argument structure by proposing that arguments are introduced by functional heads, one of which is also responsible for introducing the event variable. In the structure of AS-Ns in (12) below, Asp_{Ev} (standing for Aspect of Event) thus introduces the external argument and Asp_{Q} (standing for Aspect of Quantity) the internal one (which is likewise severed from the root). Asp_{Ev} is also responsible for introducing the event variable *ev*. In this paper, we will by and large adopt Borer's framework; but see Alexiadou (2001); Van Hout and Roeper (1998) among others for alternative implementations.

(12) (AS-Ns)



R-nominals in (13), in turn, are built directly from a root. They lack verbal structure and, therefore, the event variable introduced by Asp_{Ev}.

(13) (R-Ns)



Recent work on AS-Ns denoting processes have, thus, reached the conclusion that eventivity in these nominals is structurally built-in, and that the projection of argument structure is also a consequence of their functional structure. The syntactic approaches to deverbal nominals formation share the idea that eventivity is encoded in the syntax. Therefore, we will refer to these cases as cases of "grammatical eventivity", in which the presence of the event is structure-related and results from the presence of dedicated verbal functional projections in the structure of the nominal, identifiable by aspectual and manner modification. We will call this structurally built-up eventivity 'strong/grammatical' eventivity.

2.2. Simple Event nominals

In her original typology of deverbal nominals, Grimshaw (1990) distinguished not two, but three classes of deverbal nominals. Besides CENs and RNs, (here replaced by AS-Ns and R-Ns, respectively), her taxonomy includes a third class of so-called *Simple Event Nominals* (SENs). Nominals in the SENs class also denote events as they can combine with predicates like *take place*, *last x time* and *be interrupted* that take an event as a subject (cf. Haas et al. 2008) (14). According to this test, they pattern with AS-Ns (15) rather than R-Ns (16), leading many current researchers to class them with 'event' nominals:

(14) a. The concert/ the movie/ the game took place at nine. (SENs)
b. The concert / the movie/ the game lasted three hours.
c. The concert/ the movie/ the game has been interrupted.

(15) a. The examination of the papers by the committee took place today at 5pm. (AS-Ns)
b. The examination of the papers by the committee lasted three hours.
c. The examination of the papers by the committee has been interrupted.

(16) a. *The paper/ table took place yesterday. (R-Ns)
b. *The paper/ table lasted three hours.[4]
c. *The paper/ table has been interrupted.

SENs also pattern with AS-Ns in being satisfactory in the *during the N* PP construction which calls for a temporal extension:

(17) a. during the movie/concert/game (SENs)
b. during the examination of the paper by the committee (AS-Ns)
c. *during the paper/table (R-Ns)

However, while the class of SENs represented by *concert, movie, game* in (14) above, shares with AS-Ns the property of being eventive (in a way to be defined later), they clearly do not necessarily project argument structure. Incidentally, it turns out that, as opposed to AS-Ns (and R-Ns for that matter) SENs may, but need not to, be derived from a verbal base (with or without derivational morphology) (e.g. *a movie, a concert, a game* vs. *a meeting, an attack*). SENs are thus eventive by the semantic tests above[5], but not in the way AS-Ns are; i.e., presumably not in the

strong/grammatical sense defined in the previous section. Recall that standard syntactic views on AS-Ns assume that what we call a 'grammatical event' must be contributed by an underlying verbal base (or VP), and is identified by the standard tests summarized in Table 1. SENs, which do not require a verbal base, by assumption, cannot involve a grammatical event.

Crucially, and as expected, SENs are not compatible with aspectual PP modifiers (*in/for* PP), and in that respect pattern with R-Ns (20) rather than AS-Ns (19), independently of the existence of a related verb (18a) or not (18b).[6]

(18) a. the meeting/attack (*for three hours) (SENs)
b. the concert/movie/boycott (*for three hours/months)

(19) a. The president met with the Prime Minister (for three hours).
b. the meeting of the president with the Prime Minister (for three hours) (AS-Ns)

(20) the paper/table (*for three hours) (R-Ns)

Further properties distinguish SENs from AS-Ns. Recall from Table 1 that R-Ns are compatible with frequency modifiers when in the plural only, while AS-Ns accept frequency modifiers in the singular. As (21) shows, in that respect again, SENs pattern with R-Ns in (9c), and not with AS-Ns in (8c).

(21) the frequent concert*(s); the frequent movie*(s) (SENs)

In general there is no particular restriction on plurality and quantification with SENs (as for R-Ns and other nominals: *three exams; many dogs*); while certain restrictions on quantifiers, numerals and determiners, as illustrated in (22b), are commonly reported on AS-Ns (see Grimshaw 1990, Snyder 1998).[7]

(22) a. many concerts; three movies (SENs)
b. *several/two/these elections of John by the department (AS-Ns)

The count properties of SENs can be seen as a result of their being event sortals (cf. Bennett 1988, Snyder 1998). The fact that SENs can be counted is correlated to the fact that they can be individuated, unlike AS-Ns. The contrast is visible in existential constructions, which require an

individuated N, and accept SENs but reject AS-Ns (cf. also Mourelatos 1978):

(23) a. There is a movie/ are three movies starting at 5.
b. *There is a destruction/ are three destructions of the city by the enemy starting at 5.

In sum, SENs have heterogeneous properties, sometimes similar to those of AS-Ns and sometimes not (and hence making them similar to R-Ns and other non-derived nominals). In view of these apparently contradictory properties, SENs have always been rather problematic and left aside in many recent accounts. If we follow a structural approach, as discussed earlier, and if we assume that both the projection of argument structure and the event interpretation depends on the presence of a verbal(/aspectual) structure, SENs do not involve a 'grammatical event', structurally built up in the nominal, in the sense defined in the previous section. We must conclude that there is another possible source of eventivity inside nominals, which is not structure-related. Nominals can refer to events in the absence of verbal bases and therefore of any verbal layers. We will name this kind of eventivity, which is not inherited from a base predicate, a weak/conceptual(or lexical) eventivity.

2.3. Interim conclusion

In order to describe event-related nominals, a first distinction is needed between strong/grammatical eventivity and weak/conceptual eventivity. Among the tests commonly used to identify an underlying event, or eventuality more generally, inside derived nominals, some pertain to the grammatical event, others to the conceptual/lexical event. The tests are split as indicated in Table 2. This understanding of the tests turns crucial to apprehend the properties of SENs specifically, and how they differ from AS-Ns. (More on this in Section 5).

Tests for underlying eventuality	Strong/ Grammatical eventuality	Weak/ Conceptual eventuality
(i) subject of *be on the table*	-	-
(ii) subject of *take place, be interrupted*	+	+
(iii) *during the N*	+	+
(iv) obligatory arguments	+	-
(v) *constant, frequent* possible with the singular	+	-
(vi) compatible with aspectual modifiers like *in/for three hours*	+	-

Table 2: Tests for strong/grammatical eventuality vs. weak/conceptual eventuality

3. Further issue: individual nominals

3.1. Eventive *-er* nominals

-Er derived nominals (often called 'Agent'-nominals) present a further difficulty to an already complex notion of eventuality inside nominals. On the one hand, they denote individuals (rather than events); but on the other hand they have a strong/grammatical eventuality that can be linked to an AS-Ns structure (Alexiadou & Schäfer 2010; Roy and Soare (to appear)).

Nominals denoting participants in an eventuality have been characterized in the literature as being sensitive to a distinction between eventive and noneventive, on the basis of pairs like *saver of lives* / *life-saver* and *mower of the lawn / lawn-mower* (Rappaport Hovav and Levin 1992, Van Hout and Roeper 1998, among others). Only in the first case is the participant denoted by the nominal entailed to be involved in an actual event; no such entailment arises with the compound forms. Animacy plays a role here, as instrument *-er* nominals (*grinder, blender*) never involve a participation in an event (cf., Rappaport Hovav and Levin 1992; Roy and Soare (to appear)).

As argued in Roy and Soare (to appear), when interpreted as eventive, animate *-er* nominals have properties of strong/grammatical events rather than weak/conceptual events. This can be shown by the tests (iv) and (v) in Table 2, which discriminate between the two types of eventualities. With

respect to these two tests (and we will come back to test (vi) later), eventive *-er* Ns pattern with AS-Ns (and not SENs). As argued by Rappaport Hovav and Levin, the eventive interpretation, which is highlighted by the presence of frequency modifiers, correlates with the obligatory realization of arguments. *-Er* nominals can take frequency modifiers, but only when they realize their arguments.[8] In addition, frequency adjectives are possible with the singular (24b). Compare with AS-Ns in (8c) above.

(24) a. the constant defenders *(of human rights)
b. this frequent consumer *(of tobacco)

On the basis of the similarities between (24) and (8c), a unified account for eventive *-er* Ns and AS-Ns, in terms of strong/grammatical eventuality, seems plausible. Recent works have argued for such an account, but assume further distinctions within the class of eventive *-er* Ns - cf. Alexiadou and Schäfer (2010), Roy and Soare (to appear), in particular, in terms of the episodic/dispositional distinction. According to Alexiadou and Schäfer (2010), dispositional *-er* nominals have event-related properties and share the same syntactic structure as episodic *-er* nominals. Both are eventive and involve verb-like internal structure, i.e., Aspect and Voice heads (in a standard Distributed Morphology approach), but they differ in terms of aspectual specifications. Episodic and dispositional meanings are, in this approach, two flavors of an aspectual head necessarily present in eventive nominals.

(25) a. Dispositional *-er* Ns
i. fire-fighter, live-saver, baker, teacher
(educated but not necessarily experienced)
ii. $[_{nP}$ *-er* $[_{AspP\text{-}DISPO}$ $[_{VoiceP}$ *x* $[_{vP}$ *ev* $[_{RootP}$ √]]]]]
b. Episodic *-er* Ns
i. saver of lives, fighter of the fire
(necessarily experienced in action)
ii. $[_{nP}$ *-er* $[_{AspP\text{-}EPISO}$ $[_{VoiceP}$ *x* $[_{vP}$ *ev* $[_{RootP}$ √]]]]]

For Roy and Soare (to appear), dispositional and episodic *-er* Ns involve a full verbal structure akin to the one found in AS-Ns, and differ by the type of quantification on the event variable, namely existential vs. generic:

(26) a. Dispositional *-er* Ns
GEN $[_{NP}$ N $[_{AspEvP}$ *-er* $[_{AspEv'}$ AspEv *ev* $[_{AspQP}$ $[_{RootP}$ √]]]]]

b. Episodic *-er* Ns
$\exists$ [$_{NP}$ N [$_{AspEvP}$ *-er* [$_{AspEv'}$ AspEv *ev* [$_{AspQP}$ [$_{RootP}$ $\sqrt{}$]]]]]]

They show, on the basis of French data, that both episodic and dispositional Ns allow event-related adjectival modification, which can be of two types; *frequency* adjectives, allowed by episodic *-eur* Ns only, and *big/happy* adjectives with an event-related meaning (cf., Larson 1998), allowed by both dispositional and episodic *-eur* Ns. The interpretive contrast between episodic and dispositional Ns comes from their internal argument, either specific or nonspecific, leading to a particular vs. generic underlying eventuality. For further details regarding adjectival modification, and their event-related meanings in particular, as well as the correlation between event type and nominal meanings, we refer the reader to Roy and Soare (to appear).

(27) Dispositional *-er* Ns
a. *Nous avons interviewé un vendeur fréquent de voitures/ les
we have interviewed a seller frequent of cars the
consommateurs fréquents de drogue.
consumers frequent of drug
"We have interviewed a frequent car-dealer/ the frequent drug users."
b. Nous avons interviewé un petit vendeur de voitures/ les
we have interviewed a small dealer of cars the
gros consommateurs de drogue.
big consumers of drugs
"We have interviewed a small car-dealer/ the big drug users."

(28) Episodic *-er* Ns
a. Un consommateur fréquent de plusieurs drogues douces/ de
a consumer frequent of several drugs soft of
LSD a témoigné au procès.
LSD has testified at.the trial
"A frequent user of several soft drugs/ of LSD testified in court."
b. Un heureux/ gros consommateur de plusieurs drogues douces/
a happy big user of several drugs soft
de LSD a témoigné au procès.
of LSD has testified at.the trial
"A happy/big user of several soft drugs/of LSD testified in court."

Crucially, no event-related properties can be observed in the case of instrument *-eur* nominals. Event-related meanings of adjectives are never allowed. Instruments differ in a clear way from dispositional Ns in (27).

(29) Instruments[9]
a. *Un broyeur fréquent nous serait utile.
a grinder frequent us would.be useful
"A frequent grinder would be useful to us."
b. *Un gros broyeur nous serait utile.
a big grinder us would.be useful
"A big grinder would be useful to us."

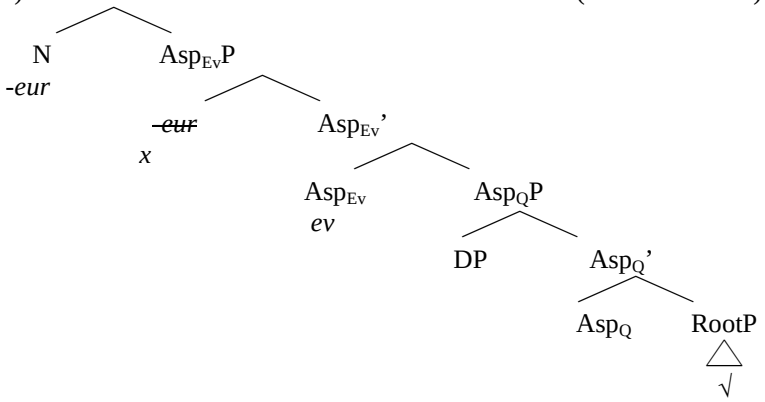
Moreover, instruments never project true arguments. In particular, definite-specific objects are always ruled out, which we take to indicate that instruments do not take arguments (30) and that when they appear with a *de*-phrase, the latter is a mere modifier (31). The nonargumental status of *de*-phrases with instruments is further supported by the possibility of substituting them with a purpose *à*-phrase adjunct (never found with true arguments).

(30) a. L'aspirateur (*de la poussière) n'a pas bien fonctionné.
the.aspirator of the dust neg.has not well functioned
"The vacuum-cleaner (of the dust) didn't work well"
b. Le photocopieur (*de l'article) a été très efficace.
the photocopier of the.paper has been very efficient
"The copy-machine (of the paper) has been very efficient"

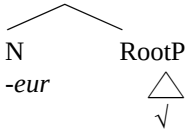
(31) a. broyeur de végétaux vs. dresseur de lions
blender of vegetables *tamer of lions*
"vegetable blender" "lion tamer"
b. broyeur à végétaux vs. *dresseur à lions
blender at/to vegetables *tamer at/to lions*
"vegetable blender"

Accordingly, instrument *-er* Ns must be treated on a par with R-Ns, as simple, root-derived nominals. A structurally built-in grammatical event must be assumed in the two classes of eventive (animate) *-eur* Ns, which must share the structure of AS-Ns in (12). Instrument Ns pattern with root-derived nominals with which they share the structure (13). Accordingly, they have the following structure, respectively:

(32) (Eventive *-er* Ns)



(33) (Instrument Ns)



However, if episodic/dispositional *-er* nominals are a form of AS-Ns, involving a case of strong/grammatical event, some differences between process-denoting AS-Ns and individual-denoting eventive *-er* Ns need to be addressed. We turn to this issue below.

3.2. Some unexplained differences

The presence of a grammatical event inside *-er* Ns has often been questioned and is the subject of some controversies. Proponents of the noneventive view, invoke two types of evidence that they take as arguing against a unified treatment of process As-Ns and individual *-er* Ns. Baker and Vinokurova (2009) argue on the basis of the grammaticality of adverbials in pairs like (34) for separating process As-Ns and *-er* Ns, assigning a 'purely nominal' status to the latter, which, according to them, are deprived of any internal verbal structure (even in languages in which they are able to assign Accusative case to their object, like Sakha). Absence of adverbial modification is not a reliable test for absence of grammatical events, however, as adverbs are also precluded with many process AS-Ns (even in cases where they are semantically compatible with the base verb) (35).

(34) a. finding the wallet quickly
b. *the finder of the wallet quickly

(35) a. the enemy found/destroyed the city quickly
b. the finding/destruction of the city by the enemy (*quickly)

Another piece of evidence taken to argue against a unified treatment of process As-Ns and *-er* Ns concerns the test (vi) in Table 2: eventive *-er* Ns never allow for aspectual PP modifications typically found with process-denoting AS-Ns. This contrast is taken by Borer (2012), for instance, to suggest the purely nominal (i.e. not verbal based) character of *-er* Ns altogether.

(36) a. le domptage des chiens (pendant des années)
the taming of.the dogs for many years
b. la vente du chien (en cinq minutes)
the sale of.the dog in five minutes

(37) a. le dompteur des chiens (*pendant des années)
the tamer of.the dogs for many years
b. le vendeur du chien (*en cinq minutes)
the seller of.the dog in five minutes

This contrast was originally noted for Greek by Alexiadou et al. (2000) (and reported in Alexiadou 2001) and taken as an indication of a diminished verbal character for *-er* nominals, even in their eventive meaning.

(38) a. *i damastes ton fotonion mesa se/gia enan eona
the tamers the-gen photons within for a century
b. *o katharistis tu ktiriu epi ena mina telika apolithike
the cleaner the-gen building for a month finally got.fired

Alexiadou et al. (2000) suggested that an explanation for the ungrammaticality of aspectual PPs would rely on the fact that *-er* Ns lack an Asp(ectual) projection, which would rule out adverbial modification across the board–and manner modification can only be spelled out as an adjective. This in turn, as also suggested by Alexiadou (2001), relates to the semantics of *-er* nominals, which denote individuals, while process nominals denote events. The difference is, thus, expected to the extent that aspect is relevant for processes and not for individuals. However, a precise

implementation of the difference has never been proposed. In our view, and since we accept a split between eventive and noneventive (i.e., instrument) *-er* Ns, the issue remains to understand the ban on aspectual PPs with individual Ns, as they involve a strong/grammatical event. The properties of eventive *-er* Ns are the combined result, as we shall argue below, of their involving both a grammatical/structurally built-in event and an individual variable. We will turn to this account in the next section.

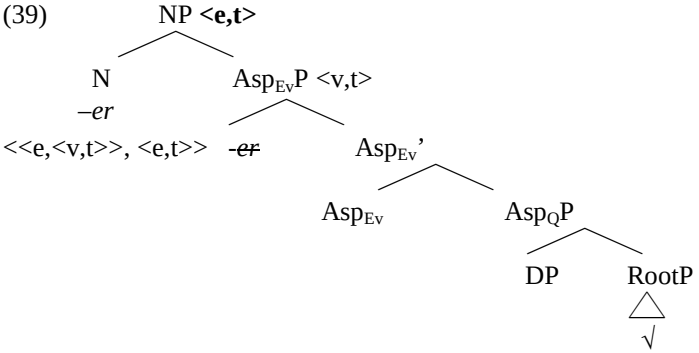
4. Event nominals and semantic types

4.1. Event vs. individual argument

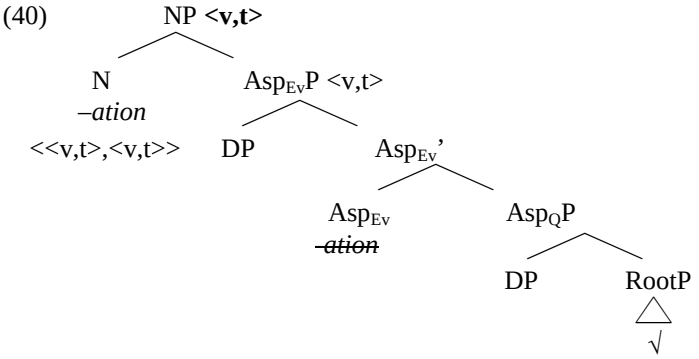
One fundamental difference between eventive *-er* Ns and process AS-Ns that, we will argue, has a major bearing on their contrastive properties, concerns their denotations. Evidently, on the one hand *-er* Ns denote individuals (*the driver* = the person who drives), whereas on the other hand process AS-Ns denote events properly speaking (*the driving of the car* = the event of driving the car). The difference is associated to the semantic properties of the nominal suffixes themselves (*-er* vs. *-ation*, *-ing*, etc.), and has structural consequences. As argued in Roy and Soare (to appear), the nominalizing suffix *-er*, which picks out an individual, is assumed to realize the external argument (i.e., occupies the specifier of $Asp_{Ev}P$; cf., (32) above).[10] Following Borer (1999, 2003), the nominalizing suffix *-ation*, for instance, which picks out an event, is the realization of the aspectual head Asp_{Ev} responsible for introducing an eventuality. Hence, even though eventive *-er* Ns and process AS-Ns share the same internal structural frame (that of AS-Ns rather than root derived R-Ns), the semantic difference in their denotation is expressed structurally as well. Cf. the representations in (32) vs. (12).

We propose that the two types of nominals correspond to a semantic difference between nouns of individuals and nouns of events. Assuming that nominalized constructs are NPs, and that NPs are predicative by nature (while referentiality would require a DP layer), we claim that the former take an individual argument, hence are of type <e,t> (39); whereas the latter take an event argument, hence are of type <v,t> (40).[11]

(39)

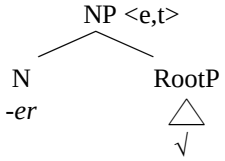


(40)



For process AS-Ns, type <v,t>, the outcome of the nominalization is a (nominal) predicate of events (40). The event semantics is introduced by the Asp_{Ev} phrase complement of N°. As with AS-Ns, Asp_{Ev} also introduces the event component in eventive *-er* Ns (39); however, both differ in the semantics of their nominalizing suffix and hence the interpretation of their resulting nominalization. The individual reading in (39) leads to the participant/agent interpretation as often characterized. Importantly, the source of the eventive interpretation in both (eventive) *-er* Ns and process AS-Ns is the presence of the event variable associated with Asp_{Ev}. Both *-ation* and (eventive) *-er* suffixes take constituents of type <v,t> as argument. Other *-er* nominals, i.e. instruments (see Roy and Soare (to appear)), are noneventive and do not involve an event variable at all. In that case, we will assume a homophonous *-er* suffix that is noneventive and takes a bare root as complement; the resulting nominalization is consequently of type <e,t> only:

(41)



The important point here is that both process AS-Ns and eventive *-er* nominals involve an event variable, and hence share a strong/grammatical eventuality interpretation. They only differ in the type of the outcome nominal. We claim in the rest of this section that this difference alone plays a crucial role in explaining the compatibility / incompatibility of the two sorts of eventive nominals (<e,t> vs. <v,t>) with event-related modifiers, namely aspectual PPs. The relevant data have been presented above and will now be discussed.

4.2. Locality of Predicate Modification

The puzzling difference between AS-Ns and eventive *-er* nominals concerning temporal/aspectual adjunct modifiers, has sometimes been taken as evidence that *-er* Ns are never eventive. We argue instead that they mark the type difference between <e,t> and <v,t> nominals, rather than the absence of underlying eventuality itself.

Temporal and aspectual event modifiers are structurally adjuncts. We assume that they combine with the nominal they modify via the rule of Predicate Modification (PM) stated in Heim and Kratzer (1998: 65).

(42) Predicate Modification
If α is a branching node, {β, γ} is the set of α's daughters, and β and γ are both in $D_{<e,t>}$, then
α = λx ∈ D_e . β (x) = γ (x) = 1.

PM is a conjunction operation. PM amounts to 'intersective modification' (i.e., Conjunctive composition) and captures the intersective reading of predicate modifiers:

(43) city in Texas
a. λx ∈ D_e. city (x) = in Texas (x) = 1
b. λx ∈ D_e. x is a city and x is in Texas

PM predicts that the intersective reading of an adjunct modifier and the nominal is only possible at the level where they merge. Importantly,

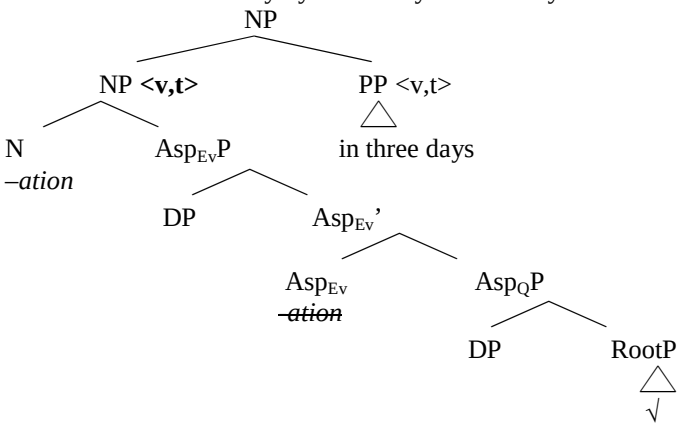
however, PM is only applicable when the two constituents β and γ are of the same semantic type. In their original proposal, both the β and γ elements are of type <e,t> (for predicates of individuals). Here, however, we extend the system to include a type difference between predicates of events, type <v,t> and predicates of individuals, type <e,t>. True to the basic principle, PM is only possible between two expressions of the same <v,t> or <e,t> type.

If modifiers are adjoined at the $Asp_{Ev}P$ level (i.e., associated to the underlying grammatical eventuality; cf. (39)-(40)), PM should be applicable in both eventive *-er* Ns and AS-Ns alike, and both classes of nominals should be equally compatible with the relevant aspectual PPs. The event modifying PPs are possible with AS-Ns but not with *-er* nominals, however. This suggests that the nominal type plays a role in allowing PM, and consequently that PM takes place at a level where the distinction is expressed. Concretely, it means, we propose, that adjunction takes place at the NP level, i.e. "after" nominalization rather than before nominalization.

The ban on aspectual PPs can be explained solely on the basis of the type difference between eventive nominals that take individuals or events. The basic intuition is that *driver* (type <e,t>) is not compatible with *for two hours* modifiers (type <v,t>) simply because it is a predicate of individuals and not of events. With process AS-Ns, the type of the PP modifier matches the type of the nominal and the rule of compositionality can be applied as in (44b).

(44) a. the destruction of the city by the enemy in three days

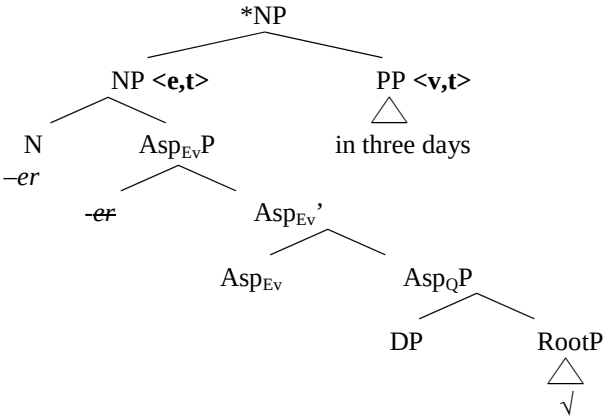
b.



While for eventive *-er* Ns, the type of the event modifying PP mismatches that of the nominal, which prevents PM from deriving the compositional meaning of the nominal complex:

(45) a. *the painter of the room in three days

b.



By definition, PM is a local compositional rule. Aspectual PPs can only be interpreted intersectively with respect to the predicate they immediately modify. Since aspectual PPs can only be interpreted intersectively with respect to the eventuality (and only the eventuality) they are directly combined with, structurally, it must correspond to the eventuality introduced by the functional projection they are directly adjoined to. Hence, modifiers adjoined at the NP level are interpreted intersectively with NP. This is only possible with AS-Ns: aspectual PPs are intersective with the noun:

(46) the destruction of the city by the enemy in 3 days

a. $\lambda e \in D_v$. destruction of the city by the enemy (e) = in 3 days (e) =1

b. $\lambda e \in D_v$. e is a destruction of the city by the enemy and e is (completed) in 3 days.[12]

As already discussed, this is excluded with eventive *-er* Ns because of type mismatch. If we wanted to adjoin an aspectual PP in the frame in (44), adjunction (and PM) could only take place at the Asp$_{Ev}$P level (due to the type constraints). This situation has, however, one important consequence for event nominals and for the understanding of how eventive *-er* Ns and process AS-Ns differ in their respective interpretation, even

though both involve an underlying grammatical eventuality. Very clear predictions are made in terms of interpretation of the adjuncts: the aspectual PPs can only be interpreted intersectively with respect to $Asp_{Ev}P$, and not to the NP. In other terms, PPs will be intersective with the embedded event and not with the (complex) NP. Cases of event modifiers inside the NP are possible with *-er* Ns and have been noted in the literature on French nominalizations (cf., in particular Kerleroux 2007). They behave in a systematic way: they are intersective with respect to the inner event, but non-intersective (and that may include a variety of interpretations; e.g., subsective) with respect to the N itself. Consider the following example:

(47) les pêcheurs sous la glace (=subset of fishers)
the fishers under the ice
"under-ice fishers" (due to Kerleroux 2007)

It has been noted that the nominal in (47) can under no circumstances describe individuals that are fishing and located under the ice. However, the important point is that the locative PP is interpreted intersectively with respect to the fishing (and *not* the fisher(s)): the fishing must take place under the ice, while no location is specified for the fishers. Modifiers at the VP /AspP level will always lead to a nonintersective reading for NP (i.e. a subset). Accordingly, going back to the original examples, (48) is possible but only when understood as subclasses of a (prototypical) class of nominals, and *not* in an event interpretation. Concretely, (48a) for instance, cannot be interpreted as *the x such that x is a runner and x is in 9 seconds* (because type mismatch prevents PM from applying at the NP level); but can be interpreted (with more or less pragmatic felicity; cf. (48) vs. (49)) as a subclass of runners (i.e. those than run in less than 9 seconds, with respect to a contextually determined run or running).

(48) les sprinters en moins de 9 secondes
the runners in less than 9 seconds
"the runners in less than 9 seconds"

(49) a. le donneur de sang (*?en cinq minutes)
the giver of blood in five minutes
"the blood donor (*?in five minutes)"
b. le dompteur des lions (*?pendant des années)
the tamer of.the lions for many years
"the lion tamer (*?for years)"

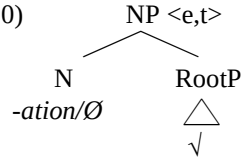
To conclude, adjunct PPs (including aspectual *in/for*-PP) are never allowed with *-er* Ns, as adjunction is precluded at the NP level. If adjunction takes place it can only be at the $Asp_{Ev}P$ level, leading systematically to a subsective interpretation with respect to NP (but intersective with respect to the lower $Asp_{Ev}P$). The subsective reading, however, is constrained by pragmatic reasons. Nominalization forms a local domain where the meaning is computed first and then further modifiers are possible, provided that they are of the right semantic type for PM to apply. Adjunction at the $Asp_{Ev}P$ level is possible but is interpreted as intersective with respect to the event only (via PM); adjunction is, in this case, not visible/accessible for the individual.[13]

Our results confirm what has been claimed in the literature since Grimshaw (1990); Van Hout and Roeper (1998); Borer (1999), namely that aspectual modifiers signal the presence of an underlying aspectual/verbal structure. However, the underlying event is only visible to adjuncts if the nominalization expresses a predicate of events and not of individuals. For a nominal to be built on an underlying event (hence a verbal/aspectual structure) does not equate to express a predicate of events. In that sense, there is no incompatibility between the fact that *-er* Ns denote individuals and the fact they, nevertheless, involve a grammatical event.

5. Extension to Simple Event nominals (SENs)

This view of events inside nominals, forced by semantic compositionality, allows us in turn to gain some understanding of the Simple Event nominals (SENs) traditionally left aside as problematic cases. Recall that SENs are interpreted as related to an event (e.g., *movie, meeting, concert*), yet they do not pass the tests for a strong/grammatical eventuality, but only the tests for a weak/conceptual eventuality: while they do accept predicates like *be interrupted, last x time*, and enter in the *during the N* construction, they do not (i) project arguments, (ii) allow *frequency* adjectives in the singular, (iii) allow PP aspectual modifiers like *in/for x time* (cf., Table 2).

Since SENs lack a grammatical event, they are not syntactically derived from a verbal/aspectual structure and we assume that they are simply formed from a root (whether they are morphologically complex as in the case of *meeting* or not, as in *concert, movie, attack*). Accordingly, they pattern structurally with R-Ns (including instrument *-er* Ns) rather than AS-Ns. Cf. (41).

(50) 

(SENs)

If this is correct, then the difference between SENs and AS-Ns boils down to the same semantic type difference between <e,t> nominals on the one hand and <v,t> nominals on the other. What we have described as grammatical vs. conceptual eventuality interacts with the type difference: conceptual eventuality is found with nominals that are of the <e,t> type, whereas grammatical eventuality is found with *event* denoting nominals that are of type <v,t>. In other words, SENs differ from AS-Ns in that they take an individual as argument (rather than an event); it just happens that for SENs that individual variable is an abstract entity, conceptually an event (rather than a concrete object as with *table*, *book*, and so on). Accordingly, SENs share properties with other R-Ns that are associated with reference to individual entities (including abstract ones): they are count and allow discrete quantification (*three movies, many concerts*; cf. (22a)), they do not take frequency adjectives in the singular (**the frequent concert*; cf. (21)) and do not take aspectual *in/for* PPs (52b). They differ, however, from other R-Ns in appearing with predicates like *took place*, *last x time* which seek for an event-denoting subject. However, this is only the result of their denoting abstract conceptual events (rather than concrete entities). In terms of the nominalization, for As-Ns, (51a) and (51b) are structurally and semantically related: the nominal form in (b) is derived from the verbal form in (a) and hence they share common semantic features. By contrast, for SENs, (52a) and (52b) are only conceptually related in the sense that their roots share the same conceptual/lexical content, but do not have internal grammatical structure.

(51) a. On a construit la cathédrale (en 100 ans).
one has built the cathedral in 100 years
b. La construction de la cathédrale (en 100 ans)
the building of the cathedral in 100 years

(52) a. Les membres du projet se sont réunis (pendant 3 heures).
the members of.the project refl have met for 3 hours
b. La/une réunion des membres du projet (*pendant 3 heures)
the/a meeting of.the members of.the project for 3 hours

As earlier, the incompatibility of SENs with *in/for* PPs derives from a type mismatch between <e,t> nominals and <v,t> type adjuncts. Nothing special needs to be said of SENs in that respect; nor regarding frequency modification. As expected, SENs accept frequency adjectives when in the plural only, and thus pattern with R-Ns. The *frequent* modifier is adjoined at the NP level and forces pluralization of the individual with <e,t> type Ns. By contrast, recall that frequency adjectives do not force the plural on the nominal when they quantify over the inner event introduced by $Asp_{Ev}P$ in eventive *-er* Ns and AS-Ns.

In sum, SENs can be straightforwardly integrated in our type semantic account as <e,t> Ns and their apparently mixed properties can be derived from their semantic type and the special kind of abstract object they denote.

6. Conclusion

To conclude, event-related nominals (and nominalizations) form a rather heterogeneous group that is traditionally split into three coherent classes: AS-Ns, SENs, eventive *-er* Ns. They share event related properties that distinguish them from noneventive nominals altogether (R-Ns). The distinct properties of the three groups of event-related nominals can be accounted for on the basis of two interacting notions of event inside nominals. On the one hand, we have argued that a fundamental difference exists between grammatical eventuality, associated to the structural projection of VP/AspP and hence a verbal syntactic base, and conceptual eventuality that is expressed lexically on roots. On the other hand, the semantic type of the outcome of nominalization turns out crucial in distinguishing nominals that denote individuals (type <e,t>) and those that denote events (type <v,t>). The two notions interact in a very straightforward way, leading to the typology of nominals in Table 3.

Nominals of type <e,t> come in three flavours. They may not involve any event (and thus be interpreted as concrete entities); or involve an underlying eventuality, which can be a conceptual one only (SENs) or a grammatical one (eventive *-er* Ns). For nominals of type <v,t> the logically possible combinations are much more restricted, however. As <v,t> nominals are eventive in the strong/grammatical sense (i.e., they involve an event variable that is introduced, by assumption, structurally), they require a grammatical event: <v,t>. They cannot involve a conceptual event or no event at all. The attested classes of nominals are, thus, precisely the ones that we should expect in our system.

NP type	Underlying eventuality	Nominal form
<e,t>	conceptual eventuality	SENs: *movie, play, concert*
<e,t>	grammatical eventuality: AspEvP <v,t>	eventive *-er* Ns: *driver, consumer* (e.g., *the driver of the truck to Paris*)
<e,t>	no eventuality	R-Ns (concrete individual entities): *table; exam; boy*
<v,t>	conceptual eventuality	**impossible
<v,t>	grammatical eventuality: AspEvP <v,t>	process AS-Ns: *destruction, examination, forming* (e.g., *the destruction of the city by the enemy*)
<v,t>	no eventuality	**impossible

Table 3: Typology of eventive and noneventive nominals

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Notes

[1] We thank the audience at the CASTL Workshop Categorization and Category Change in Morphology (University of Tromsø, dec. 2011), two anonymous reviewers, Bridget Copley, Florian Schäfer, and Hagit Borer for their helpful comments and discussion. We gratefully acknowledge support from the Program Structure Argumentale et Structure Aspectuelle–CNRS, Fédération TUL.

[2] We use the following abbreviations: *ev*–event; √–Root; *gen*–Genitive, *refl*–reflexive pronoun.

[3] We use the terms 'event' and 'eventivity' in a loose sense that does not discriminate between events properly speaking and states, and interchangeably with the term 'eventuality' introduced by Bach (1986).

[4] There is an interpretation for (16b) in which *lasted 3 hours* applies to the lifetime of the subject (here a concrete entity) and not to an event duration per se. Nevertheless, the conclusion that R-Ns are different from both SENs and AS-Ns is supported by their respective behavior with the other predicates, namely *take place*, *be interrupted*, among others.

[5] Similarly, the literature invokes the subject position of *occur*, *start* or *finish* (see e.g. Vendler 1967, Snyder 1998 among many others). We take all these tests as broadly indicating semantic eventivity in nominals, and do not broach on further semantic distinctions like the one between events and propositions, pointed at in the literature.

[6] As pointed out to us by a reviewer, SENs are compatible with another type of apparently temporal modifiers, namely *of x time*. Structurally, this modifier is not a VP modifier, however, and involves clear nominal modification; e.g. *a meeting/concert/movie of three hours in length*; we leave it aside at it is not relevant to the question of an internal grammatical event.

[7] Recent works on pluralization have shown that AS-Ns may sometimes accept plurals and discrete quantification when the nominals denote a bounded event; Borer (2005); Alexiadou et al. (2010). What is important here is that no such requirement is made for SENs.

[8] As discussed in the literature, frequency adjectives are often ambiguous between (at least) three readings: internal, adverbial and generic interpretations (cf., in particular, Gehrke and McNally 2012). Typical cases of frequency adjective + N, that do not involve argument structure (e.g., *an occasional sailor*, *an occasional beer*) are generic or adverbial. We are not concerned with these cases here, and refer the reader to Roy and Soare (to appear) for further discussion.

[9] As specified in Roy and Soare (to appear), the (b) example is ungrammatical under the right, i.e., event related, interpretation and in argumental position. Predicative uses generally seem to render the eventive reading accessible; compare *I bought a big grinder* (# "a tiny machine that grinds much") vs. *This is a big grinder* (ok: "a tiny machine that grinds much"). Predication may, however, contribute its own eventuality; for that reason we focus our discussion on argumental nouns exclusively.

[10] For the syntactic derivation of *-er* nominals we assume the results of Roy and Soare (to appear).

[11] In type semantics, e stands for entity; v stands for events. We use the following types: <e,t> for predicates of individuals, <v,t> for predicates of events, and <e,<v,t>> for a predicate with an open argument position.

[12] Preposition *in* gives the duration of the agent action that brings about the telos, for a telic predicate (Giorgi and Pianesi 2000)

[13] A phase-based approach to nominalization seems relevant to account for the domains of adjunction and interpretation (see, Chomsky 2008; van Hout and Roeper 2011, Bauke and Roeper (to appear)). The details of such an analysis would need to be worked out and we leave a proper implementation open for future research.