

# Derived Nominals

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- 1 Introduction
- 2 Transformationalist–lexicalist controversy
  - 2.1 Configurational Hypothesis
  - 2.2 Non-configurational thematic approaches
- 3 Result/process ambiguity
- 4 The event-structure theory of nominalizations
- 5 Neo-transformational accounts of nominalizations
  - 5.1 Parallel Morphology and derived nominals
  - 5.2 Picallo's account
  - 5.3 Gerunds as nominalizations
  - 5.4 Alexiadou's ergativity patterns of derived nominals
- 6 Problems with nominals derived from intransitive predicates
- 7 Configurational accounts of nominalizations cross-linguistically
- 8 More on aspectual properties of derived nominals
  - 8.1 Aspect in English derived nominals
  - 8.2 Aspect in Polish derived nominals
  - 8.3 Aspect in Russian derived nominals
- 9 Borer's Exo-Skeletal approach (XS model)
- 10 Psych nominals
- 11 Deadjectival nominalizations
- 12 Conclusion

## 1 Introduction

Derived nominals are nominal structures derived from other syntactic categories by means of derivational affixes. In modern linguistic tradition this term is associated with deverbal nominalizations denoting eventualities of various sorts (as opposed to, e.g., agentive *-er* nominals). In the generative tradition the study of derived nominals thus understood dates back to Lees (1960). Since then, during subsequent

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stages of the development of the theory of grammar and as a result of the ever growing interest in nominalizations, various problems have been identified and their number keeps growing in view of the recent intensive cross-linguistic studies.

Cross-linguistically, derived nominals have a mixture of nominal and verbal properties. As categorial hybrids they constitute a challenge to the modern theory of grammar. Even in a single language such as English there is a whole range of nominalizations, such as derived nominals proper (*destruction*), nominal gerunds (*the destroying of the city*), or verbal gerunds (*destroying the city*) (see Gerundive Nominalizations), whose structures are quite diversified with respect to their nominal and verbal properties. Different languages show different nominalization patterns and variations. Therefore it is very difficult to develop a theory that would provide a consistent account of all the varieties. There is no consensus as to the nature of the nominalization process and the relationship of the derived nominal to the base verb. Among derived nominals, action nominalizations (that is, those derived from Agent–Patient verbs like *destroy*) have been studied most extensively. They have usually constituted the basis for the development of various theories, which, on closer scrutiny, do not always work when confronted with derived nominals from other semantic classes, such as, for example, nominalizations of the notorious Experiencer verbs like *fear* or *amuse* (see Psychological Verbs and Psychological Adjectives). The mixed categorial nature of derived nominals, the inter-language and intra-language variations, as well as the Experiencer problem have inspired research in this area, at the same time leading to a lot of controversy. Here we will be primarily concerned with the derived nominals proper, and not with gerundial constructions or nominal infinitives (see Gerundive Nominalizations). The prototypical derived nominal is presented in (1):

- (1) a. the enemy's destruction of the city
- b. the destruction of the city by the enemy
- c. the city's destruction by the enemy

Koptjevskaja-Tamm (1993), following the tradition represented earlier by Comrie (1976) or Comrie and Thompson (1985), provides an exhaustive cross-linguistic and typological classification of languages with respect to action nominal constructions (ANCs). Typological studies reveal that languages vary as to the closeness of nominalizations to underived noun phrases or to verb phrases in respect of both semantic and syntactic properties. Their intermediate nature is unquestionable, though: they are indeed a mixed category rather than an independent category whose properties would be different from those of NPs or VPs. Although they have nominal external distribution, their internal syntax is often not unlike that of a VP. The degree of their “nouniness” and “verbness” varies from the point of view of both intra-language and inter-language variation. For a long time all these facts were problematic in view of the generally endocentric phrasal pattern encapsulated in the X-bar conventions and the prevailing generative conception of syntactic categories as discrete elements within a system of contrastive oppositions. In view of the universality of the noun/verb distinction (which is assumed in different linguistic traditions; see Sapir 1921, 117–119; Hopper and Thompson 1985), the task of a linguistic theory is to provide an account of the categories which clearly show both nominal and verbal properties. The history of nominalization studies shows that

at various points different aspects of the properties of derived nominal structures were discovered and emphasized. Particular theories focus either on what nominalizations share with verbs or on what makes them nominal. There is no single division line between various approaches, though some researchers try to simplify the issue and group the approaches into complementary pairs. Thus we often encounter such binary divisions as transformationalist vs. lexicalist approach, or syntactic vs. lexical derivation.

## 2 Transformationalist–lexicalist controversy

This binary contrast is assumed by Borer (1991; 1993), Koptjevskaja-Tamm (1993), and Fu (1994). The early transformational approach is represented by Chomsky (1957) and Lees (1960) and contrasted to the Lexicalist Hypothesis developed in Chomsky (1970). The transformationalist approach is to make the link between derived nominals and their corresponding verbs a matter of syntactic derivation; the lexicalist approach is to express the link in the lexicon. In the early stages of the development of generative grammar the only possibility of expressing the link between related structures was via a syntactic transformational process operating on sentences, which by its nature accounted for clausal properties of derived nominals. Chomsky's (1970) seminal paper "Remarks on Nominalization" was a reaction to the transformationalist hypothesis. He argued against a transformationalist analysis of derived nominals, illustrated further in (2) and having their sentential counterparts in (3):

- (2) a. John's eagerness to please  
 b. John's refusal of the offer  
 c. John's criticism of the book
- (3) a. John is eager to please.  
 b. John has refused the offer.  
 c. John criticized the book.

Chomsky (1970) pointed out that the following properties of derived nominals are problematic for the transformationalist approach:

- The productivity of derived nominals is restricted.
- The semantic relations between the associated proposition and the derived nominal are quite varied and idiosyncratic.
- The nominal has the internal structure of a noun phrase.
- Well-known transformations that apply to sentences (such as raising to object, raising to subject, or dative shift) are barred from nominalizations.

He provided an alternative account, the Lexicalist Hypothesis, according to which derived nominals constitute separate items in the lexicon. Building on an elaborated system of syntactic features introduced in Chomsky (1965), he proposed that the same selectional properties of verbs and related nominals should be captured by

the same lexical entry with the same selectional requirements, but neutral with respect to the category. This gave rise to X-bar theory, widely adopted in modern grammar and extended later on. X-bar theory postulates a lexical entry that is underspecified with respect to the category, but whose other grammatical features, such as subcategorization and selectional properties are specified and projected irrespective of the category it is inserted into. In this way the link between a derived nominal and its corresponding verb was located in the lexicon, that component of the grammar where all the idiosyncrasies are listed. This theoretical move took care of the problems enumerated above. Since then, for some time the consensus was that nominalizations are base-generated in the lexicon rather than syntactically derived. However, the question of the relationship between nouns and verbs has not been settled. Rather, it has become much more complex and now it occupies a central place in theoretical research. The dominating tendency in recent studies is to return to the spirit (but not the machinery) of the early transformational account in a new guise. New mechanisms have been introduced which allow different derivations of different types of derived nominals. Both the lexical tradition and the syntactic tradition in nominalization studies have come to the point where it is necessary to recognize syntactically different, though morphologically identical, deverbal derived nominals. There are various independent versions of what might be regarded as the neo-transformational approach. Differ as they may in initial assumptions and theoretically important details, they share the basic claim that the difference in interpretation and argument distribution corresponds either to the level at which a morphological operation takes place or to the functional layers that are dominated by the nominal head.

The point of departure for the various approaches is the argument distribution in nominals as compared to verbs. Even from the point of view of this single property it turns out that the debate cannot be reduced to the simple transformationalist-lexicalist controversy.

## 2.1 Configurational Hypothesis

The lexicalist approach developed in various directions. One of its versions is represented by Giorgi and Longobardi (1991), who develop Chomsky's (1970) assumption that the structure related to a verb is the same as that related to the corresponding noun. Accordingly, their thematic properties remain the same as well. To put it in simple words, both nouns and verbs have subjects and complements, and both nouns and verbs assign  $\theta$ -roles to the respective positions in the same way. Furthermore, various rearrangements of arguments within the nominal and verbal projections are due to the same principles of grammar such as "Move  $\alpha$ ," which apply both in the domain of clauses and in the domain of noun phrases. Thus the well-known analogy illustrated in (4) and (5) below obtains:

- (4) a. The barbarians destroyed the city.  
 b. The city was destroyed by the barbarians.
- (5) a. the barbarians' destruction of the city  
 b. the city's destruction by the barbarians

Under this approach (5a) and (5b) are transformationally related in the same sense in which (4a) and (4b) are, and the possessive phrases of (5) have the same prominence as the surface subjects of (4). These views are generalized into the Configurational Hypothesis, consisting of two clauses:

(6) *Configurational Hypothesis:*

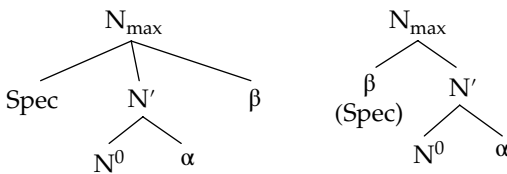
- It is possible to identify, within NPs, definite  $\theta$ - (and non- $\theta$ -) positions at various levels of hierarchical attachment: whenever an element of the N-frame appears in a position arguably different from the one where it should be projected at D-structure, its displacement must, then, be governed by the general conditions holding on antecedent-trace relationships created by "Move  $\alpha$ "; moreover, the binding of anaphors and pronouns in NPs obeys the same constraints as observed in clauses.
- The  $\theta$ -structure of Ns (their  $\theta$ -grid and the conditions on  $\theta$ -assignment) strictly parallels that of Vs, so that the differences appearing on the surface must be due to the intervention of other modules of grammar which determine some systematic variation (Giorgi and Longobardi 1991, 2).

To accommodate the differences in the distribution of NP satellites between Germanic and Romance languages, Giorgi and Longobardi enrich the X-bar theory with the directionality parameters: "Head-Complement" and "Head-Subject." Internal arguments are projected to the right of the head in Romance and in Germanic; external semantic functions are licensed at D-structure on the right in Romance but on the left in Germanic, as represented in a simplified way in (7):

(7) *The Head-Subject Hypothesis:*

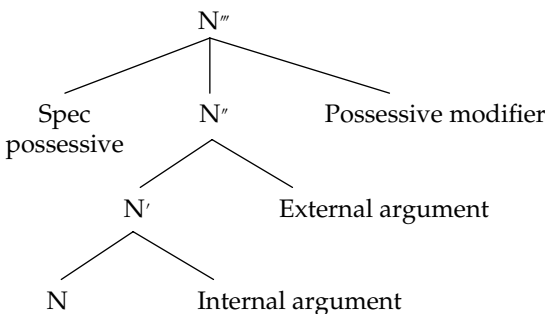
a. Romance

b. Germanic



Next, on the grounds of binding evidence, Giorgi and Longobardi propose a three-layer structure for an Italian NP:

(8)



In (8) in addition to the external argument, there is a place for a possessive modifier, which is attached higher than the external argument. In Italian NPs, all the occurrences of satellites to the left of N are the result of movement to Spec (core case of movement), which together with the Possessivization Principle quoted in (9) is supposed to account for the distribution of arguments and for the binding facts in Italian:

(9) *Possessivization Principle:*

The unique phrase allowed to appear as a possessive is the hierarchically highest genitive argument of an NP (Giorgi and Longobardi 1991, 68; see also External Possession and Possessor Raising).

Giorgi and Longobardi claim that the syntactic template of the NP determined by the parameters fully predicts the distribution of arguments in nominals. This is by virtue of the fact that the null assumption of the Configurational Hypothesis is that all the grammatical processes, including the  $\theta$ -assignment conditions, are identical for verbs and nouns. On this approach no reference to lexical or semantic information is allowed, apart from recognizing the classic syntactic distinction between external and internal arguments (introduced by Williams 1981) in the  $\theta$ -grid of a lexical item, neutral with respect to the category. Given the syntactic template for the NP with canonical D-structure positions for the internal and external arguments of the  $\theta$ -grid (a distinction which is equivalent to the distinction between the object and the subject), the distribution of arguments is predicted. By nature, the configurational approach refers neither to the content of thematic roles nor to any other kind of lexical information.

Giorgi and Longobardi (1991) are primarily concerned with the structure of NP as such. They do not discuss complexities within the domain of derived nominals such as the result/process distinction. Nor do they provide any explanation for the failure of Agents of transitive actions to surface as subjects of NPs, which is attested in a number of languages (e.g., Romance, Slavic, Modern Greek, Hebrew), as opposed to Agents of result nominals (sometimes also referred to as material nouns). The significance of these patterns and the details are extensively discussed in Borer (2013) (see also section 9 below).

## 2.2 Non-configurational thematic approaches

The configurational hypothesis assumes complete parallelism between verbs and nouns and, as described in the previous section, mapping principles are stated in syntactic terms. On closer investigation it turns out that the argument realization in derived nominals depends on some semantic distinctions which the categorial view ignores. Those who recognize the distinctions differ in what they consider crucial for stating important generalizations.

The regular pattern in (1), which gave rise to the categorial lexicalist approach, is attested only for prototypical Agent–Patient predicates. English nominalizations from verbs with non-affected objects (see Affectedness) do not have a passive nominal:

- (10) a. John enjoys the movie.  
 b. The movie is enjoyed by John.  
 c. John's enjoyment of the movie  
 d. \*the movie's enjoyment by John

Anderson (1984) proposes a constraint which prohibits movement of non-affected objects to the Specifier position of an English NP. In addition to cases like (10) we observe the non-existence of nominalizations derived from Object Experiencer verbs (see Psychological Verbs and Psychological Adjectives):

- (11) a. \*the book's amusement of the children  
 b. \*the news' terror/horror of Mary  
 c. \*his rude behavior's disgust of Mary  
 d. \*the book's delight of the public

The regularity of the patterns illustrated in (10) and (11) inspired lexicalist non-categorical thematic approaches to nominalization represented among others by Amritavalli (1980), Rappaport (1983), Hoekstra (1986), and Rozwadowska (1988). Their essence is the claim that formal realization of arguments is determined by their thematic role with respect to the head. In other words, it is not the syntactic structure (specifier and complement in (7)) which is directly inherited from the verb by the nominal, but the thematic grid. The mapping rules are then formulated directly in terms of thematic relations assigned by a predicate. Moreover, verbal and nominal projections are treated separately, and accordingly, the mapping rules between  $\theta$ -roles and structural positions for nominals are formulated separately from the corresponding verbal projections. The  $\theta$ -grid itself can be shared by nominals and verbs, but the rules are independent.

Although the thematic generalizations formulated in various ways and using various thematic labels are observationally adequate, the explanatory value of thematic generalizations both with respect to nominalizations and with respect to other grammatical phenomena has been questioned. Thematic systems are notorious for the arbitrariness of their definitions and the multiplicity of their thematic labels. New thematic labels are often introduced as the need arises, and it is quite difficult to achieve a consensus on what and how many thematic relations do exist. The attempts to decompose the thematic labels into a small, finite set of features (such as, e.g., Rozwadowska 1988; 1989; 1992; Reinhart 1996) reduce the number of primitives and account for the substantial overlap among the traditional atomic concepts but do not provide any more principled, motivated, or explanatory basis for the generalizations.

The next stage in the non-configurational lexical approach was the event-structure approach to derived nominals developed by Grimshaw (1990) and discussed in section 4. The event-structure approach is closely connected with the result/process ambiguity discussed in section 3. The Event Structure Theory of nominalization developed in Grimshaw (1990) can be placed in between the configurational (categorical) view and the thematic view. There are two important ingredients of this approach. First, it makes crucial use of the distinction between result nominals and process nominals; and second, it introduces a derived lexical level of argument structure, which determines both the argument distribution in nominalizations and the existence of a nominalization itself. The mapping rules do not refer directly to thematic roles, but to the lexical level of Argument Structure,

which is derived from the Lexical-Conceptual Structure via a two-dimensional hierarchy, one dimension being thematic and the other aspectual. The aspectual hierarchy presupposes the existence of an event structure in the sense of Pustejovsky (1988; 1991). Thus, ultimately, nominalizations are analyzed in terms of event structure.

### 3 Result/process ambiguity

Significant ambiguities within the system of nominalization were discussed by Anderson (1984), Walinska de Hackbeil (1984), Grimshaw (1986; 1990), Lebeaux (1986), Roeper (1987), Zubizarreta (1987), Malicka-Kleparska (1988), Picallo (1991), Bottari (1992), Schoorlemmer (1995; 1998a), Rozwadowska (1997), Engelhardt and Trugman (1998a; 1998b), Rappaport (1998), Sichel (2010), and Alexiadou (2001), among others. Anderson (1984) distinguishes between concrete nouns, such as *store*, which take lexical possessives, and abstract nouns, such as *reliance*, where the possessive morpheme *'s* in the specifier position is inserted transformationally. A similar distinction between abstract and concrete nominals is the basis for Malicka-Kleparska's (1988) distinction between regular nominalizations and their irregular lexicalizations. Walinska de Hackbeil (1984) discusses a relation between clausal nominals with a full  $\theta$ -grid, and the so-called  $\theta$ -nominals, where one of the argument positions is absorbed in the lexical process. The properties of the clausal nominals as contrasted to those of the  $\theta$ -nominals are illustrated below:

- (12) a. Possession \*(of such a knife) was her dream.  
 b. This is my favorite possession (\*of such a knife).
- (13) a. Their acquisition by the museum was thoughtless.  
 b. \*Their recent acquisitions are here. (ungrammatical on the passive interpretation)
- (14) a. The doctor coldly observed this nervous crossing and uncrossing of legs.  
 b. This (\*un)crossing on the Ave is dangerous.

In (12a) the clausal nominal requires the presence of the theme argument, which contrasts with (12b), where we have the corresponding  $\theta$ -nominal with no argument possible. Examples in (13) illustrate the possibility of passivization within the clausal nominal and its impossibility in the case of the  $\theta$ -nominal. This is claimed to be a consequence of the absence of the argument structure in the latter case. Example (14) illustrates the difference between the two kinds of nominals with respect to propositional negation. To summarize Walinska de Hackbeil's observations, the action/process nominals in the (a)-examples above are clausal nominals because they share a number of properties with clauses, while the  $\theta$ -nominals in the (b)-examples lack such properties.

The distinction between process nominals (since Grimshaw 1990, these are often referred to as Complex Event Nominals and abbreviated to CENs) and result



nominals has been well documented cross-linguistically. Zubizarreta (1987) draws a similar distinction between result and event nominals and accounts for the difference between them with respect to argument realization, illustrated in (15) and (16) for Romance languages. The nominals in (16) have only the event interpretation as opposed to the result interpretation in (15):

## (15) Italian

- a. la descrizione degli avvenimenti di Gianni  
the description of the facts of Gianni  
'Gianni's description of the facts.'
- b. la description du paysage de Pierre (French)  
la descripción del paisaje de Pedro (Spanish)  
'Pierre's description of the landscape'
- c. sa description du paysage (French)  
su descripción del paisaje (Spanish)  
'his description of the landscape'

- (16) a. la description du paysage par Pierre (French)  
la descripción del paisaje por Pedro (Spanish)  
'the description of the landscape by Pierre'
- b. l'interprétation des données par Pierre (French)  
la interpretación de los datos por Pedro (Spanish.)  
'the interpretation of the data by Pierre'
- c. la traduction de l'oeuvre de Balzac par Pierre (French)  
la traducción de la obra de Balzac por Pedro (Spanish)  
'the translation of Balzac's work by Pierre'
- d. la démonstration du théorème de Pythagore par Pierre (French)  
la demostración del teorema de Pitagora por Pedro (Spanish)  
'the proof of Pythagoras' theorem by Pierre'

The main difference between (15) and (16) is that the Agent is realized as the second postnominal genitive (or a prenominal possessive pronoun) with result nominals but in the *par*-phrase (the equivalent of the English *by*-phrase) with event nominals. There is a clear complementary distribution between these two varieties. Similar facts obtain in other languages. The clear difference between result nominals and process/event nominals with respect to both the internal and external distribution, including co-occurrence with adjectives and adverbs, is discussed for Italian in Bottari (1992); for Catalan in Picallo (1991); for Greek in Markantonatou (1995), Alexiadou (2001) and numerous references therein; for Russian in Schoorlemmer (1995; 1998a; 1998b), Engelhardt and Trugman (1998a; 1998b), Rappaport (1998); for Polish in Rozwadowska (1997), Willim (1999; 2000); for Hebrew in Borer (2013) and references therein. These cross-linguistic data show that in addition to the distinctions between process and result nominals identified for English, the transitive result nominals in Romance, Slavic, Greek, and Hebrew allow two adnominal genitives, in contrast to the process/event nominals, which do not. The latter may take only one adnominal genitive, always expressing the Theme (Patient) argument. The Agent must appear in an optional prepositional phrase or in the instrumental case (equivalents of the English *by*-phrase). Romance and Polish, but not Hebrew (see

Borer 2013) allow a prenominal genitive realization of the Agent argument for pronouns. Cetnarowska (2005) claims that in certain contexts even non-pronominal Agents can appear in a prenominal position in Polish.

While the contrast between result nominals and process nominals is uncontroversial and widely recognized, the terminology and the views are not uniform. For instance, nominals with a *by*-phrase are often referred to as passive nominalizations. In a non-standard way, Alexiadou (2001) takes the single genitive restriction as an indication of intransitivity and accordingly refers to them as intransitive nominals. Consistently, result nominals taking two adnominal genitives are treated by her as transitive nominals. Borer (2013), in turn, refers to process nominals with a full argument structure as *long AS nominals*, illustrated in (17) and (18), for English and Hebrew respectively, and introduces the label *short AS nominals* for nominals in which the logical subject is either missing or expressed through a *by* phrase, as in (19) for English and (20) for Hebrew:

- (17) a. the scientist's formation of complex molecules  
 b. the scientist's forming of complex molecules
- (18) Hebrew  
 hapcacat ha.maʔos 'et ha.bayit  
 bombing the.plane OM the.house  
 (OM = object marker)
- (19) a. the formation of the committees (by the new deans)  
 b. the (organized) reaction to the austerity measures (by the Greek population)  
 c. the (repeated) voting against the bill (by the young Republicans)
- (20) Hebrew  
 a. ha.hokaxa šel ha.ʔeʔana (ʔal yedey ha.matematika'it  
 the.proof of the.claim (by the.mathematician)  
 b. ha.šiqqum šel ha.ʔir (ʔal yedey ha.šilʔonot)  
 the.rehabilitation of the.city (by the.authorities)  
 'the rehabilitation of the city (by the authorities)'

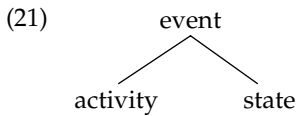
Borer (2013) argues extensively for the passive nature of short AS nominals. Additionally, among passive nominals Borer identifies raising nominals, where the object is realized in the prenominal position.

The obvious contrast between event/process nominals vs. result/referential nominals led to the development of various approaches concerning both the internal structure and the derivation of the respective subtypes of derived nominals. Zubizarreta (1987) attributes that difference to a universal distinction between *description*-type nominals and *destruction*-type nominals: the former are ambiguous between the result, non-argument-taking nominal, and the event nominal with predicate–argument structure, whereas the latter have only the event interpretation. To capture this distinction, Zubizarreta stipulates that in Romance nominals the adjunct genitive phrase (i.e., the external postnominal argument in Giorgi and Longobardi's 1991 theory), generated in the postnominal position immediately under the NP node (illustrated in (7a) above), has two essential properties: it is

lexically marked as +Poss and syntactically bound to the Specifier position. Zubizarreta defends the hypothesis that the nominals which denote an event cannot carry a Poss variable, while the nominals which denote the result of a process can. This explains the contrast between the *destruction*-type and the *description*-type nominals: the event nominals (such as *destruction*), in contrast to the result nominals, cannot carry the Poss variable, and consequently the genitive adjunct *de NP* cannot receive an interpretation.

#### 4 The event-structure theory of nominalizations

The result/event ambiguity was taken as the starting point for a more elaborated theory developed by Grimshaw (1990), who refers to that ambiguity as the result/process distinction and links the ambiguity with aspectual properties, arguing that the real distinction is between nouns that have an associated event structure (the so-called Complex Event Nominals – CENs) and nouns that do not. The latter include both the result nominals discussed in section 3 and Simple Event Nominals (abbreviated to SENs) such as, for example, *examination* (=exam), *race*, *war*, *storm*, and so on. An example of the internal event structure for an accomplishment, analyzed as consisting of two subevents, is given in (21):



For an event to count as complex, it does not need to be necessarily a branching event. This means that one of the branches may be empty. It is only crucial that it should be analyzable in terms of aspectual distinctions – that is, that it has some temporal organization. Thus all kinds of Vendlerian events count as complex: activities, achievements, accomplishments, and also states (such as, for instance, *fear* or *love* in Grimshaw’s analysis).

In Grimshaw’s theory, argument structure is composed from the thematic and aspectual analyses of a predicate according to the respective hierarchies given in (22a) and (22b). She hypothesizes that any predicate lacking an aspectual analysis will also lack an argument structure and will never take any grammatical arguments at all.

- (22) a. (Agent (Experiencer (Goal/Source/Location (Theme))))  
 b. (Cause (other (...)))

The prediction is that complements to CENs will be obligatory (i.e., capable in principle of being obligatory but perhaps subject to lexical variation). Since derived nominals are often ambiguous, it is not always obvious how they behave with respect to their argument-taking properties. On closer investigation it turns out that only on their complex event interpretation can they take grammatical arguments (but see sections 5.4 and 7 for different views on argumenthood of derived nominals

in Alexiadou 2001; 2009; Bašić 2010; Markova 2010; among others). The result nominals take neither Agent nor Patient (or Theme). The CENS do not pluralize, while the result nominals or SENs do. Moreover, the CENS can be modified by aspectual adverbs. These contrasts are illustrated in (23):

- (23) a. The assignments were long. (no a-structure)  
 b. the assignment \*(of unsolvable problems) by the instructor  
 c. Only observation of the patient for several weeks can determine the most likely ...  
 d. These observations are very interesting. (no a-structure)

The modifiers *frequent* and *constant* force the complex event reading of the noun and thus its a-structure must be satisfied. Therefore (24b) and (25b) are not grammatical:

- (24) a. The expression is desirable.  
 b. \*The frequent expression is desirable.  
 c. The frequent expression of one's feelings is desirable.  
 d. We express \*(our feelings).
- (25) a. The assignment is to be avoided.  
 b. \*The constant assignment is to be avoided.  
 c. The constant assignment of unsolvable problems is to be avoided.  
 d. We constantly assign \*(unsolvable problems).

Although Grimshaw's lexical event-structure-based approach suffers from various drawbacks (as pointed out in Rozwadowska 1997; 2000; Bašić 2010; Markova 2010; Sleeman and Brito 2010a; 2010b; Borer 2013; among others), its insight and influence are uncontroversial. Table 1 (taken from Borer 2013 and based on Grimshaw 1990) summarizes the essence of Grimshaw's distinction between two types of derived nominals. The labels *R-nominals* (nominals with individual reference) and *AS-nominals* (argument structure nominals, by assumption including the event argument) correspond to Grimshaw's result nominals and CENs respectively.

According to Grimshaw, the process of nominalization consists in the suppression of the external argument, defined as the argument which is most prominent on both the thematic and the aspectual hierarchies quoted in (22) above. The

**Table 1** Comparison of properties of R-nominals and AS-nominals

<i>R-nominals</i>	<i>AS-nominals</i>
No role assignment; no obligatory complements	Role assignment; obligatory arguments
Event reading not necessary	Event reading necessary
No agent-oriented modifiers	Agent-oriented modifiers
Subjects are possessives	Subjects are arguments
<i>By</i> -phrases are non-arguments; in Spanish select <i>de</i> , in Hebrew <i>šel</i>	<i>By</i> -phrases are arguments; in Spanish select <i>por</i> , in Hebrew <i>'al yedey</i>
No implicit argument control	Implicit argument control
No aspectual modifiers	Aspectual modifiers

non-existence of nominals in (26a)–(26b) is explained as a consequence of the non-existence of the external argument in the case of Object Experiencer (OE) predicates (see Psychological Verbs and Psychological Adjectives): there is a conflict in prominence between the thematic and the aspectual dimensions. Thus, the highest argument on the thematic hierarchy is the Experiencer whereas the highest argument on the aspectual hierarchy is the Cause, and so there is no argument which could be most prominent on both dimensions, thus qualifying for being the external one. The nominals in (26c)–(26e) are claimed to be result nominals without argument structure – their satellites are mere modifiers:

- (26) a. \*the event's embarrassment/humiliation of Mary  
 b. \*the movie's (constant) amusement/entertainment of the children  
 c. Mary's embarrassment/humiliation  
 d. the embarrassment/humiliation of the bystanders  
 e. the amusement/entertainment of the children

The suppressed external argument can be realized in a *by*-phrase, which is an argument-adjunct (a-adjunct) linked to it. As summarized in (27), the *by*-phrase is licensed by any suppressed external argument in passives but only by an Agent in nominals:

- (27) a. *by*, a-adjunct, external argument (verbs)  
 b. *by*, a-adjunct, Agent (nouns)

If there is no external argument, the nominalization does not exist, and the *by*-phrase is not licensed. Generalization (27b), originally proposed by Rappaport (1983), is supposed to explain the impossibility of the Experiencer of a Subject Experiencer predicate (see Psychological Verbs and Psychological Adjectives) being realized in the *by*-phrase, as illustrated in (28):

- (28) a. \*fear of flying by many people  
 b. \*dislike of flying by many people

With respect to argument distribution, the predictions of Grimshaw's theory can be summarized as follows: both the *by*-phrase and the prenominal possessive are a-adjuncts linked to the external argument, lexically suppressed in the process of nominalization. Only complex events undergo the process of nominalization and only such CENs have an argument structure. All the other nominals are either result nominals or SENs, and the rule of suppression of the external argument of a predicate does not apply to them. Grimshaw emphasizes that the introduction of the external argument *Ev* for CENs (defined as the most prominent on the hierarchies in (22)), which does not correspond to the external argument of the verbal base but is another element, provides an explanation for the restrictions on the *by*-phrase in nominals. The pattern in (27) is no longer accidental.

Grimshaw's theory inspired a lot of cross-linguistic research and raised a lot of controversy. The division of nominals into three types (i.e., results, simple events, and complex events) has been generally accepted. What have been questioned

though are the suppression mechanism and the explanation for the distribution of the *by*-phrase (see Rozwadowska 1997; 2000) as well as the lexical nature of the account as such (see Borer 2013 for an extensive argumentation in favor of the syntactic explanation). Another controversy concerns the debate whether derived nominals and which ones are instances of passive nominals (see Borer 1993; 2013; Engelhardt and Trugman 1998b; Rappaport 1998; Schoorlemmer 1998b; Alexiadou 2001; Cetnarowska 2005). Finally, more subtypes of derived nominals have been recognized in various languages (see Alexiadou and Rathert 2010b), which Grimshaw's lexical account cannot accommodate.

## 5 Neo-transformational accounts of nominalizations

Another line of research is represented by Borer (1991; 1993), Picallo (1991), Fu (1994), Hazout (1994; 1995), Schoorlemmer (1995; 1998a; 1998b), Engelhardt and Trugman (1998a; 1998b), Roeper (2005); Van Hout and Roeper (1999), and Alexiadou (2001; 2009). They argue for the syntactic derivation of process nominals in contrast to the lexical derivation of result nominals. Thus their approach can be treated as the revival of the early transformationalist approach within a much more sophisticated and refined syntactic theory, which offers mechanisms and solutions capable of overcoming the drawbacks of the early transformational account. Individual researchers differ in many points, but they all share the assumption that the environment for the morphological operation of combining the nominalizing suffix with the root may be regulated by the presence vs. absence of different functional projections and/or syntactic processes. The inspiration for this approach is the Parallel Morphology model developed by Borer (1991; 1993).

### 5.1 Parallel Morphology and derived nominals

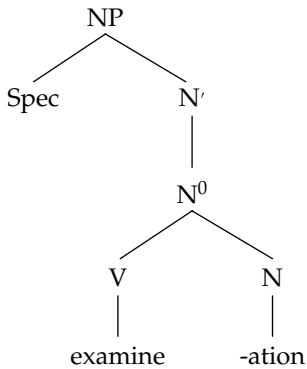
In contrast to the traditional view on the autonomy of the word-formation component, which assumes a linear ordering between morphology and syntax, Borer (1991; 1993) considers an alternative notion of autonomy which allows the interaction between the two modules in a parallel fashion. According to her, a module is autonomous if (i) it has a distinct set of primitives not found in other modules, and (ii) it constitutes a coherent set of formal operations which are distinct from those found in other components. Given this notion of autonomy, there is no need to maintain that two autonomous modules interact with one another at a fixed unique point (like D-structure level in the standard approach). A word can be derived either in the lexicon, before the D-structure insertion, or later on, after D-structure. The post-D-structure word-formation is novel as compared to the lexicalist approach. The relevant aspects of the output of each syntactic operation are available to the word-formation component, and likewise, the relevant aspects of the output of each word-formation operation are available to syntax.

A morphological word, an M-word, is the output of the autonomous morphological component with its independent restrictions and properties. Syntactic operations, such as the head-to-head movement, can create the environment in which such word formation can take place. In that case the word formation takes place after a syntactic operation. This process is referred to as the syntactic derivation as opposed to the lexical derivation, which takes place in the lexicon, without any prior syntactic processes. So, the word  $[YX]_x$ , where X (the affix) is the head, can be derived either in the lexicon, prior to D-structure insertion, or in syntax, after D-structure. In the former case the properties of Y, the non-head (the root the affix attaches to) are opaque, whereas in the latter case the properties of the non-head are transparent, because it originates in a syntactic head position, and then is raised to adjoin to the affix. Parallel Morphology attributes the transparency of a non-head of a word to the presence of a syntactic projection of that non-head. The transparent properties include both argument structure and adjunct phrases of the non-head. In this regard, Parallel Morphology differs from lexicalist approaches in assuming that the non-head is syntactically present in the structure.

A word inserted following D-structure, which is both an M-word and an  $X_0$  with a complex syntactic structure, results in the impossibility of any semantic drift in that case. The dual representation as both M-word and  $X_0$  with an internal structure ensures that such words will always have as a subpart of their meaning the semantic and selectional properties of the phrases embedded in them, or a violation of the Projection Principle would result. M-words which do not have a syntactic representation are not thus constrained. Some properties of the embedded morphemes may and will disappear, without any violation resulting.

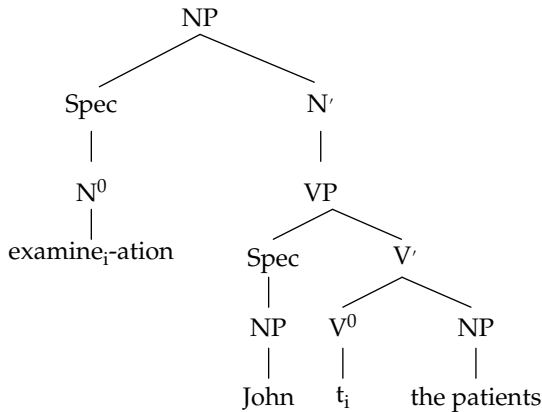
Parallel Morphology (or its spirit) has been adopted in recent accounts of mixed categories, in particular nominalizations. Borer (1993) uses her model to account for the result/process ambiguity of derived nominals by attributing it to the presence of the VP constituent within the NP in the case of process nominals and its absence in the case of result nominals. A result nominal is formed in the lexicon and can be inserted at D-structure as an  $N_0$ , which then projects an NP like an ordinary noun:

(29) an examination (= an exam)



A process nominal, on the other hand, is inserted at S-structure. The environment for the respective morphological rule to apply is created by V-raising, which takes place to satisfy the morphological requirement of the N (-ation):

(30) the examination of the patients by John



The Parallel Morphology approach directly accounts for the presence of argument structure in the case of process nominals (here attributed to the presence of the VP) and its lack in the case of result nominals. However, mere presence of the argument structure is not the most important criterion for the V-raising (neo-transformational) approach as such, because in lexical accounts the presence of the argument structure can be attributed to the inheritance of the  $\theta$ -grid. Therefore, further evidence has been brought up in defense of the V-raising structure for derived nominals. This has been done for various languages: Fu, Roeper, and Borer (1995) argue for the presence of the VP in English derived nominals on the basis of their admitting certain adverbs and the *do-so* test. Hazout (1994; 1995) presents evidence for the presence of the VP constituent in the action nominalization constructions in Hebrew and Arabic, while Fu (1994) gives extensive support for the V-raising structure in Chinese derived nominals, at the same time modifying and extending Borer's original idea. Schoorlemmer (1995) and Engelhardt and Trugman (1998a; 1988b) adopt parallel morphology for Russian.

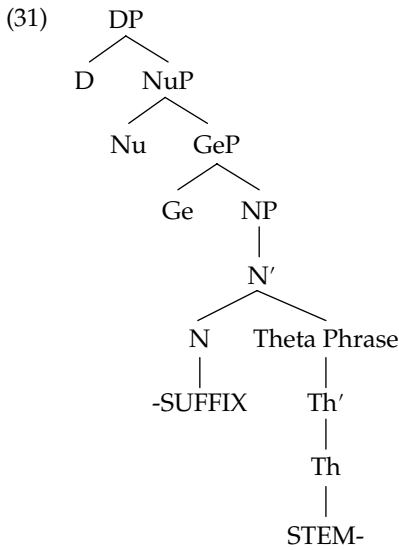
Fu (1994) admits that there remains a problem: if there is an underlying VP in derived nominals, then why is it that some VP-related elements such as verbal case-marked NPs and adverbs do not occur in derived nominals? What is the difference between VPs in derived nominals and other VPs? Borer (1993) and Fu (1994) propose that head licensing (case and adverbs) requires that the licensing head be dominated by its "extended projection" in the sense of Grimshaw (1991). The absence of verbal case-marked NPs and adverb phrases is explained, then, by the absence of extended verbal projection in derived nominals. Fu proposes that nominalization structures may vary between an underlying VP and an underlying IP. Languages whose nominalization constructions admit verbal cases and adverbs have nominalizers which select for an IP rather than VP. It is the presence of an IP that makes the head licensing possible for verbal cases and adverbs. Similar arguments are extensively discussed in Alexiadou (2001).



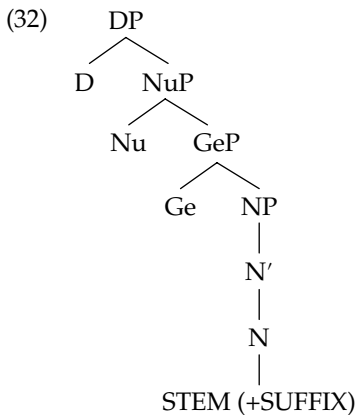
5.2 Picallo’s account

Similar ideas are presented in Picallo (1991). Unlike Borer, however, Picallo regards her proposal as the continuation of Chomsky’s (1970) “Remarks on Nominalization.” She supports the view that the thematic structure of nouns parallels that of verbs and adapts to the current theoretical framework (Chomsky 1986; 1989) the suggestion made in Chomsky (1970) that lexical elements may not be categorially marked in the lexicon.

Picallo attributes the difference in argument distribution between result nominals and event/process nominals in Catalan to the ambiguity of the nominalization suffixes: they are either inflectional elements or derivational ones. When the nominalization suffix is analyzed as an inflectional element, the DP will receive the event/process interpretation, and will have the structure as in (31):



The nominalization suffix can complementarily be analyzed as a derivational morpheme. The DP will then have the result interpretation with the structure in (32):



Non-deverbal nominals, which designate only objects and do not have the nominalization suffix, will be assigned structure (32), like result nominals.

According to Picallo, the analysis of the nominalization affix as a functional category (as in (31)) is what allows the event/process reading to obtain. This functional element has the property of absorbing the external role. Consequently, the external argument cannot be realized in argument position and its appearance as an adjunct is licensed.

Picallo shows that in Catalan among monadic nominals, the intransitive unergative nominals (in contrast to the ergative ones) have only the result interpretation, as they do not take temporal modifiers. Picallo points out that a great number of intransitive nominals in Catalan do not take any of the Catalan nominalization suffixes (i.e., *-acio*, *-ada*, *-iment*, etc.). Therefore, she concludes that there are no syntactic nominalizations of intransitives in Catalan, and consequently, adjunct-subjects (i.e., *by*-phrases) are impossible with intransitives:

- (33) a. \**el salt per part de l'atleta*  
'the jump on the part of the athlete'  
b. \**la lluita per part del gladiador*  
'the fight on the part of the gladiator'  
c. \**el xiscler per part del nen*  
'the scream on the part of the child'

Borer explicitly states that her approach is in opposition to the lexicalist position and refers to it as the syntactic one. On the other hand, Picallo's proposal, similar in spirit to Borer's theory, though articulated in a different way, emerged as the continuation of the configurational approach advocated by Giorgi and Longobardi (1991). Borer's and Picallo's theories converge and share the spirit of the neo-transformational approach in advocating the lexical/syntactic distinction, the presence of the syntactic projection in the syntactic nominal, and the V-raising (or  $\theta$ -raising) operation allowing the creation of the nominal after D-structure. The difference between them is that Picallo adheres to the category-neutral approach to lexical entries, while Borer assumes a category-changing morphological process.

### 5.3 Gerunds as nominalizations

The binary distinction between syntactic and lexical nominalizations becomes even more complicated when confronted with gerunds (see Gerundive Nominalizations). English *-ing* constructions pose a well-known problem in being three-way ambiguous and in exhibiting both verbal and nominal properties. The standard, traditional treatment recognizes three types of *-ing* structures: action nominals, gerunds, and ACC-*ing* constructions, illustrated below after Adger and Rhys (2000) in (34a), (34b), and (34c), respectively:

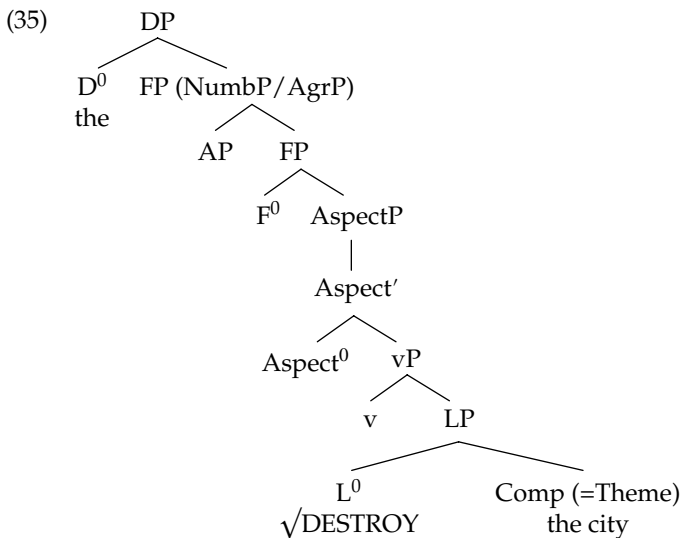
- (34) a. Jo's devouring of cakes  
b. Jo's devouring cakes  
c. Jo devouring cakes

Adger and Rhys (2000) argue that the constructions in (34b) and (34c) differ crucially from the construction in (34a). They propose a binary division between

N(ominal) G(erund)s (34a) and V(erbal) G(erund)s (34b)–(34c), and claim that the two classes could be distinguished by the representation of their argument structures: NGs have no argument structure while VGs have argument structure. Then, following Borer (1984) and assuming a modularized architecture for the morphology and syntax, they postulate a lexical combination for the affix and the root to derive NGs, but a syntactic combination of the root and the functional head *-ing*, via head movement, to derive VGs. As a result, there is a single lexical entry for the affix *-ing* and different licensing conditions for complements depending on the presence vs. absence of argument structure. Such an account is incompatible with the approaches presented above, because it leaves no room for the explanation of the result/process ambiguity of derived nominals in terms of argument structure and the level of derivation (lexical vs. syntactic). Adger and Rhys’ proposal wrongly suggests that NGs are like derived nominals in having no argument structure.

#### 5.4 Alexiadou’s ergativity patterns of derived nominals

Another version of the structural account of the ambiguities attested in the domain of derived nominals is offered by Alexiadou (2001; 2009) within the Distributed Morphology (DM) framework (developed by Halle and Marantz 1993; Marantz 1997). Alexiadou proposes that the differences between the two types of nominals should be explained in terms of different functional projections under which the respective nominals are embedded. She argues (like Borer 1993; Fu 1994; Schoorlemmer 1995; 1998a; 1988b; Van Hout and Roeper 1998) that result nominals are inserted directly under nominal projections, whereas the structure of process nominals includes (i) an Aspect Phrase (AspP) and (ii) a “deficient” light v/Voice Phrase (vP) that does not license an external argument. Only vP and AspP are present within process nominals (there is no Tense projection). The presence of AspP explains the aspectual properties of process nominals, whereas the presence of vP accounts for the eventive reading of these nominals. The structure for process nominals is presented in (35):



According to Alexiadou (2001; 2009) result nominals and process nominals are similar in the sense that both include the root (the lexical node) as their basic component, and hence both can take an internal argument. Thus, Alexiadou weakens the generalization that derived nouns that have argument structure inherit this in some form from their verbal source; that is, the presence of a verbal source is not a prerequisite for the licensing of argument structure. Building on data from English and Greek nominalizations, Alexiadou (2001) argues that a distinction should be made between verbalizers and layers introducing arguments. Only process nominals include verbal, that is eventive, functional layers (vP and AspP). The difference between result and process nominals results from the absence of functional layers in the former, and does not reduce to a difference in the base (category neutral vs. nominal). Alexiadou and Rathert (2010c) point out that a more recent concern is that even if the nominal lacks an event interpretation, its morphological decomposition suggests that it still contains verbal layers (Alexiadou 2009; Harley 2009). For example, the non-eventive noun *nominalization* contains the verbalizing morpheme *-ize*, the spell-out of the verbalizing head  $v^0$ , yet it does not have verbal extended projection properties. Thus, derived nominals may have a verbal source, but not necessarily argument structure. Alexiadou proposes that the optionality of argument structure in the nominal domain is related to the presence of NumberP in combination with a particular (aspectual) type of verbal structure. Nominals that have both verbal and nominal layers below D are ambiguous between argument structure and non-argument structure readings (based also on Malouf 2000; Alexiadou 2007; Iordachioaia and Soare 2007).

Another important ingredient of Alexiadou's approach is the absence of passivization within nominals (contra Picallo 1991; Bottari 1992; Borer 1993; 2013). Schoorlemmer (1998b) argues for lack of passivization within nominals on the basis of Russian. Alexiadou (2001, 111–120) claims that nominals are generally intransitive; that is, they are ergative constructions. This means that the type of *v* that is included in a process nominal does not license an external argument, like in unaccusative structures. Furthermore, Alexiadou distinguishes between process and event nominals (i.e., those with durative and terminative interpretation, respectively), whereas in previous accounts either those two labels were used interchangeably or the difference was unimportant. Harley (2009) investigates DM analyses of event, process, and result nominals on the example of verb-particle constructions and their behavior in mixed nominalizations. Also Sichel (2010) adopts the spirit of DM when analysing constraints on nominalizations based on event structure.

The above reported theories of derived nominals are mainly concerned with the result/process ambiguity in the domain of action nominals. The debate cannot be reduced to the simple lexicalist–transformationalist controversy. First, significantly different accounts were advocated within what can be roughly referred to as the lexicalist position, and second, theories which essentially share the basic ideas (e.g., Borer's and Picallo's accounts) were developed from different underlying assumptions with respect to the lexicalist–transformationalist controversy. It is also worth noting that only transitive actions are easily accommodated in all the above solutions.

## 6 Problems with nominals derived from intransitive predicates

All the theories reported above cannot account for the nominals derived from intransitive predicates in a consistent, satisfactory way. For example, if nominalization consists in suppressing the external argument which can be expressed in the adjunct (or the a-adjunct) *by*-phrase (as postulated in Grimshaw's *by*-phrase licensing rule in (27)), then the prediction is that process/event nominals derived from unergative verbs should realize the Agent in the *by*-phrase. Similar predictions follow from Picallo's approach or Borer's Parallel Morphology account. However, cross-linguistically the distribution of arguments in nominals derived from intransitive predicates is different than expected. As already noted above (examples in (33), section 5.2), in Catalan, nominals related to unergative verbs do not take any nominalization suffixes, do not allow aspectual modifiers, and do not admit the Agent *by*-phrase. However, they can take the Agent in the genitive. Similar facts are attested in Greek (Alexiadou 2001, 78). Therefore, both Picallo (1991) and Alexiadou (2001) conclude that nominals derived from unergative predicates in Catalan and in Greek denote results and not processes/events. The respective examples of unergative nominals in those languages are presented in (36):

- (36) Catalan
- a. el salt de l'atleta/ \*per part de l'atleta  
 the jump of the athlete-GEN/ on part of the athlete-GEN  
 'the jump of the athlete/on the part of the athlete'
- Greek
- b. to kolimpi tu Jani/ \*apo to Jani  
 the swimming the John-GEN/ by the John  
 'John's swimming'

At the same time, as illustrated in (37) (after Alexiadou 2001, 78–82), in Catalan and Greek nominals related to unaccusative predicates, the single theme argument appears in the genitive (as in the unergative nominals). Moreover, in Catalan, such nominals can co-occur with aspectual modifiers.

- (37) Greek
- a. i sinehis ptosi ton timon anisihi tus pandes  
 the constant fall the prices-GEN worries everybody-ACC  
 'The constant fall of the prices worries everybody.'
- Catalan
- b. la tornada dels turistes durant l'estiu  
 the returning the tourists-GEN during the summer  
 'the returning of the tourists during the summer'

More problematic are languages where nominals derived from unergative intransitive verbs have the properties which clearly point to their event/process status and which realize the Agent in the genitive/possessive and not in the *by*-phrase (see Rozwadowska 1991; 1995b; 1997 for Polish; Schoorlemmer 1995; 1998a; 1988b for Russian; Borer 2013 for Hebrew). The examples of such nominals in Polish

and Russian (taken from Rozwadowska 1995b and Schoorlemmer 1995) are presented in (38a)–(38b):

(38) Polish

- a. **pływanie** Janka w swoim własnym  
 swimming John-GEN in [possessive anaphor] own  
 basenie przez godzinę  
 swimming pool for hour  
 'John's swimming in his own swimming pool for an hour'

Russian

- b. Eë **polzanie** po polu v tečenie celogo večera  
 her crawling over floor in course whole evening  
 zabespokoilo menja  
 worried me  
 'Her crawling over the floor for the whole evening worried me.'

Russian

- c. Šla postojannaja rabota nad mašinami dlja togo čtoby  
 went constant work on cars for it that  
 oni nie raspadalis' na kuski.  
 they not fell to pieces  
 'Constant work on the cars was going on so that they should not fall into pieces.'

Note that in (38a) and (38b) there is a very productive nominalizer *-nie*, whereas in (38c) the nominal does not have any nominalizing suffix. As discussed in Rozwadowska (1995b; 1997), Polish nominals derived from intransitive predicates qualify as CENs, because they may take aspectual modifiers, allow control into purpose clauses (another test employed by Grimshaw to check the complex event status of a nominal), and exhibit the familiar event/result distinction. Moreover, Polish intransitive nominals appear in aspectual pairs, which additionally confirms their complex event status. Those one-participant events in Polish must have their only argument expressed as a possessive modifier, irrespective of the type of semantic predicate (whether unergative or unaccusative).

Schoorlemmer (1995, 297–300) recognizes the existence of intransitive CENs in Russian and thus provides further evidence for their existence cross-linguistically. Schoorlemmer (1998a) demonstrates that Russian intransitive CENs, like the Polish ones, occur in eventive contexts, can take aspectual modification, and allow control into purpose clauses if unergative (see (38c)). Both in Polish and in Russian, Agents of CENs derived from intransitive verbs must appear as genitives/possessives and not in an Agentive phrase equivalent to the English *by* phrase.

The obligatory realization of the single participant of CENs derived from intransitive predicates as the genitive/possessor is a counter-example to the suppression theories. While correctly predicting the difference in argument distribution between non-argument-taking and argument-taking nominals in the domain of transitive actions, Grimshaw's (1990) theory (like Zubizarreta's 1987) fails to predict the failure of single participants of intransitive complex events to surface in the

*przez-/by-*phrase. Borer's (1993) and Picallo's (1991) accounts face a similar problem. Borer treats all syntactic nominalizations (corresponding to Grimshaw's CENs) as derived from passive verbs, so automatically intransitives are not considered at all. Picallo claims that among monadic nominals in Catalan only ergative nominals can designate events/processes, whereas the unergative intransitives appear to be only able to have the result interpretation. Picallo observes that with respect to their morphological characteristics, ergative nominals, without exception, appear with a nominalization suffix (i.e., *-acio*, *-ada*, *-iment*, etc.), whereas a great number of unergative intransitives consist of an NP stem with features for Gender and Number only, without a nominalization morpheme. Picallo claims that these nominals lack the event/process reading and denote results, which correlates with the absence of the nominalizing suffix. Similar implications can be found in Markantonatou (1995) or Alexiadou (2001). Polish and Russian are different from English, Catalan, or Modern Greek in admitting complex event reading (i.e., abstract, non-concrete event/process interpretation) in the domain of intransitives. This is a challenge for the accounts referred to so far, which, despite significant theory-internal differences, all fail to accommodate single participants of CENs derived from unergative predicates.

## 7 Configurational accounts of nominalizations cross-linguistically

The last two decades saw an ever-growing interest in nominalizations and quite a number of various analyses have been recently developed. Also, the range of languages where derived nominals received scholarly attention has significantly increased. The current dominating trend is to follow in one way or another some version of the so-called neo-constructivism, a syntax-driven approach (in contrast to lexical accounts) where functional projections are responsible for a variety of available meanings of derived nominals. The approaches that share the spirit of neo-constructivism include not only Distributed Morphology (DM, Halle and Marantz 1993; Marantz 1997; Arad 2003; 2005), but also First Phase Syntax (FPS, Ramchand 2008) and the most elaborated Exo-Skeletal theory developed by Borer (2005a; 2005b; 2013) reviewed in more detail in section 9. The recent contributions within the DM and FPS approaches include numerous papers pointing to the variable size of the structures that are embedded in the nominal projection, which implies that Grimshaw's binary division of deverbal nominalizations into CENs and result nominals is insufficient. Depending on the functional layers, different subtypes of nominalizations have been identified.

In addition to the contributions presented in the preceding sections, analyses of nominalizations in Slavic languages include Russian (Engelhardt and Trugman 1998a; 1998b; Rappaport 1998; Schoorlemmer 1998a; 1998b), Polish (Willim 1999; 2000; Cetnarowska 2005), Serbian (Bašić 2010), and Bulgarian (Markova 2010). The majority of these accounts are configurational, though often mutually incompatible. The main difference between result nominals and process (action) nominals in Russian and Polish consists in the possibility of two adnominal genitives with

result nominals and lack of the second genitive with process nominals. As noted in Engelhardt and Trugman (1998b), the common trend in the analyses of Russian NPs has been to view only the lexical head N as a possible source of case for genitive DPs (see Babby 1992; Rappaport 1992; Schoorlemmer 1995). Under standard assumptions those analyses were forced to treat all possessor elements as adjuncts, and did not explain why possessor adjuncts are ruled out in process nominals. Engelhardt and Trugman (1998a) exploit the idea that genitive subjects in Russian are licensed by the functional head D. This is an extension of the account of subjects of nominal projections proposed for other languages (Abney 1987 for English; Szabolcsi 1987; 1994 for Hungarian; Grosu 1988; 1994 for Romanian; Engelhardt 1997 for Hebrew). In addition to adopting the assumptions of Parallel Morphology, Engelhardt and Trugman assume that the case licensed by functional and lexical heads in NPs is of a different nature (structural and inherent, respectively). The inherent case is licensed by the lexical head N to its complement, whereas the structural case is licensed by the functional head D to the syntactic subject of the NP – that is, the genitive DP occupying the specifier position. This mechanism, together with the assumption that all process nominals in Russian contain a passive VP-projection, rules out the possibility of double adnominal genitives in process nominals.

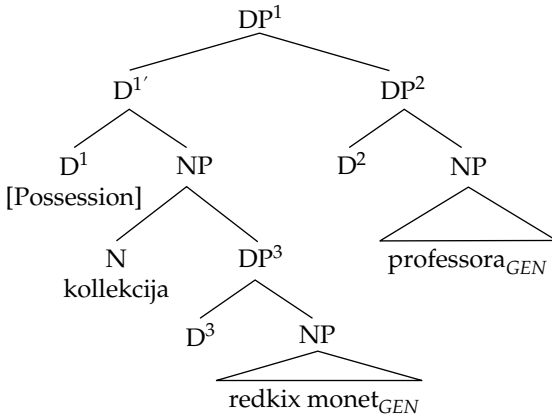
Following Engelhardt and Trugman (1998a), Rappaport (1998) assumes the DP analysis for all types of Russian NPs: material nouns and action nominals alike. The minimal pair is illustrated in (39):

- (39) Russian
- a. *kollekcija redkix monet professora*  
     collection rare-GEN coins-GEN professor-GEN  
     ‘the collection of rare coins of the professor’
  - b. \**kollekcionirovanie redkix monet professora*  
     collecting rare-GEN coins-GEN professor-GEN  
     ‘the professor’s collecting of rare coins’
  - c. *kollekcionirovanie redkix monet professorom*  
     collecting rare-GEN coins-GEN professor-INS  
     ‘collecting of rare coins by the professor’

With other proponents of DP analysis, Rappaport assumes that the NP is selected by a functional category of Determiner. However, he proposes a different case system. He distinguishes between the internal geometry of material NPs (equivalent to Grimshaw’s results) and that of action nominal NPs (equivalent to events/processes), and elaborates a mechanism of licensing NP-internal case assignment. Assuming the distinction between inherent case licensed by selection (and accompanied by the assignment of a thematic role) and structural case licensed by the need to check uninterpretable features (and divorced from thematic role assignment), Rappaport distinguishes two types of Determiners. The content of one type is the feature [possession]. This Determiner can select a material noun (example (39a)) and assign inherent case to its external argument together with a thematic role of Possessor by the mechanism of selection. This structure is represented in (40):



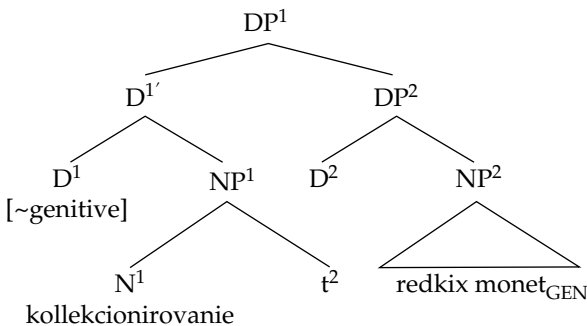
(40)



There is no overt determiner here in the head position  $D^1$ . There is only the feature [Possession] in this position, which characterizes the NP that licenses the higher instance of the genitive ( $DP^2$ ). If the NP were not possessed, there would be no justification for this genitive. Moreover, the noun *kollekcija* ‘collection’ selects a genitive complement that also is a DP. Case, then, must now characterize DPs as well as the Ns on which it is actually marked by the morphology. The case of the head noun must be transmitted to the head of the D which selects it. In the structure in (40), *kollekcija* and [possession] must “see” the genitive case feature on the nouns *monet* and *professora* respectively. In order to ensure that D is paired with a morphologically correct N, Rappaport assumes that the features of the N raise “covertly” to D, carrying the case feature along. This mechanism captures the idea that case-features on N serve to link their morphology with syntactic context, but it is the case marking on the DP which truly characterizes the entire nominal complex.

The other Determiner (in action nominals) has no semantic content but an uninterpretable case-feature, which entails that it assigns structural case, unrelated to thematic role assignment. This uninterpretable feature [-genitive] needs to be checked, and  $DP^2$  can do so by permitting its case feature to raise to the position of  $D^1$ . At the same time, on the basis of the binding facts Rappaport suggests that the maximal projection  $DP^2$  raises to the specifier-of- $D^1$  position although he admits that the mechanism by which this happens is not clear. Controversial as it might be, rising of the entire projection of  $D^2$  to specifier-of- $D^1$  would give the structure in (41):

(41)



As in the case of passive, the category which moves receives its interpretation (thematic role) in its initial position from one head, and its case by feature raising to a different head. The Determiner  $D^1$  in (41) selecting an action nominal is a different Determiner from that with the feature [possession], which can select a material nominal. The former assigns structural genitive case by the mechanism of feature checking, while the latter assigns inherent genitive case by the mechanism of selection. Rappaport's analysis does not require the assumption that all process nominals in Russian contain a passive VP-projection. Neither does it distinguish between lexical and syntactic derivations.

Willim (1999; 2000) deals with the syntax of Polish NPs (which have a very similar internal distribution of arguments to Russian nominals) and the mechanism of genitive case-checking. As in other languages, Polish CENs allow only one adnominal genitive argument, whereas object-denoting nouns and result nominals (i.e., material nouns) allow two adnominal genitives (see also Rozwadowska 1997). This is illustrated in (42) and (43) respectively:

(42) Polish

- a. odkrycie Ameryki przez Kolumba  
discovery America-GEN by Columbus  
'the discovery of America by Columbus'
- b. \*odkrycie Ameryki Kolumba  
discovery America-GEN Columbus-GEN  
'Columbus' discovery of America'
- c. \*odkrycie Kolumba Ameryki  
discovery Columbus-GEN America-GEN
- d. \*Kolumba odkrycie Ameryki  
Columbus-GEN discovery America-GEN
- e. \*Ameryki odkrycie Kolumba  
America-GEN discovery Columbus-GEN

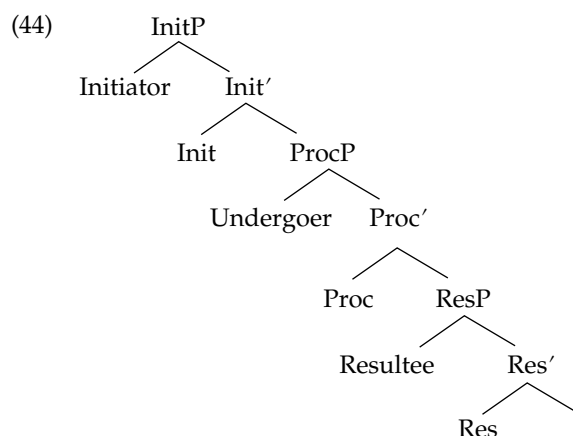
(43) Polish

- a. kolekcja znaczków Piotra  
collection stamps-GEN Peter-GEN  
'Peter's collection of stamps'
- b. pudełko zapalek Marysi  
box matches-GEN Mary-GEN  
'Mary's box of matches/a box of matches of Mary's'
- c. opis zachodu słońca Mickiewicza  
description set-GEN sun-GEN Mickiewicz-GEN  
'Mickiewicz's description of the sunset'

Willim suggests that the reason why only one argument of the noun may realize genitive case in Polish is that Polish nominals lack the DP-layer and consequently a nominal complex cannot contain two lexical genitive arguments. Therefore, in CENs, the object argument is in the genitive and the subject argument is introduced by the preposition *przez* ('by'). In object-denoting nominals (i.e., material nouns) involving two lexical genitives the Possessor is an adjunct rather than an argument of the noun and it is adjoined to the lexical projection of the noun. In other words,

Willim takes it that the genitive case of the Possessor is not supported by the noun. Otherwise, Polish, Czech, and Russian disallow two lexical genitives. Assuming that in these languages only one genitive argument can occur in the nominal complex, Willim claims that the second relevant head is missing – that is, there is no Determiner.

Later contributions in the area of nominalizations belong to the neo-constructivism approaches and develop the ideas of DM (essentially following Alexiadou 2001) or FPS (following Ramchand's (2008) model). Ramchand's (2008) approach consists in verbal decomposition into three core projections: Init(iation)P, Proc(ess)P and Res(ult)P, as illustrated in (44) below. The projections correspond to subevents and their specifier positions host the thematic participant in the particular subevent.



Bašić (2010) investigates the morphosyntactic properties of Serbian nominalizations. She takes the presence of verbal morphology in derived nominals as evidence for the presence of verbal projections and concludes that these verbal projections occur both inside AS-nominals and RNs (result nouns). Adopting Ramchand's (2008) FPS approach, Bašić argues for different structural representations of AS-nominals and RNs, despite morphological identity of the two types. At the same time she claims that the difference between CENs and RNs is not a matter of argument structure (contra Grimshaw 1990), because both can take arguments, but of the number and type of functional projections that each type of nominal contains. Moreover, she says that the obligatoriness of internal arguments is related to aspectual properties rather than "eventivity" of the noun. Bašić claims that a verbalizer can lexicalize all three projections presented in (44) or a subset of these, and consequently there may exist different types of nominalizations corresponding to different chunks of the structure in (44). This kind of approach is in opposition to a binary split between CENs and RNs, and in favor of more fine-grained structural representations, where Grimshaw's CENs correspond to several structural types. Also, according to this approach RNs may license internal arguments. These observations are compatible with the facts analyzed in Melloni (2010), who investigates polysemous action nominals in Italian and develops a hypothesis that it is possible to

predict the potential polysemy of action nominals by exploring the conceptual semantics of the base verb.

Markova (2010), following essentially the multi-layer approach to nominalizations developed in Alexiadou (2001), distinguishes three types of nominalizations for Bulgarian: AS nominals, participant-structure nominals, and RNs. She claims that true AS nominals (i.e., eventive nouns with obligatory internal arguments, Grimshaw's CENs) are those formed only from Aspect Imperfective Phrase (Asp<sup>I</sup>P) which additionally embed Asp<sub>Q</sub>P; participant-structure nouns (eventive nouns with optional internal arguments, Grimshaw's *Simple Event Nominals*) are those which contain eventive thematic vowels in their structure but lack an Asp<sup>I</sup>P, whereas result nouns are those which contain neither of the two. Prefixes are divided into inner and outer prefixes (inner and outer aspectual modifiers). The former are inserted pre-syntactically, as part of a complex verbal head.

Sleeman and Brito (2010a; 2010b), based on Brito and Oliveira (1997) and cross-linguistic evidence, distinguish five different readings of nominalizations corresponding to different possibilities of their argument-structure realization and relate the various readings to various differences within Ramchand's split *v*P: 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.

## 8 More on aspectual properties of derived nominals

### 8.1 Aspect in English derived nominals

The relevance of aspectual dimension for the analysis of derived nominals was recognized by Grimshaw (1990). Aspect is understood there in the sense of Vendlerian distinctions; that is, lexical differences between different types of predicates (activities, accomplishments, achievements, and states). The fact that derived nominals co-occur with the same temporal adverbials as the corresponding verbs as well as their co-occurrence with the adjectives *frequent* and *constant* is taken as evidence for the presence of aspect in them.

Further studies of aspectual distinctions in derived nominals (e.g., Schoorlemmer 1998a; 1998b; Snyder 1998; Rozwadowska 2000; Alexiadou 2001) show that the problem of the presence of aspect in derived nominals is more complex and requires further research. Snyder (1998) maintains that in English, active CENs derived from accomplishment verbs denote either the "development" (i.e., an "ongoing process") or the "culmination" of an underlying event. The compatibility of the nominal with the verb *continue* is taken by Snyder as evidence for the "ongoing process" reading, illustrated in (45a). On the other hand, Grimshaw's example in (45b) illustrates the "culmination" reading (though not labeled in this way by her). That this is not an isolated phenomenon is further illustrated (after Snyder) in (46):

- (45) a. If the barbarians' destruction of the city continues for another week, little will remain.  
 b. The total destruction of the city in only two days appalled everyone.

- (46) a. If the reorganization of the filing system continues, I'll never be able to find anything.  
 b. If the consumption of our food continues at this rate, we'll exhaust our supplies in a week.

Snyder's examples with *continue* are supposed to prove that on top of the accomplishment reading standardly recognized with CENs derived from accomplishment verbs, active CENs allow also a "development" reading, which passive nominals resist, as illustrated in (47):

- (47) a. ??If the city's destruction (by the barbarians) continues for another week, little will remain.

Snyder claims that compatibility with *frequent* and *constant* is characteristic of propositional nominals and plural SENs, but not CENs or singular SENs. Passive nominals are incompatible with such modifiers, which suggests that they resist a propositional reading. However, Snyder claims that they receive a clear complex-event reading and can serve as the subject of *occur*. They are incompatible with *continue*, which leads to the conclusion that the passive nominalization of an accomplishment denotes the culmination of an underlying accomplishment event. Similar views are presented in Alexiadou (2001). Alexiadou presents arguments against the result analysis of passive nominals. She introduces the distinction between events and processes, arguing that English passive nominals are generally event nominals – that is, have a terminative interpretation.

## 8.2 Aspect in Polish derived nominals

As shown in Rozwadowska (1995b; 1997; 2002), in Polish there are two types of derived nominals that qualify as CENs: derived nominals similar to those attested in other languages and the so-called verbal nouns. Polish verbal nouns are derived by means of the productive suffix *-nie/-cie* and appear in aspectual pairs (perfective vs. imperfective), distinguished morphologically in the same way as the corresponding aspectual pairs of verbs. Verbal nouns in Polish have more verbal properties than other derived nominals (see Rozwadowska 2002). However, they are unlike verbal gerunds or nominal infinitives (see Gerundive Nominalizations) in not admitting accusative case on the object. They are illustrated in (48):

- (48) Polish
- a. **Napisanie** dobrego artykułu przez studenta w tydzień nie  
 writing<sub>pfv</sub> good-GEN paper-GEN by student-ACC in week not  
 jest łatwe. (perfective)  
 is easy  
 'Writing a good paper by a student in a week is not easy.'
- b. **Pisanie** tego rozdziału trwało kilka miesięcy. (imperfective)  
 writing<sub>impfv</sub> this-GEN chapter-GEN lasted a few months  
 'Writing this chapter lasted a few months.'

- c. **Ocenienie** studentów przez nauczycieli nastąpiło natychmiast.  
 evaluation<sub>pfv</sub> students-GEN by teachers-ACC happened immediately  
 (perfective)  
 'The evaluation of the students by the teachers took place immediately.'
- d. **Ocenianie** studentów przez nauczycieli ciągnęło się przez  
 evaluation<sub>impfv</sub> students-GEN by teachers-ACC continued for  
 cały tydzień. (imperfective)  
 whole week  
 'The evaluation of the students by the teachers continued for the whole week.'

It is also worth noting that Polish is exceptional even when compared to other Slavic languages (e.g., Russian). The existence of the two types of CENs in Polish as contrasted to Russian led Schoorlemmer (1998a) to emphasize that Russian derived nominals are sensitive to aspectuality (understood as lexical or inner aspect) and not to grammatical (outer) aspect. Also it inspired Schoorlemmer's proposal that Polish verbal nouns contain an embedded IP whereas Russian and Polish derived nominals contain only an embedded VP. Such a proposal is consistent with the approaches presented in the preceding sections, most of which relate different types of derived nominals to different functional projections or different levels at which the morphological operation takes place. Rozwadowska (1997; 2000; 2002) presents more evidence that all three types of derived nominals (i.e., object nominals and two kinds of CENs) exist in Polish both in the action domain and in the psych domain. Polish derived nominals (as opposed to verbal nouns) are either aspectually neutral – that is, they are ambiguous between the perfective and the imperfective reading – or their aspectual interpretation is idiosyncratic, as illustrated in (49):

- (49) a. **Ocena** studentów przez nauczycieli nastąpiła natychmiast.  
 evaluation<sub>pfv</sub> students-GEN by teachers-ACC happened immediately  
 'The evaluation of the students by the teachers took place immediately.'
- b. **Ocena** studentów przez nauczycieli ciągnęła się przez  
 evaluation students-GEN by teachers-ACC continued for  
 cały tydzień.  
 whole week  
 'The evaluation of the students by the teachers continued for the whole week.'
- c. **Obserwacja** nowego zjawiska przez uczonych  
 observation new-GEN phenomenon-GEN by scientists  
 trwała 5 lat  
 lasted 5 years  
 'The observation of a new phenomenon by the scientists lasted 5 years.'
- d. \***Obserwacja** tego zjawiska nastąpiła po  
 observation this-GEN phenomenon-GEN happened after  
 5 latach badań.  
 5 years experiments-GEN  
 'The observation of this phenomenon happened after 5 years of experiments.'

The following facts should thus be highlighted:

- (i) In Polish there are two types of nominals that meet the criteria for CENs: aspectually neutral derived nominals with argument structure and *-nie/-cie* verbal nouns, which, in addition to argument structure, have grammatical aspect and appear in aspectual pairs.
- (ii) Polish derived nominals (but not verbal nouns) and English derived nominals share essential properties, including aspectual ambiguity, which suggests the absence of aspect rather than its presence in them.
- (iii) The aspectual ambiguity of the derived nominals coincides with the internal complexity of the event denoted by the nominal (i.e., it occurs only in nominals corresponding to accomplishment verbs).

### 8.3 Aspect in Russian derived nominals

Engelhardt (1998) and Engelhardt and Trugman (1998a; 1998b) propose a correlation between the level of nominalization and the aspectual properties of the derived nominal. They observe that Russian *-nie* nominals are syntactic and claim that the syntactic derivation triggers an imperfective viewpoint of the event, in the sense of Smith (1991). They do not claim that syntactic derivation of process nominals preserves aspectual features of a base verb, but that irrespective of the aspect of the verbal base syntactic derivation will always result in an imperfective nominal. According to this view syntactic nominalization is thus an imperfective operator. As one piece of evidence for their hypothesis Engelhardt and Trugman (1998a) provide the distribution of modifiers such as Russian equivalents of *frequent* and *constant*, which have been found to be restricted to process nominals across languages. It turns out that in Russian the nominal derived from the imperfective base functions predominantly as a process nominal, whereas the one formed from the perfective base is preferred in the result interpretation. They also point out that perfective verbal bases stop giving rise to new *-nie* derivations.

## 9 Borer's Exo-Skeletal approach (XS model)

Borer (2005a; 2005b; 2013; 2014) develops an extreme version of the neo-constructionist approach to the lexicon–syntax interface, named the Exo-Skeletal (XS) model, which can accommodate quite a number of various structures. Her model is based on the assumption that the relationship between a verb and the nominal morphologically derived from it is syntactic in nature. Similar assumptions are made about the relationship between adjectives and the nouns derived from them (e.g., *kind* → *kindness*; *drinkable* → *drinkability*). Crucially, she claims that the event structure is not contingent on properties of the verb or adjective as such, but it is a specific set of ExP (Extended Projection) segments, functional projections, which creates event structure, including the event argument. Borer (2013) notes that many accounts of nominalizations share the idea that there is some VP-constituent embedded under the nominal node, but argues that all these accounts fail to capture the fact that it is not a broad optionality within the domain of derived nominals but

rather a case of ambiguity. In other words, it is not the case that a particular root selects its complements or an event argument (optionally), as implied in other accounts, but it is the ExP-segment, by virtue of the specific semantics of S-functors (semantic functors), that defines its Categorical Complement Space (CCS). Borer (2013, 51–71) emphasizes the importance of Grimshaw’s binary division between R-nominals (not associated with event structure) and AS-nominals (associated with event structure), but notes that the distinction between event structure nominals (i.e., AS-nominals) and non-event structure nominals in Grimshaw’s system is contingent on the presence of the role *Ev* for the former vs. a referential index *R* for the latter. The assignment of *Ev* or *R* is lexical and independent of the derivational history of the nouns in question. Contra Grimshaw, Borer argues that it is not the inherent properties of roots that select their Extended Projections, but the properties of C(categorical)-functors. To support this claim, she notes that cross-linguistically derived nominals are in essence ambiguous between an AS-nominal and an R-nominal. The fact that some nouns denoting events cannot assign an *Ev* role (Grimshaw’s simple events), while others do, becomes an arbitrary stipulation.

Borer demonstrates (building on data for Romance from Ruwet 1972; for German from Ehrich and Rapp 1999; and Ehrich 2002; for Greek from Alexiadou 2001; for Polish from Rozwadowska 1988; 1997; for Hebrew from Borer 1991; 1993; and Hazout 1991; 1995; and Siloni 1997; for Arabic from Fassi Fehri 1987; Hazout 1991) that cross-linguistically AS-nominals are *always* derived from a verbal or adjectival source, while nouns that do not have a verbal or an adjectival source can never be AS-nominals. She draws a conclusion that AS-nominals contain some argument-licensing constituent which “simple” event nominals do not. This is the major argument in favor of a syntactic rather than lexical account of the nominalization process.

Borer (2013; 2014) also argues that DM solutions (Picallo 1991; Ouhalla 1991; Alexiadou 2001; Marantz 2001) are no more capable of explaining the absence of argument structure in nominals which are not derived from verbs or adjectives than Grimshaw’s account is. For example, she considers the structure in (50), proposed in Marantz (2001), and with different assumptions in Picallo (1991) and Ouhalla (1991), as well as the structure in (51) based on Alexiadou (2001):

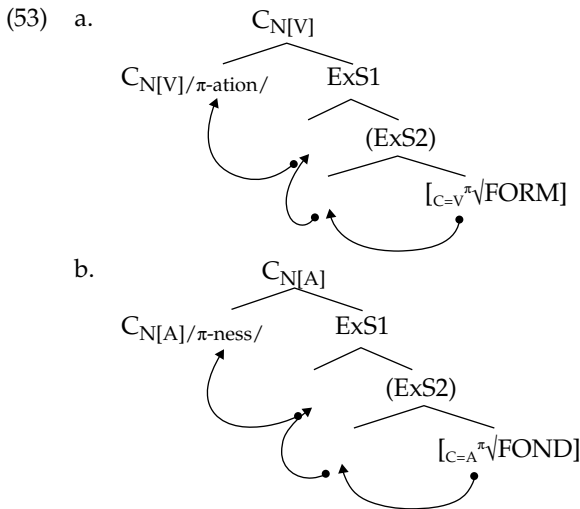
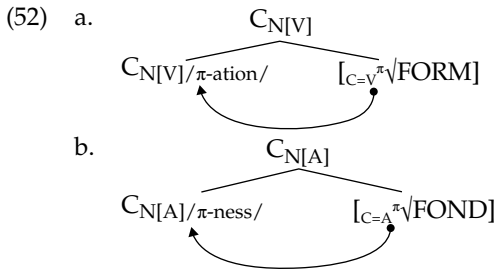
- (50) a. [<sub>D</sub> the army [<sub>N</sub> [<sub>r</sub>*n* + √DESTROY] the radio station]]  
 b. [<sub>V</sub> the army [<sub>V</sub> [<sub>v</sub>*v* + √DESTROY] the radio station]]
- (51) a. [<sub>D</sub> the army [<sub>ASP</sub> the radio station [<sub>N</sub> [<sub>r</sub>*n* + √DESTROY]]]]  
 b. [<sub>V</sub> the army [<sub>ASP</sub> the radio station [<sub>V</sub> [<sub>v</sub>*v* + √DESTROY]]]]

Borer notes that the categorization of the root (although it is category-less as a terminal node) is accomplished through its merger with a dedicated categorial functor such as *n*, *v*, or *a*. This is independent of the existence of any syntactic-functional event structure that may dominate it, thus the net result of all the DM-style approaches is that there is no conflict between the root categorized as *n* and event structure.

Borer’s XS approach is syntactic, as those within the DM framework, yet crucially different from them. The major difference consists in the fact that, in contrast to DM



accounts, on Borer’s approach the event structure associated with AS-nominals is never selected by the root categorized as *n*, nor is the argument structure directly inherited from the verbs or the adjectives, because in XS it is fundamental that grammatical properties are carried by functors and configurations and never by roots. All event-related information must come from some functional segments of Extended Projections (ExP-segments). In other words, Borer’s model by its very nature allows divorcing argument structure from the category of the root (as roots are category-less). R-nominals, according to Borer, have the structures in (52), whereas AS-nominals are represented in (53).



(52a) should be interpreted as follows: the C-functor with the phonetic representation *-ation* projects N and defines its CCS as (equivalent to) V, and hence is an instance of  $C_{N[V]}$ . When combined with the phonological index  $^{\pi}\sqrt{\text{FORM}}$  it renders it V-equivalent; the result is a non-event R-nominal with no argument structure. Similarly, in (52b) the C-functor *-ness* projects N and defines its CCS as (equivalent to) A, and hence is an instance of  $C_{N[A]}$ . When combined with the phonological index  $^{\pi}\sqrt{\text{FOND}}$ , it renders it A-equivalent; the result is a non-argument taking R-nominal. In contrast to R-nominals, AS-nominals involve the incorporation of the root/stem into the suffix through the succession of head re-mergers and re-projections. In (53a)  $[C=V^{\pi}\sqrt{\text{FORM}}]$  is rendered V-equivalent by the ExP segments it merges with. Details aside, broadly speaking, the functional structure that licenses event structure of AS-nominals includes ExP-segments which are part of the verbal

extended projection; that is, ExS2 is an optional functional node that licenses a direct internal argument whereas ExS1 is a functional node that licenses the event argument as well as an external argument. Thus (53a) can be a representation of, for instance, *Kim's formation of the committees*. Similarly, (53b) is a simplified representation of, for instance, *John's fondness for opera music*. Borer (2013) provides an elaborated justification for her claims, providing evidence from a variety of languages, including a detailed analysis of Hebrew.

Borer's account is flexible enough to accommodate various types of nominalizations. The structures differ in the number and types of categorial functors. Transitive quantity nominals, transitive non-quantity nominals, unergative nominals, unaccusative nominals, all have corresponding syntactic structures with appropriate functors and extended projections selected by them. The architecture of the XS model makes it possible to overcome the majority of the problems indicated above, including intransitive nominalizations, various aspectual distinctions, the distribution of the *by*-phrase, as well as stative nominalizations and deadjectival nominalizations. The detailed structures are elaborated at length in Borer (2013). Borer also provides a detailed passive analysis of short AS-nominals; that is, nominals such as *the election of nobody*, where only the internal argument is expressed. Moreover, she compares ATK derived nominals (i.e., the so-called *-ation and kin* group) with *ing*-nominals, claiming that only the former can be quantity nominals (i.e., telic), whereas the latter can only be non-quantity (i.e., atelic), and finds room in her theory for deadjectival nominalizations, following Roy (2010; 2013).

## 10 Psych nominals

Psych predicates (see Psychological Verbs and Psychological Adjectives), including psych nominals, provide a challenge to various syntactic generalizations because of their peculiar behavioral properties. Psych nominals are derived from the so-called Experiencer verbs, divided at least into two classes: Subject Experiencer verbs and Object Experiencer verbs. They are illustrated for English in (54) and (55):

- (54) a. John's enjoyment of the film  
 b. \*the film's enjoyment (by/of John)  
 c. John enjoys the film.
- (55) a. John's amusement at the books  
 b. \*the book's amusement of John  
 c. The books amused John.

The contrast in the distribution of nominal satellites between the pattern in (54) and the pattern typical of action nominals illustrated in (1) was already noticed by Anderson (1984). Anderson accounts for this contrast in terms of a constraint on movement of "non-affected" objects inside NPs (see Affectedness). Nominals such as those in (55) must then be treated as derived from adjectival passives rather than from verbs and are irrelevant for Anderson's constraint. For a critique of such an account see Amritavalli (1980) and Rozwadowska (1988).

Rappaport (1983) and Rozwadowska (1988; 1989) independently formulate different versions of thematic constraints responsible for the distribution of satellites in derived nominals. Rappaport introduces the thematic label *Experienced* and suggests within the framework of Lexical Functional Grammar that Experienced is restricted from being assigned the Poss function. Then, quite separately, she mentions nominals such as those in (56) and refers to Anderson's (1984) constraint on the movement of non-affected objects to account for their ungrammaticality:

- (56) a. \*history's knowledge  
 b. \*John's sight by Mary  
 c. \*the event's recollection  
 d. \*the problem's perception  
 e. \*the picture's observation  
 f. \*the novel's understanding

Rozwadowska (1988; 1989) introduces the feature-decomposition approach to thematic relations and formulates various thematic constraints on the distribution of satellites in deverbal nominals in terms of features. She argues that they are more consistent than all the previous theories, that they account for a wider range of facts, and that they capture the overlap among thematic relations. The relevant constraints are presented in (57):

- (57) a. A [-change, -sentient] argument cannot appear in the specifier position of an English nominal.  
 b. If one of the two arguments of a transitive nominal is [+change], then this argument must be expressed in a single-argument nominal.  
 c. Only [+change] arguments can be expressed as genitive complements of Polish transitive nominals.

Note that single-argument nominals are understood here as nominals taking one satellite but derived from transitive verbs:

- (58) a. Rome's destruction  
 b. John's love  
 c. John's surprise

The constraint in (57b) is motivated by the contrast between (58) and (59):

- (59) a. \*the barbarians' destruction (where *the barbarians* = Agent)  
 b. \*the books' love (cf. *John loves books*)  
 c. \*her behavior's surprise (cf. *Her behavior surprises John*)

The constraint in (57c) is illustrated with the Polish data in (60) and (61):

- (60) a. Jan            podziwia Mari(ę).  
           John-NOM admires Mary-ACC  
           'John admires Mary.'

- b. podziw            Jana        dla    Marii  
 admiration-NOM John-GEN for Mary-GEN  
 'John's admiration for Mary'
- c. \*podziw            Marii        przez    Jana  
 admiration-NOM Mary-GEN by        John-GEN
- (61) a. Dzieci            zdumiewaj(a)    rodzic(ó)w.  
 children-NOM amaze            parents-ACC  
 'Children amaze parents.'
- b. zdumienie            rodzic(ó)w    dzie(ć)mi  
 amazement-NOM parents-GEN children-INS  
 'parents' amazement at the children'
- c. \*zdumienie            dzieci            (przez)    rodzic(ó)w  
 amazement-NOM children-GEN (by)        parents-GEN  
 '\*children's amazement of/by the parents'

All the above thematic constraints work consistently for both Object Experiencer and Subject Experiencer predicates, which is an argument in favor of the thematic constraints rather than syntactic solutions, since the two classes of predicates share thematic properties but differ in syntax.

As discussed in section 4, under Grimshaw's analysis psych nominals derived from Subject Experiencer verbs are stipulated to have both argument and aspectual structures, and the lack of the *by*-phrase in them is attributed to the semantic restriction on the *by*-phrase in nominals. Psych nominals derived from OE verbs are claimed to be results with no argument structure.

In opposition to this view, Pesetsky (1995, 72) maintains that nouns derived from Object Experiencer verbs like *agitation*, *annoyance*, *amusement*, and so on are not result nominals but argument-taking nouns, hence true nominalizations, some of which have uses that refer to objects, but not results. Rozwadowska (1997), on the basis of Polish, further develops the idea that nominals related to both Subject Experiencer verbs and Object Experiencer verbs show all the ambiguities recognized in the action domain. Rozwadowska (1997, 44–48, 85–97) demonstrates that psych nominals display the same pattern as action nominalizations. The examination of the cluster of properties generally assumed to be tests for argumenthood reveals that psych nominals in general can be both argument-taking and non-argument-taking. In other words, they qualify as CENs. The predictions of the suppression theory, however, are not met then. Recent work on stative nominalizations (Alexiadou 2010) or deadjectival nominalizations (Roy 2010; Borer 2013 and references therein) confirms the conclusions that the contrast AS-nominals vs. R-nominals is valid for all types of predicates, not only the eventive ones.

Markantonatou (1995) provides evidence from modern Greek that many psychological predicates are related to some nominal. She shows that they take as many syntactic arguments as the verbs they are related to and that they can be modified by the same durative adverbials:

## (62) Greek

- a. i agapi \*(tu Yiani) \*(via tin Maria) epi dio hronia sto  
 the love the-GEN Yianis-GEN for the Maria for two years in-the  
 telos ton trelane  
 end him made-crazy  
 ‘Yianis’ love for Maria for two years made him crazy in the end.’
- b. (o Yianis) agapuse \*(tin Maria) epi dio hronia  
 the Yianis loved the Maria for two years  
 ‘Yianis loved Maria for two years.’

Markantonatou concludes that nothing is suppressed here, contrary to Grimshaw’s claim. She proposes a mechanism for the derivation of modern Greek deverbal nominals which requires the existence of an “internal” ([-r]) argument; that is, the argument bearing a semantically unrestricted grammatical function. She claims that a small set of simple, unification-based operations within the framework of the Lexical Mapping Theory of Lexical Functional Grammar provides a broader coverage than the suppression theory.

Rozwadowska (1997) suggests that the lack of the *by*-phrase in intransitive and psych nominals can be related to their intransitivity at the event structure level, where the number of event participants is crucial. Borrowing from Van Hout (1996) the idea that the number of event participants is a primitive at the level of event structure, Rozwadowska divides the domain of eventualities into external (i.e., non-psych) eventualities and internal (i.e., psych) eventualities. External eventualities can be either one-participant or two-participant eventualities, whereas internal eventualities are necessarily one-participant eventualities. Such division groups together intransitive actions and all psychological events. Then the distribution of the *by*-phrase in derived nominals can be explained in terms of some version of Williams’ (1987) ergativity rule operating at the level of event structure.

## 11 Deadjectival nominalizations

Deadjectival nominalizations have been rather neglected. Roeper and Van Hout (2009) develop a minimalist account for *-ability* nominalizations compatible with Alexiadou’s (2009) and Harley’s (2009) approach. They propose a passive operation for these nominalizations. Roy’s (2010) analysis of deadjectival nominalizations in French points out that there are systematic restrictions on the formation of deadjectival nominals, which can be formed from intersective adjectives only. She argues that deadjectival nominals belong to two classes, one which supports argument structure and an eventuality interpretation and another one which does not. Borer (2013) notes that there are systematic similarities between deverbal and deadjectival nominals in their argument-taking properties and uses this to support her theory of nominalizations within the constructivist, Exo-Skeletal approach to the lexicon–syntax interface.

## 12 Conclusion

To conclude this overview we can say that the current approaches to derived nominals are predominantly syntactic in nature and can be seen as a revival of the early transformational account within a much more sophisticated architecture of grammar. They represent different faces of the neo-constructivist trends by attributing the differences in their properties and interpretations to a variety of functional projections. The focus is on event structure and aspectual differences among them, which are configurationally represented. The most recent research agenda indicates the need to investigate stative nominalizations, including psych nominalizations as well as deadjectival nominalizations. However, there are still voices supporting the lexical approach, such as Siloni and Preminger (2009), or Optimality Theoretic accounts represented by Cetnarowska (2005). The debate on the nature of derived nominals remains controversial and complex.

SEE ALSO: Affectedness; Gerundive Nominalizations; Psychological Verbs and Psychological Adjectives

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