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Morphological taxonomy in the present-day generative framework: A case study of English and Czech nominalization

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Abstract

This paper addresses the classification of morphemes in a generative framework. Referring to existing theoretical models of generative morphosyntax (e.g. Distributed Morphology), it demonstrates that a traditional long-standing taxonomic distinction reflects formal, i.e. structural (and derivational) distinctions. Using the well-known examples of the English multi-functional nominalizer *-ing* and some parallel data in Czech, the study reinterprets morphological taxonomy in terms of three levels, namely the (i) lexical, (ii) syntactic and (iii) post-syntactic insertion of grammatical formatives. It shows that the level of insertion in a syntactic derivation results in predictable (and attested) diagnostics for the multi-morpheme exponents.

Key words

morphological taxonomy, Distributed Morphology, levels of morpheme insertion, English nominalization, Czech nominalization

1. Introduction: classification of morphemes

Each scientific field is defined by its taxonomic hierarchy. In traditional linguistics, the morpheme represents the smallest grammatical unit, i.e. the smallest element which carries some meaning of function. As for morpheme classification, morphemes can be considered with respect to a variety of characteristics. Typologically relevant criteria are, e.g. independent occurrence, position with respect to the stem, and grammatical function, which may correlate with semantic classification. This study will concentrate on classification based on functional and semantic characteristics – one which divides morphemes as defined in (1).

(1) a. **Lexical**: carry "lexical" or "referential" meaning (stems, bases, roots),
b. **Derivational**: are able to change category (or derive a new paradigm), and
c. **Inflectional**: (contentful and formal) appearing within one paradigm.

This morpheme taxonomy (in one form or another) re-appears in every linguistic framework. I assume that the persistence (and similarity) of the classification indicates some basic intuitions about distinctions inherent to the core of the language system. In the following study, I will demonstrate how they have been encoded in the present-day generative morpho-syntactic framework. First, I will summarize some approaches typical of the field, which illustrate the development of generative

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morphology. Then, I will illustrate these theories describing analyses of English and Czech nominalizations.[1]

2. The role of morphology in generative grammar

Chomskian generative grammar seemed to many not to pay enough attention to language-specific morphology, in spite of the fact that the process of affix hopping in *Syntactic Structures* was already crucial and central in Chomsky's analysis of the clausal projection (Chomsky, 1957). Interest in morphology has increased since the late 1970s and early 1980s, when more languages became the subject matter of generative analyses. In the present-day minimalist framework, the term "Borer's Conjecture" is widely used, and refers to a claim made by Borer (1984). The author proposed that the distinctions among the variety of human languages can be best expressed as distinctions in the repertories and characteristics of their grammatical morphemes. This claim confirmed morphology as an integral (and often central) part of the generative enterprise in its Minimalist phase (as in, e.g. Chomsky, 1995), and much research has since been carried out from this perspective.

2.1 Derivational model

Most generally, morphological theories that form a part of the generative framework are based on a now traditional derivational model (the T or Y Model) schematically illustrated in (3). It presents derivation as a process that starts with selecting some elements (units) from a repository – labelled here as the **Lexicon** (or Lexical Arrays). The elements (units) go through the level(s) of **Syntax** in which specific formalized operations take place, which may result in reorderings. The syntactic process is finished at the so-called **Spell Out**, where the derivation branches and divides into two separate levels: the **PF** (Phonetic Form, auditive-perceptive interface), where the morphophonological rules apply, and the **LF** (Logical Form, logical-interpretative interface), where the structure is interpreted.

Research implementing the T model triggered a discussion about the characteristics of the elements (units) that enter the syntactic derivation to be manipulated by syntactic procedures. The nature of syntactic objects and their inertness or flexibility / modifiability during the derivations have been the topic of many theoretical studies, starting with Chomsky (1970).[2] In the following section, to show the general nature of the phenomena, I will demonstrate the logic of the discussion referring to Wasow's paper, "Transformation and the Lexicon" (1977).

2.2 Lexicalist and non-lexicalist hypotheses

Wasow (1977) compares two standard usages of the English morpheme *–en/-ed* in structures, which he calls the **adjectival** passive and the **verbal** passive. Some of his contrasting examples are shown in (2), where the relevant expression containing the morpheme *–en/-ed* and its variants is in bold. In the left column are the adjectival passives, labelled more traditionally as derived (or verbal) adjectives (ADJ). In the right column are verbal (analytic) passives – an auxiliary combined with a passive form of a relevant verb (V).

(2)	(i) adjectival passives		(ii) verbal passives	
	a.	*the* ***hung***$_{ADJ}$ *jury*	a'	*the judge was not* ***hung***$_{V}$ *by the mob*
	b.	*the man looked* ***shaven***$_{ADJ}$	b'	*John was being* ***shaved***$_{V}$
	c.	**John remained* ***believed***$_{ADJ}$ *to be sick* (no Raising to Object for adj. Passive)	c'	*John was* ***believed***$_{V}$ *to be sick*
	d.	*a very* ***driven*** $_{ADJ}$ *worker*	d'	*the car was (*very)* ***driven***$_{V}$ *by John*

Wasow showed that the adjectival passives are associated with **idiosyncrasy** in both meaning and form. They cannot interact with productive syntactic rules, as seen in the contrasting (2c/c'), and they trigger a "categorial" change – such as premodification by *very* demonstrated in (2d/d'). Wasow proposed that, with adjectival passives, the concatenation of the stem with the morpheme *–en/-ed* takes

[1] The first (shorter) version of this paper was presented at the *Anglophone Conference 2018* at Univerzity Hradec Králové on 22 March 2018.

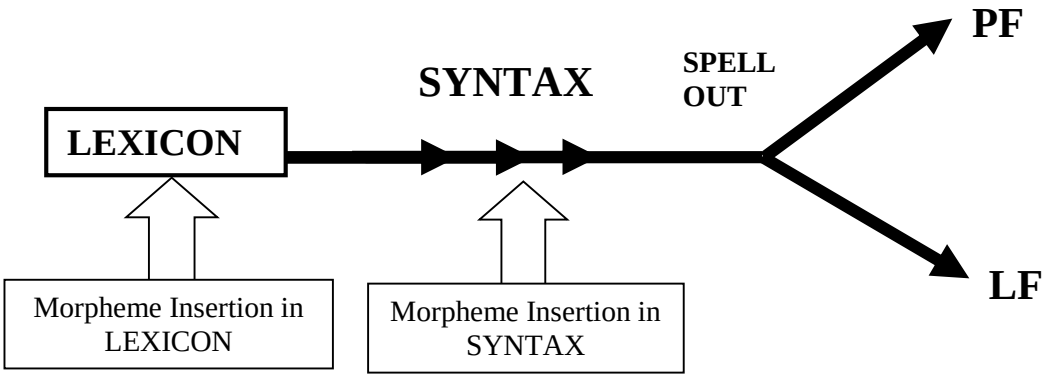
[2] The paper is discussed in more detail in Section 3.

place at the level of the Lexicon, while the multi-morpheme lexical entry (containing a verbal stem) passes through Syntax without the categorial label of Adjective.

On the other hand, the right column in (2) represents a verbal passive. This combination of the stem and *–en/-ed* is more **regular**, **productive** and standardly carries a **compositional** meaning. Wasow explains the characteristics of verbal passives, claiming that this lexical entry enters syntax as a Verb, and it remains a Verb throughout the derivation.

Using traditional terminology as in (1), the concatenation of morphemes inside a Lexicon can be correlated with derivational morphemes, while the syntactic combinations can be taken as inflection. The two derivational levels at which the grammatical morpheme combines with the stem are illustrated in (3).

(3)



In spite of the fact that both Chomsky (1970) and then Wasow (1977) explicitly argued for the existence of both levels of insertion (concatenation) of morphemes – in the Lexicon and in Syntax – with respect to categorial labels, some proponents of the theoretical framework seemed to prefer one or the other.

- The strong **Lexicalist Theory** assumes that the lexical entry contains a category in Lexicon already, and this category cannot in fact change at all during Syntax.
- A weaker version of the Lexicalist Theory claims that a category is present in the Lexicon, but it can be changed in Syntax.
- An even weaker claim assumes that lexical entries in the Lexicon are category free, and each category is assigned only in Syntax.
- The radical opposite to the Lexicalist Theory (anti-Lexicalist, Derivational Theories) argue that there is no traditional "category" in either the Lexicon or Syntax, and what we traditionally called N, V, A, etc. are only morphological realizations of clusters of features.

In the following sections, I will describe two present-day morphological frameworks which are productive within the generative field. Notice that neither of them is Lexicalist and both reject the autonomy of morphology with respect to syntax. I chose the two derivational models because as a native speaker of a language with a relatively free word order and rich morphology I saw the advantage of the framework(s) assuming only one combinatorial system which – when properly defined – allows to derive the syntactic structure from morphological signals. [3]

[3] An example of a present-day lexicalist approach can be found in the Lexical Semantic Framework developed in Lieber (2004; 2016). Using the tools of corpus linguistics and collecting an impressive amount of data, the author argues that the paradigms discussed in e.g. Grimshaw cannot be evaluated as non-ambiguous and contrastive (esp. with respect to their interpretations) as theories based on the non-lexicalist aspects of Chomsky (1970) predict. For Lieber, the intuitions about the readings of complex nouns are often unreliable and there exists a high degree of polysemy. She proposes that it is because the core of the available interpretations is based on the underlying complex semantics which can be underspecified and dependent on syntactic context and language-specific application of the skeletal structures and syntactically relevant semantic features.

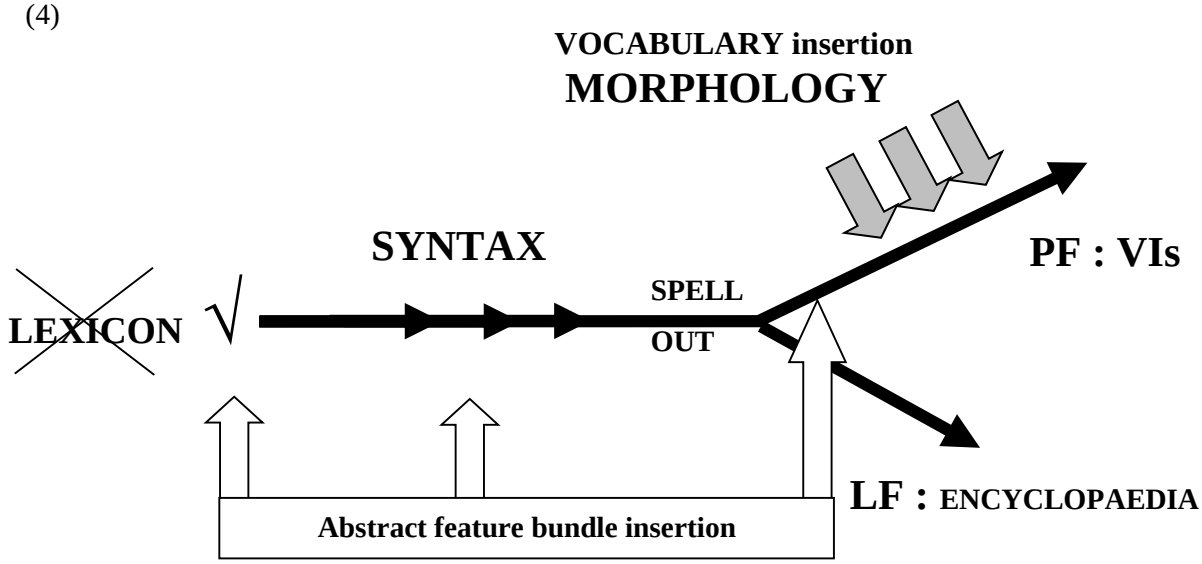
2.3 Distributed Morphology

The Distributed Morphology (DM) framework develops ideas proposed in studies by Halle and Marantz (1993; 1994) and Marantz (1997). The proponents of DM state explicitly that their theory is radically anti-Lexicalist. Using the slogan "there is no Lexicon," they argue that the whole syntactic process operates only with bundles of features and not with morphemes as traditionally conceived.

According to Harley and Noyer (2000) and above all Halley (2007), the derivation starts with both content-free and category-free **roots** (√), which merge with **abstract features**, i.e. with representations of syntactic primitives (both interpretable and uninterpretable, both functional and contentful). In syntax, the bundles of "morphosyntactic" features undergo syntactic operations – they Merge, Remerge, Move and enter Agree relations – until they reach Spell Out. In the scheme (4), the insertion of abstract features is illustrated with the three white upward arrows.

In the next step of derivation, in the branch going to PF, there is a special module of **Morphology**, in which some additional operations on the feature bundles take place, in which DM is most interested (e.g. Impoverishment, Fusion, Fission, Linearization, M-Merger, Dissociated Morphemes). Only after these morphological adjustments are finished are the real (language-specific) **Vocabulary Items** (VIs) inserted into the structure – as suggested with the three dark downward arrows in the scheme (). When they are phonetically realized, the inserted VIs must conform to the (sometimes rather complex) context formed from the abstract features.[4] As for semantics, the interpretation of VIs is achieved via the linking of each individual (indexed) VI with a parallel semantic concept listed in the **Encyclopaedia**.

(4)



Looking for what the DM framework uses to replace Lexicon, we can see that it assumes the existence of three independent repositories of units: (i) a repository of abstract (functional) **feature bundles** (plausibly using a language-specific subset of UG features), (ii) the list of **Vocabulary Items** (very language-specific combinations of feature bundles), and (iii) the list of semantic concepts in the **Encyclopaedia**.

A close parallel to DM can be found in a complex morpho-syntactic framework proposed and illustrated in Hagit Borer's extensive trilogy *Structuring Sense* (Borer, 2005). The author assumes the existence of a functional lexicon listing f-morphemes (separate from the lexical L-morphemes). As for the categorial labels and heads, the author proposes (volume I, Chapter 2, p. 45) that categorial heads (which combine with roots) are pairs in which one member provides the category label and the other (optional?) provides the range assigned to that value, i.e. it is a 'C-functor'. The framework introduced

[4] The charactersitics of the lexical entries (VIs) is defined in The l-node Hypothesis, which assumes that the "syntactic status of l-node is determined by its local relation with f-nodes… notions such as 'noun' and 'verb' are purely derivative in syntax, although potentially significant morphophonologically" (Halley and Noyer, 2000, p. 357).

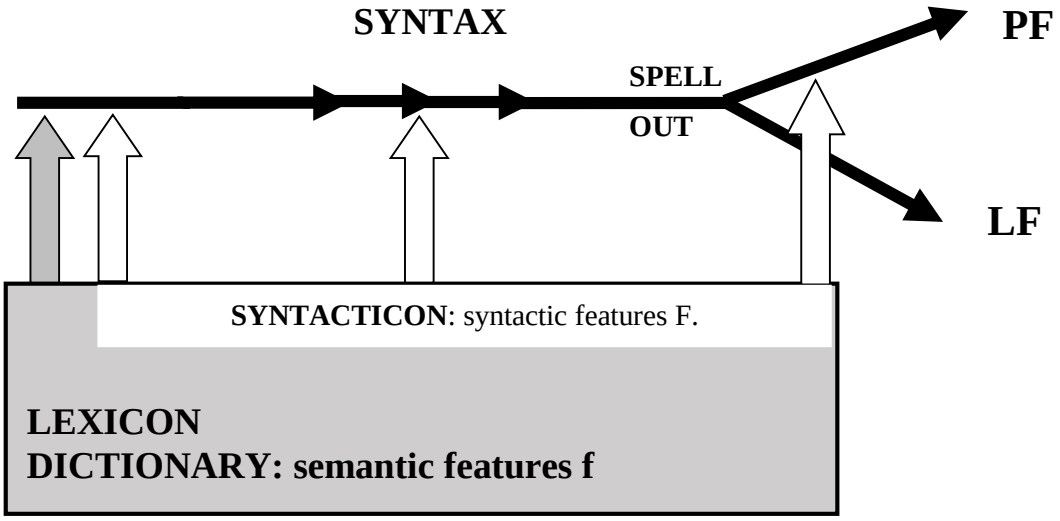
and applied in Borer's trilogy deals in detail with interpretation of a wide variety of data, esp. in Hebrew; it does not, however, make any specific claim with respect to the process of morpheme insertion, assuming a kind of Vocabulary Insertion of Distributed morphology at the end of the cycle, i.e. post-syntactically.

2.4 Three Level Insertion model of morphology

The other morphologically sensitive model within present-day generative grammar is the model of Three Level Insertion (3LI), which has been applied in a variety of morphosyntactic analyses; some of the earlier ones are in, e.g. Emonds (1991, 2000).

The model is schematically described in (5) according to Emonds (2000). Notice that the author does use the concept of the **Lexicon**. His Lexicon contains a **Dictionary**, which is a repository of morphemes expressing highly specific **semantic** features and concepts (**f**), and these features are inserted in the derivation at the very beginning – demonstrated with the left-most (dark) arrow in (5).

(5)



Semantic features (f), however, play no role in syntax. Syntax is driven by **syntactic features**, (**F**) which are stored in another part of the Lexicon called the **Syntacticon**. The features (and feature bundles) stored in the Syntacticon are language specific combinations of abstract conceptual ('grammaticalized') features, which are special, because they can enter derivations on three levels, illustrated by white arrows in (5). The three levels are as follows:

(6) Three Levels of Insertion (3LI) of grammatical features (bundles) F:

a. together with the semantic features at the very beginning - **deep** (Phase initial) insertion;
b. during the syntactic process - **late** (Phase final) insertion;
c. after Spell Out – **post-syntactic** (PF) insertion.

The level of insertion of a grammaticalized feature F in 3LI is subject to economy (the later, the better), and – crucially – combined with independent principles of grammar, it explains a number of otherwise unaccounted for specific properties of complex lexical entries containing relevant morphemes. For example, the concatenation of morphemes inserted via the deep insertion in (6a) will show the properties described by Wasow as characteristic of 'lexical' derivation. On the other hand, the morphemes subject to late (6b) or post-syntactic insertion (6c) will show the properties typical for inflectional morphemes. They have respectively either purely grammatical (e.g. Tense) or no

interpretations (e.g. agreement). They are the right-hand heads of words in languages like English and Czech.[5]

The table in () compares the DM and 3LI models of morphology. We can see that, apart from distinct labels (ff≈F, VI≈f), they both claim the existence of lexical and non-lexical morphemes. With the non-lexical morphemes (feature bundles), both theories assume that they can be activated at the beginning of the derivation, during Syntax and after Spell Out. The only difference then is the level of insertion of the semantic features: DM claims the VIs come at the very end, while 3LI assumes the presence of semantic features 'f' from the very beginning of derivations.

(7) Comparing Distributed Morphology and Three Level Insertion models

(8)	*Features*		*Enter derivation*
DM	**Feature bundles**: Abstract representations of syntactic primitives, (un)interpretable, functional / contentful	ff	- at the beginning + in Syntax (Merge) + in Morphology
	Stems (parts?) of Vocabulary items related to concepts in the Encyclopaedia (semantics)	VI	**After Spell Out**
3LI	**Syntactic features:** Conceptual/ "grammaticalized"	F	- at the beginning + in Syntax (Merge) + in Morphology
	Purely **semantic features**: addressed by phonological content and linked to stems	f	**At the very beginning**

Recall, however, that both theories agree that semantic features do *not* play any role in syntax, so the discussion about advantages of one approach over the other may therefore become rather scholastic. I am not aware of any irrefutable argument in favour of one of those hypotheses, and therefore I will ignore the distinction here, and in Section 3, I will use common (combined, shared) assumptions.

3. Nominalization in English (and Czech)

In this section, I summarize studies dealing with English nominalizations to provide data and paradigms that motivate (and justify) a given theoretical framework.

3.1 Lees (1960)

The first generative study of English nominalizations appears in Robert Lees's *Grammar of English Nominalizations* (1960). The author proposed that derived nominals like *destruction* in (9a) are transformed forms of predicates like *destroyed* in (9b). The English examples are followed by Czech equivalents to show the generality of the claim.[6]

(9) a. *the enemy's* ***destruction*** *of the city* ENG
nepřítelovo ***zničení*** *města* CZ
enemyPOSS destruction cityGEN

b. *The enemy* ***destroyed*** *the city* ENG|
Nepřítel ***zničil*** *město* CZ
enemyNOM destroyed cityACC

[5] For a more detailed description of the correlations between traditional and generative morphology, see Veselovská and Emonds (2016).

[6] The genitive of *města* (city$_{GEN}$) in the Czech (9a) is forced by the non-animate Neuter feature(s), which prevent(s) formation of a possessive. More about the complementarity of Czech possessives and post-nominal genitives is given in Veselovská (1998).

(10a) demonstrates the assumed nominalization of the passive predicate. Notice the reordering of the arguments and the presence of Instrumental in both verbal and nominalized structures.

(10)	a. *the city's*	***destruction***		*by the enemy*	ENG
		zničení	*města*	*nepřítelem*	CZ
	cca:	destruction	cityGEN	enemyINS	
	b. The city	*was **destroyed***		*by the enemy*	ENG
	Město	*bylo **zničeno***		*nepřítelem*	CZ
	cityNOM	was destroyed		enemyINS	

Lees describes the transformation rule of nominalization in English in the format typical for the then Standard Theory, i.e. as follows.

(11)	a. **Transformation rule:**	**S(=clause) → N(=noun)**
	b. **Transformational change:**	NOM → 's-GEN + ACC → of-GEN

Notice that the morphological changes Nominative to Genitive/Possessive and Accusative to *of*-genitive mentioned in (11b) are operative in Czech as well as in English.[7]

3.2 Chomsky (1970)

A decade later, Noam Chomsky discussed similar data in his influential paper "Remarks on Nominalizations" (1970). Apart from clausal structures (12a) and nominalizations (12c), he also included data covering English gerunds, (12b).

(12)	a. *John*	*criticized*	*the book.*	CLAUSE
	b. *John's*	*criticizing*	*the book*	GERUND
	c. *John's*	*criticism*	*of the book*	DERIVED NOUN

Comparing the morphosyntactic characteristics of the structures in (12), Chomsky argued that some nominalizations – namely the derived nominals represented in (12c) – represent structures formed in Lexicon, while others – i.e. those represented in (12b) as gerunds – are derived in Syntax. Apart from those two kinds, Chomsky noticed that some nominalizations show mixed characteristics. His taxonomy is provided in

(13) **Kinds of nominalizations** (Chomsky, 1970)

i.	SYNTACTIC nominalizations (gerunds)	see (12b)
ii.	"mixed nominals" (*John's criticizing of the book)*	
iii.	LEXICAL nominalizations (derived nominals).	see (12c)

In the following paragraphs, I illustrate some of the diagnostics Chomsky used to divide distinct kinds of nominalizations. He compared the lexical entry with prototypical Nouns and Verbs, to check for (a) the presence of categorial features, (b) the form of phrasal projections (characteristics of co-occurring elements and their interpretation) and (c) the syntactic function of the constituent. He also noticed that lexical nominalizations are typically non-productive and show a number of idiosyncrasies in their form and interpretation (recall that Wasow [1977], cited above in Section 2.2, also confirmed those observations for other kinds of English morphemes).

As for the syntactic tests, Chomsky noticed that lexical nominalizations cannot take part in transformations targeting VPs, while the syntactic nominalizations (gerunds) can. The contrast is demonstrated where Raising to Object structures, re-analysed as Exceptional Case Marking, are possible

[7] For more details (and a variety of examples) in Czech in a compatible framework, see Karlík and Nübler (1998) and Veselovská (1998).

with verbs in (14a) and can also be formed with gerunds in (14b), but not with derived nominals in (14c).

(14) **ECM/ raising to object**

a. *John **believed** that **Bill** was a fool* → *John **believed Bill** to be a fool.*
b. → *John's **believing Bill** to be a fool.*
c. *John's **belief** that **Bill** was a fool.* → **John's **belief/-ing of Bill** to be a fool.*

Analogously, the distribution of post-verbal particles, which can both precede and follow the direct object of the verb in (a), is identical with gerunds in (b) but is both restricted with mixed nominals in (c) and impossible with the lexical derivates, i.e. derived nominals, in (d).

(15) **particle distribution**

a. *John is **explaining** (away) the problem (away).* VERB
b. *John's **explaining** (away) the problem (away).* GERUND
c. *John's **explaining** (away) of the problem (*away).* MIXED NOMINAL
d. *John's **explanation** (*away) of the problem (*away).* DERIVED NOMINAL

Gerunds in (16b) (i.e. syntactically derived nominalizations, according to Chomsky [1970]) show the same kind of complementation as verbs in (16a) – including the double object structure with NP_{DAT}+NP_{ACC} ordering. The contrasted lexical (derived) nominalizations in (16c) are not able to shift the dative phrase to immediate post-verbal position and appear without the preposition.

(16) **"DATIVE shift"**

a. *John **gave** the book to Bill.* → *John **gave** Bill the book.*
b. *John's **giving** the book to Bill.* → *John's **giving** Bill the book.*
c. *John's **gift** of the book to Bill.* → **John's **gift/-gifting** of Bill the book.*

Chomsky's argumentation in this study led to the establishment of the Lexicalist theory (see Section 2.2), but at the same time it left some data fuzzy, especially the treatment of the mixed nominals as non-systematic, and the inadequate interpretation of the pre- and post-modifiers of the nominals. These topics were addressed by Jane Grimshaw in her dissertation (see Grimshaw 1991).

3.3 Grimshaw (1991)

Concentrating on argument structure in the eponymous monograph *Argument Structure*, Jane Grimshaw proposed a distinction between – on one side – **thematic** roles, i.e. obligatory and grammaticalized roles related to the verbal category (and to syntactic nominals = gerunds), vs. – on the other side – **semantic** roles – optional and fuzzier arguments of nouns and also of the Lexicon's derived nominals. According to more fine-grained diagnostics, she also divided Chomsky's mixed nominals into two groups: event and complex event nominals. Her taxonomy is as follows:

(17) **Lexical vs. Syntactic derivation** (Grimshaw, 1991)

a. **result** nominals
b. (simple) **event** nominals
} derivation in Lexicon (combine with 'nominal' semantic roles)

c. **complex event** nominals
d. **gerunds**
} derivation in Syntax (assign 'verbal' theta roles)

To illustrate the distinction between lexical and syntactic derivations, let us look at the projections headed with distinct kinds of nominals. First, let us consider the result nominal in (18) and (19). I provide both English (a) and Czech (b) examples to show the similarity.

(18) a. *Oscar put* ***two paper writings from her granny*** *on the table.*
b. *Oskar položil* ***dvě papírová psaní od babičky*** *na stůl.*
Oscar put two paper writings (=letters) from granny on table

(19) a. *At the end of the village there are* ***three tall buildings***
b. *Na kraji vesnice stojí* ***tři vysoká stavení.***
on edge village stand three tall buildings (=houses)

The schematic (20) shows that result (and most simple event) nominals (RN) can be determined with both definite and indefinite articles (i.e. the nominal is countable), that they can be modified by concrete physical adjectives, and that their *of*-P complements are non-arguments. The suffixes (apart from the multi-functional *–ing*) are varied and can be idiosyncratic (e.g. *–ation/-ment/-al*). The interpretation of these lexical nominalizations (as discussed in Sichel (2010)) is restricted to simple events.[8]

(20)

a/ three *the/ these* *my/ *me*	*ink* *smudged* *dark* **instant*	**already*	***writ-ing(s)***	**of a letter* *of Monday* **on Monday*

The following examples in (21) and (22) demonstrate typical complex event nominals (CEN) in both English and Czech. Notice that their form can be close to identical to the RNs illustrated above.

(21) a. *Oscar was tired of the constant writing of letters.* ENG
b. *Oskar byl unaven z ustavičného psaní dopisů.* CZ
OscarNOM was tired of constant writing lettersGEN

(22) a. *They do not allow building of the sheds here* ENG
b. *Nepovolují stavění zahradních domků v této oblasti* CZ
they do not allow building [garden sheds]GEN in this region

Some schematic characteristics of the projection of the CENs are in (23). Notice that the determination is limited to those that do not reflect number; CENs are non-countable and can be premodified with temporal adjectives (not adverbs), and the post-modification can be interpreted as arguments of the *verbal stem*. Their interpretation is 'verbal', i.e. CENs describe a complex event including a possible temporal framing.

(23)

a/ *three* ***the/ some* ***this****/*these* ***my****/ *me*	*dark **quick** ***quickly** ***already**	***writ-ing(*s)***	*of a letter* *to John* **of Monday* *on Monday*

The following scheme in (24) shows a third type of nominalization, an English **gerund**. Compared with CEN, gerundial premodification here tolerates only possessives, (singular) demonstratives and a few quantifiers, but no adjectives. On the other hand, gerunds also allow subjects/Agents in the form of object pronouns licensed by external context. As for post-modification, gerunds are identical with verbs both formally (they cannot be post-modified by adverbials, or an *of*-phrase, and standard double object structures are possible) and with regard to the co-occurring constituents, they are interpreted as the arguments of the verbal stem.

[8] In the following text, I am not going to distinguish between result and simple event nominals. I will label them both as 'result nominals' (RN), because with respect to the characteristics observed here, they are identical. For more diagnostics see Grimshaw (1991), Sichel (2010) and the studies cited there.

(24)						
	my/% me this/that		*John*	*a letter*	*quickly*	
	any/no	***write-ing(*s)***	*a letter*	*(to John)*	*already*	*on Monday*
	**a/*the*					
	**three*		**of a letter*		**dark(-ly)*	
	**some*					

Descriptively, a gerund looks like a highly deficient nominal, because its post-modification is purely verbal. In terms of a projection, it is the lower (internal) part of the projection that is verbal, while the high periphery is nominal – including the external characteristics.

An English gerund is used in positions typical for nominal phrases – as illustrated in example (25) where gerunds (GER) are in the position of (a) a structural object, (b) clausal subject, and (c) following prepositions. Notice that in all these contexts it can have a phonetically realized subject (or phonetically empty PRO) with agentive interpretation.

(25) a. *I <u>love</u> [$_{GER}$ his/him/PRO$_{SUB}$* ***reading*** *novels before we go to bed].*
b. *[$_{GER}$ His/him/PRO$_{ARB}$* ***cooking*** *the meal] was a disaster.*
c. *<u>Despite</u> [$_{GER}$ her not* ***knowing*** *anything], Pauline passed the test.*
<u>With</u> [$_{GER}$ Paul ***being*** *required to buy a car], he decided to take a new job.*

In a present-day generative framework, cross-categorial structural (and interpretative) parallels remain a fruitful tool for analysis. Grimshaw' s diagnostics have been frequently re-defined, modified and made more complex. Some authors concentrate on the morphosyntactic characteristics (e.g. Hazut, 1995; Halley and Noyer, 2000; Alexiadou, 2001; Marantz, 2007 and many others). Semantics, especially the interpretation of 'arguments' of the nominal expressions (in comparison with their verbal counterparts) is discussed in e.g. Snyder (1998), Sichel (2010), Baker (2016) and Lawrence (2017).

3.4 Nominalizations in Czech

A descriptively rich and original study of Czech nominalizations in the Government and Binding framework appeared in the study of Petr Karlík and Norbert Nűbler, *Poznámky k nominalizaci v češtině* (1998). The same topics are discussed in the early Minimalist framework in Veselovská (1998; 2001).

The authors show that (as we could see already in [9] and [10]) Czech does indeed reflect the basic parallelism between verbal and nominal structures as that found in English, although not every argument can be easily translated from one language to the other. In the following paragraphs, I am going to demonstrate the arguments in Czech which signal the distinction between lexically and syntactically derived nominals, i.e. between RNs and CENs. Without attempting to modify the theory because of any novel data I am going to summarize some of the paradigms discussed in the above-mentioned studies in terms of the present-day morpho-syntactic frameworks.

Concentrating mainly on the characteristics of the Czech candidates for the syntactic nominalizing suffixes *–ěn/-en + í* and *–án/-an + í*, the following example shows that prototypical lexical nouns (capitalized on the left) can be coordinated with derived nominals, including those which contain the verbal aspectual suffixes *–ova/ovává-* and prefixes *pře-* , i.e. those to the right in the example, which are interpreted as highly verbal. In example (26), (A) represents examples of Noun, (B) a kind of RN, and (C) is a plausible CEN.[9]

[9] I am providing only one example here for reasons of space. Many more can be found in Karlík and Nűbler (1998) and Veselovská (1998).

(26) Coordination with N

	(A)	(B)	(C)
KRESBA	*- a malba /*	*- a mal-**ov**-ání*	*– a **pře**-mal-**ovává**-ní*
DRAWING	-and painting /	-and painting	-and repainting

The following examples are parallel to the English (25), showing that these nominals can appear in nominal contexts, i.e. as verbal and prepositional complements.

(27) NP context – selected by V/P

a.

Nesnáším	*- malbu /*	*- a mal-**ov**-ání*	*– a **pře**-mal-**ovává**-ní*
I hate	- painting /	- painting	- repainting

b.

Protestovali proti	*- knihám /*	*- psaní*	*– **pře**-pis-**ová**-ní*
they protested against	- books/	- writing	- rewriting

These examples show the nominals in (a) accusative and (b) instrumental contexts. Notice that standard Nouns show case distinction: *malb**a**-malb**u*** (painting$_{NOM}$-painting$_{ACC}$), *kniha-knihám* (book$_{NOM}$-book$_{DAT}$), are countable, and are gender marked (both the above are feminine). In contrast, the relatively productive nominalizers *–ěn/-en + í, –án/-an + í* are all unmarked neuters and have the same forms in all cases, with the exception of instrumental. This feature deficiency, apart from other characteristics, places the B and C nominals in (26) among plausible parallels of English simple event and/or complex event nominals.[10]

The number deficiency of the derived nominals is illustrated in (28), which shows that those nominals are standardly incompatible with numerals *dvě* 'two' but it can be combined with the morphologically specific numeral typical for non-countable *dvojí* 'double.' The choice of the quantifier in (28b) suggests the same distinction – the combination is salient with the singular form of the quantifier but not with the plural.

(28)

Dvě malby /	*? dvě malování /*	*- *dvě/dvojí přemalovávání*
two paintings /	? two paintings /	- *two/dual repainting

*všechn-**o** stavění*	*?? všechn-**y** stavění*	*?? dvě stavění*
all$_{SG}$ building	?? all/every$_{PL}$ building(s)	?? two building(s)

The high periphery of the Czech derived nominals is, however, nominal enough to license the presence of demonstratives and relative clauses, which are standardly associated with the DP projection.

(29) *Takové to / malování / přemalovávání, které Oskar nesnáší nejvíc...*
such that / paintings / repainting that Oscar hates most...
'The painting/repainting, that Oscar hates most...'

With the CEN, the nominal characteristics are complemented with the presence of a clearly verbal feature – i.e. of Aspect. Apart from the aspectual affixes (both prefixes and suffixes) mentioned above in (26), the following examples in (30) show in (a) that the Czech derived nominals tolerate the aspect sensitive adjectival modification *častý* (frequent), and the presence of aspectual feature is confirmed in (b) by various limits on the choice of aspect sensitive prepositions.

(30) a.

?častá malba	*časté malování*	*časté přemalovávání*
frequent painting	frequent painting /	frequent repainting

[10] Apart from the examples (28b) the anonymous reviewer also proposes that the distinction between mass vs. count nominals reflects (copies) the distinction between activities (mass) and accomplishments (count).

b.	*při/po opravě*	**při/po opravení*	*při/*po opravování*
	during/after repair	*during/after repairing	during/*after repairing

Transitivity is another feature standardly related to the category of Verb. A distinct tolerance of the Czech derived nominals for these complements is illustrated below. Notice that the typical (result) Noun does not allow complements interpreted as arguments, as in English (20), while the CENs do, and if they contain aspectual affixes, they in fact require complements (alternatively, the patient is semantically incorporated into the CEN).

(31)

*dopis (*textu)*	*psaní (textu)*	***pře**-psání ?(textu)*	***pře**-pis-**ová**-ní ??(textu)*
letter (* $text_{GEN}$)	writing ($text_{GEN}$)	rewriting ?($text_{GEN}$)	re-writing ($text_{GEN}$)

The example (32) demonstrates the distribution of the short (clitic) reflexive pronoun *se* 'oneself', which is standard with verbs (V), is possible with CENs, but impossible with RNs.

(32)

N	RN	CEN	V
**obraz se*	*malba se*	*namalování se*	*(na)malovatt se*
picture oneself	painting oneself	re-painting oneself	to (re)paint oneself

In the schematic examples (20) and (23), I showed for English that the RN tolerates a concrete, physical modification but not a temporal, abstract one. With CENs it was just the contrary. The data in (30a) and (33) show that the same is true about the distinct RNs and CENs in Czech. The same example illustrates the opposite characteristics, namely that the CENs tolerate subject- (agent-) oriented adjectives, which signals a kind of verbal argument structure that is missing in the RN.

(33) Modification with concrete / subject-oriented APs

*špinavý /*úmyslný dopis*	*špinavé / úmyslné psaní*	**špinavé / úmyslné přepisování*
dirty /*intended letter	dirty / intended writing	*dirty / intended re-writing

The examples in this section have demonstrated that there are minimally two quite distinct kinds of derived nominals in Czech – one group that can be called lexical derivates (RN and possibly some event nominals) and another group, which deserves the label of syntactic derivates (CEN).

3.4.1 Gerunds in Czech

Every comparative grammar of English and Czech states that there are no gerunds in Czech. As for the formal equivalent of the English gerund as in (24), i.e. the lexical entry that can occur with the pre-head possessive and at the same time with a complement marked with verbal structural case (accusative in Czech) – such a lexical entry is not a part of Czech grammar. The examples in (34) demonstrate the incompatibility of possessives with (a) ACC and (b) adverbial modification – both of which are the trademarks of English gerunds. I am using the morphology of CENs and infinitives, the only available lexical entries in Czech, to show that neither of them can appear in a given context.[11]

(34) Combination of POSS and ACC / adverb

a.	**Nesnáší*	*moje*	***přečtení /přečíst***	*jednu knihu*	*každý večer.*
	*he hates	my	**reading/read**	one $book_{ACC}$	every evenng.

'He hates my reading one book every evening.'

[11] In (34b), the complement *kázání* 'prayer(s)$_{GEN/ACC}$' is used because its genitive and accusative are identical, and therefore it cannot be the trigger for ungrammaticality. Translating English gerunds, apart from subordinate clauses, Czech usually uses either a CEN or infinitive. The choice between CEN and infinitive depends crucially on the subcategorization of the main verb, which usually does not tolerate both verbal and nominal complementation. The semantic distinction (in terms of "activity" of the CEN/infinitive) is hardly ever a criterion.

b. **Vážili si jeho **přepisování /přepisovat** kázání rychle a spolehlivě*
*they praised his **re-writing /to re-write** prayers$_{GEN/ACC}$ quickly & reliably
'They praised his rewriting the prayers quickly and reliably.'

However, looking for the semantic equivalent of English gerunds, the Czech CENs are able to express their verbal meaning quite adequately (in most contexts CENs can be even more active than gerunds), including available interpretations of their possessives and/or post-nominal genitives.[12]

4. The structures for nominalizations

In the preceding section, I provided a list of characteristics attested to with 2-3 kinds of deverbal nominals in English and Czech – they all suggested the distinction between what is assumed to be lexical and syntactic derivations. Now I will reproduce two morphosyntactic analyses of the phenomena to show to which extent they are able to explain the attested distinctions.

4.1 Abney (1987)

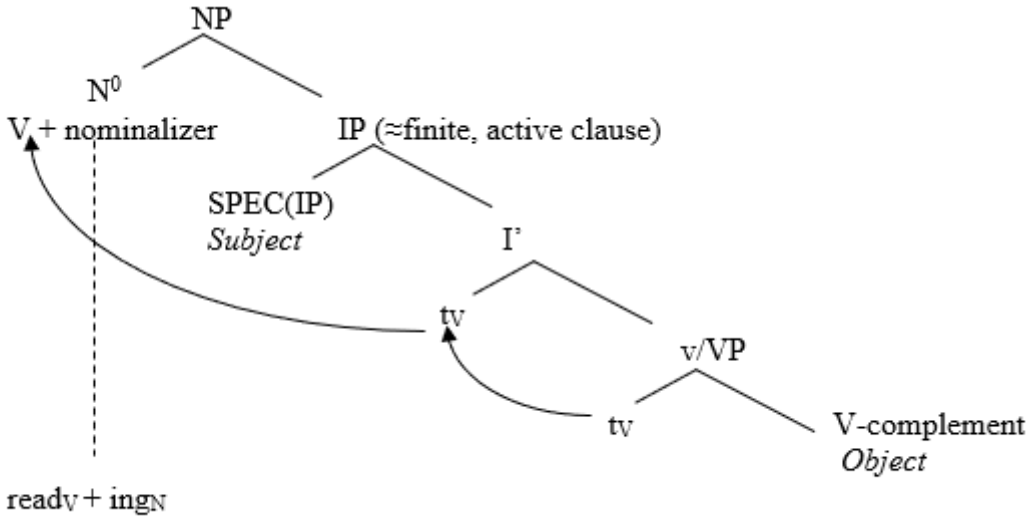
As already mentioned with respect to Lees (1960), productive nominalization has been analysed as a kind of transformation. The concept of transformation underwent development during the stages of generative grammar, and Lees's format in (11) is no longer acceptable. The scheme in (35) shows a nominalization transformation as a movement (leaving traces t_V) of a Verb (V) to a nominalizing suffix (nominalizer), as proposed in, e.g. Abney (1987) or Hazout (1995). Notice that the Verb first moves to I, i.e. the structure projects to the level of a finite clause, to allow generating SPEC(IP), the assumed position of the Subject (Agent).

The IP level, present in (35) became superfluous after the more constructivist approach of argument structure, which relates each argument role to a specific thematic functional head. If the position of the Agent-assigning functional head is VP internal, no IP is needed, and the VP projects only to the level required to generate the Agent-related functional head.

The scheme in (35) captures saliently the form of nominalizations – the verbal structure hidden inside the nominal surface. However, the same structure must be proposed for *all* kinds of nominalizations – both those which take place inside the Lexicon and those within Syntax. There is no principled systematic explanation of the nature of the distinctions between the four kinds of nominalization (result nominals, simple event nominals, complex event nominals and gerunds), which have been noticed, attested to, and some of which were also briefly described in the preceding sections.

[12] I am not going to here describe in detail the interpretation of arguments with the derived nominals. For more theoretical discussion see Grimshaw (1991), and Marantz (1997), and for Czech, Karlík and Nűbler (1998), Karlík (2000) and Veselovská (1998; 2001). All the authors in some way suggest that "in nominal context, the interpretation of possessor as agent or theme is not in fact determined by the subcategorization information we encode, but by our real-world (encyclopedic) knowledge about the meaning of the roots..." (Harley and Noyer, 2000, p.372). For extensive discussion see also Borer (2005-2013) mentioned at the end of section 5 and ft 21.

(35) Nominalization Transformation: V → I → N/nominalizer Movement



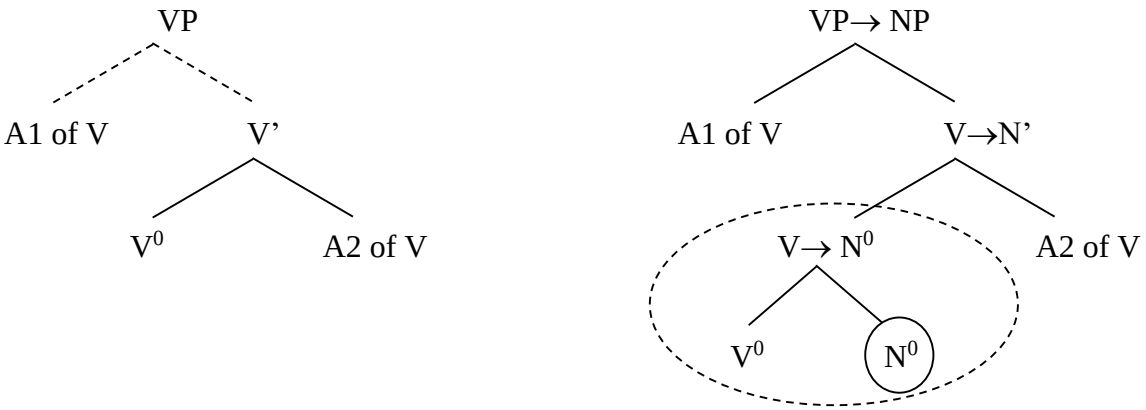
4.2 Levels of insertion

An alternative to a transformation as in (35), reasonably well described in the literature, is Emonds's insertion of the nominalizing suffix to a verbal stem. (For the background of this theory, see Section 2.4.) Step one in such a derivation is demonstrated in (36a) on the left: it is a standard projection of the verbal category (V) at the level that allows a merge of both the A2 and even A1 arguments.

On the right side of (36a), we can see the same structure with a grammaticalized nominalizer (N^0) right adjoined to the verbal stem V^0. After the insertion of N^0, the structure on the right in (36b) projects according to Williams's generally accepted Right-hand Head Rule for English (see Williams (1981)), which claims that the head of a morphologically complex word is its right-hand member: this insertion forces the verbal projection to become a nominal projection.

(36) Insertion of grammatical morpheme: N^0 nominalizer

(a) before adding the N suffix (b) after adding the N suffix



In (36), there is no VP present at the same time as the nominal projection. The process is conceived more as chronological: the projection is standardly verbal *as long as* (i.e. counted in steps in a derivation) the nominalizer is not yet inserted. If insertion of the N^0 morpheme takes place early (e.g. in Lexicon), the verbal head has no time (during the derivation) to project as a Verb, and the dotted layer in (36a) may be missing, replaced instead by D, Q or some other assumed nominal functional head. On the other hand, if the nominalization takes place late, the verb could project quite far, and its projection can dominate heads hosting Aspect and/or positions including the assignment of A1.

The nominalizers are grammatical morphemes, and according to the model in scheme (), they can be inserted in the Lexicon, Syntax or pf. Emonds (1987) shows that the English nominalizing suffix *–ing* allows all three levels of insertion, which explains the distinct properties of (a) result (and simple event) nominal (=Deep, lexical insertion), (b) complex event nominals (=Late, syntax insertion), and (c) gerundials (=PF insertion, including inflection).

The model proposed in (5) and applied in (36) is general and systematic. Emonds (2000) shows that it is able to explain a variety of characteristics of many cross-language morphemes, including Wasow's kinds of passive in English. The same approach is used for the two interpretations of the English nominalizations with the *–er* suffix in Emonds (2018).

Some problems still remain. One wonders, what device forces the insertion of the nominalizer, and what is its nature? In the structure (36), the nominalizing affix N^0 plausibly represents the morphological realization of some syntactic head (alternatively realized in the closest lexically realized extended sister).[13] The tree, however, does not contain any nominalizing head apart from the N morpheme itself, which makes the derivation counter-cyclic, especially with the late and post-syntactic kinds of insertion.

In the following section I will propose a derivation, which combines a structural approach with the chronologically viewed steps in derivations.

4.3 Inner and outer morphology

In Section 2, I summarized some of the theoretical assumptions of present-day generative morphology. Apart from the taxonomy related to the derivational T model (as described in Sections 2.3 and 2.4.) there are also approaches that refer in more detail to parameters of linear order. Integration of the linear models depends on the frameworks' assumptions about lexicalization. The Mirror Principle of Baker (1985) claims that the ordering of suffixes mirrors (in a predictable way) the order of functional heads – i.e. it signals a crucial information about the hierarchy. In DM framework, Bobaljik (1995) argues that inflection is a typical post-syntactic operation and the agglutinating nature of morpheme combinations is thus seriously challanged. With full respect to the arguments provided in Bobaljik's studies, I will assume here that the linearity or morphemes can be in the unmarked case linked to some specific underlying structure.

The ordering of morphemes with respect to each other is discussed in detail in, e.g. Margaret Allen's and Dorothy Siegel's studies (see Allen (1978) and Siegel (1979)). Based on morphophonological criteria, stress patterns and the uniqueness of distinct kinds of grammatical morphemes, the authors propose the existence of three classes of morphemes:

(37) Three classes of morphemes

i. Class I (often Romance): a. *-tion, -ity, -ous, ...* b. *in-, pro-, re-, ...*
ii. Class II (often Germanic): a. *-ness, -ful, -ly, ...* b. *un-, sub-, re-, ...*
iii. Class III: productive inflections (suffixes)

The distinctions observed between the three groups include **linearity** (Class I is the *closest* to the stem, Class III the most distant) and also derivational **chronology** – the ordering of morphophonological processes (Class I morphemes attach to the stem *before* the application of some phonetic rules, the other, Class III after the processes).

Linerity is also considered in Dubinsky and Simango (1996) summarized in (). Discussing typical characteristics of each group, the authors divide affixes into **inner** and **outer** ones, according to their regularity and position, i.e. according to the criteria mentioned already in Chomsky (1970) for lexical and syntactic derivations.[14]

[13] For precise definitions of Alternative Realization, see Emonds (1987; 2000 or 2018).
[14] The same distinctions are mentioned in Wasow (1977) and summarized above in Section 2.2.

(38) Inner vs. Outer Morphology

Considering	**Inner Affixation**	**Outer Affixation**
(a) Regularity	Potential *special* form and meaning	*Predictable* (compositional) form and meaning
(b) Selection	Attaches *inside* the morphology determining the lexical category	May attach *outside* morphology determining the lexical category

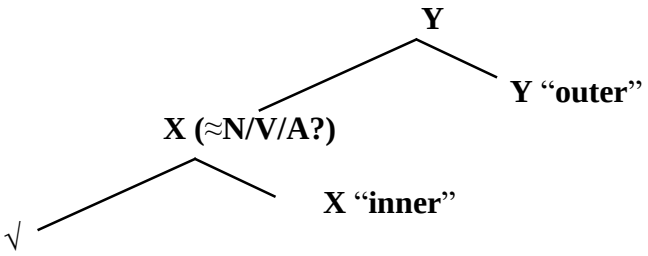
The linear (selection) parameter is directly incorporated into the derivational model in Marantz (2007), who claims a tight connection between *locality domains* in morphophonology and in syntax, and his () redefines () in terms of the structure ().

(39) a. "**Inner morphology**" attaches to roots or complex constituents below the first little x (x = {v, n, a}) node (*phase head*) above the root.

b. All morphology above the first x node is "**outer morphology**", including all "category changing" derivational morphology.

In the following tree, the head Y is the "outer" affix – it includes both inflection and derivation. The lower head X represents "inner" functional affix (a phase head), which determines a category for the category free root √.[15]

(40)



5. Projections of derived nominals

Applying the present-day generative morphosyntactic model of projection on the well-known (above described) paradigms of various kinds of derived nominals, the scheme in (41) illustrates the so-called **lexical nominalizations** (result/event nominals). On the left (41a), we can see a projection of the categorial free root √.[16] It may include some already-merged elements, but none of them is a categorial head, and therefore the projection is not labelled with respect to its category (for the labelling requirements, see Chomsky [2013]). Then, at some moment, the Num head is merged, which is a categorial head as long as it selects a feature [+N]. The Num head used in (41) is not to be identified with a Q head high in the DP. It is rather some equivalent of the head hosting the [+COUNT] feature.[17]

The tree

(b) on the right shows that after the merge of the [+N] head Num, its complement is required to satisfy the [+N] feature, and this subcategorial characteristic of Num triggers the insertion of a nominalizer N^0;

[15] Arguments in favour of the category-free stems (roots) can already be seen in Sapir (1923). In a generative framework, the idea goes back to Chomsky (1970). Here the concept of root was introduced in Section 2.3, scheme (4).

[16] It is irrelevant here whether the initial head (root √) is only an empty index (as in standard DM) or whether it contains syntactically innert semantic features (as in Emonds (2000)).

[17] The labels in this section are chosen without any serious justification, just to illustrate the logic of the analysis. I assume that the concepts of Countability and Number are formed as a *combination* of at least two numeric heads – Num and Q. The combination of several features, plus the fact that one kind of nominalizer morphology often appears in several kinds of distinct nominalizations makes the evaluations of many examples fuzzy and the corpora offers a variety of counter-examples more or less acceptable to a variety of speakers.

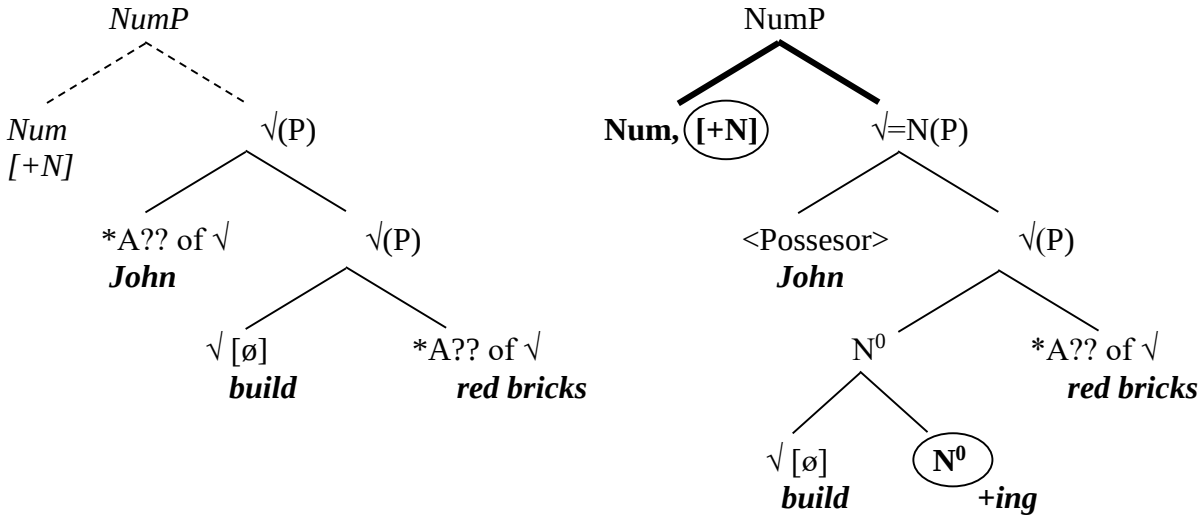
in (41b) the +N agreeing features are circled. Because result nominals are typically countable and never combine with argument interpreted modification, I conclude that the Num head selects √ only, i.e. it is an inner/categorial suffix in terms of (40). With this specification, it does not allow the previous merge of any (plausibly verbal) functional heads assigning true theta roles in their SPECs. The morphological realization of the modification can be a possessive with most likely a possessor's interpretation, an *of*-phrase with some modifying interpretation, as illustrated in (18)-(20), or any other nominal modification including the complete DP layer in the high periphery (e.g. *John's two tall buildings of red bricks*.)[18]

The structures in (42) show the proposed derivation of CENs (i.e. those I have called syntactic derivations). The scheme on the left starts as in (42a) with a root √. Instead of Num, however, a verbal functional head is merged, which I label here traditionally as little *v* (for Czech, some Aspect head may be appropriate to explain the presence of full aspectual morphology with CENs). This is a categorial head, and therefore it creates a verbal domain including the argument structure.

In (42) I assume assignment of A1 in SPEC(*v*) and of A2 in a √-complement position, but nothing depends on these labels. In the right-hand structure in (42b), the *v*P complex merges with a nominal functional head, which I mark here as D^0. This head is not an inner (categorial) head, and therefore it does not select √ only. It can merge with the *v*P as well, providing the *v*P is 'nominalized', i.e. its head becomes nominal by the insertion of a compatible categorial N^0 suffix. In (42b), the +N agreeing features are again circled. English has such suffixes (e.g. *–ing*) as well as Czech (e.g. *–á-ní*), and therefore CENs can surface in the form described in (21) – (23) for English, and similarly in parallel Czech examples.[19]

(41) **Result/ Event nominals**

(a) projection of the a-categorial √ (b) satisfaction of [+N] of Num: insertion of N^0

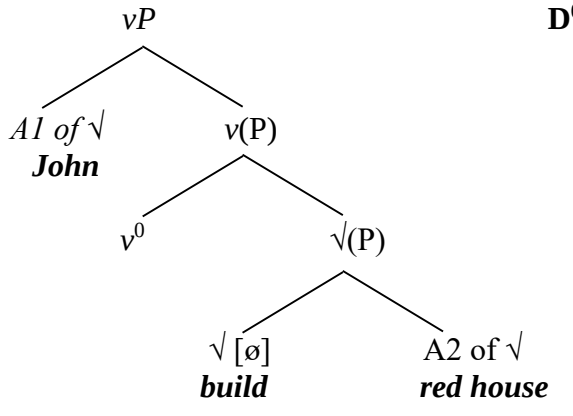


[18] Standard processes take place so as to achieve the PF format: nominal functional heads are added to provide nominal features, adjectives are merged and the possessive is realized in the DP layer.

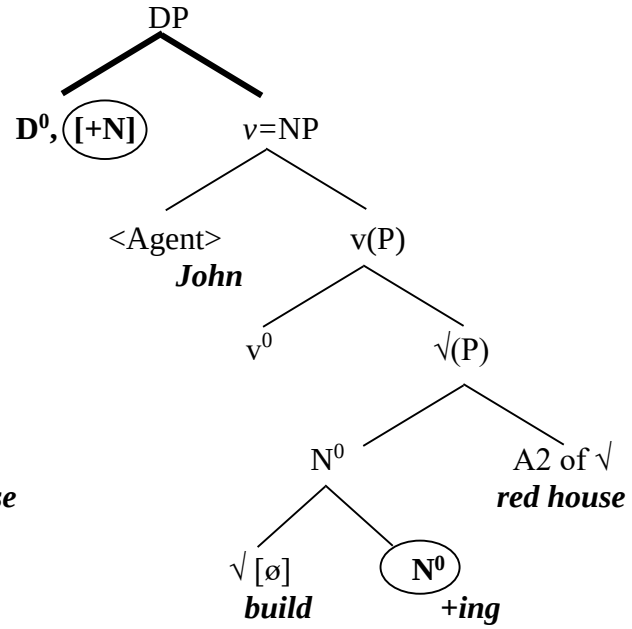
[19] In (42b), I use D^0 as the relevant [+N] head, which triggers the late (=syntax) insertion of the N^0 morpheme. Recall, however, that CENs tolerate possessives, demonstratives and adjectives – therefore perhaps some larger proportion of nominal functional projections can be present with CENs; their lowest nominal projection may be lower than D^0. I will leave it to future research to determine which head(s) this may be.

(42) **Complex event nominals**

(a) √ plus a verbal head *v*, projecting A1 and A2



(b) merging D^0 with [+N] : insertion of N^0



For space reasons, I am not going to provide here a scheme for the derivation of English gerunds. I propose that it projects like the CEN in (42a), up to the *v*P (or Aspect) level. Contrary to CEN, however, the nominalization will not be triggered by the merge of D, [+N], but it will be forced later on, by some even higher external selector – a preposition, transitive verb, etc. These heads require (or allow) a nominal complement, i.e. they require a [+N] context, and this subcategorizational feature is satisfied by a nominalizer N^0, attached to the √ in a way parallel to (41) and (42).

Cross-linguistically, the DP domain represents a phrase, and the morphology inserted outside the phrasal boundary can only be post-syntactic. Some English nominalizers (e.g. *–ing*) are post-syntactic morphemes – equivalent to inflection. No traditional Czech nominalizer (i.e. N^0 affix on a verb), however, is post-syntactic. [20]

The discussion above, however, does not cover all topics addressed with respect to nominalizations. In the present day morphosyntactic frameworks the analysis often depends on the author's assumptions about the argument structure. Borer (2005-2013) uses more complex projections for both nominals and predicates, both of which may include specific positions for individual arguments. The author assumes (volume II, Chapter 8) that *–ing* is an instantiation of the bound f-morpheme which assigns a range to open functional value. When a nominalizer, *–ing* has well-defined aspectual properties, i.e. it is $ING_{N[V]}$.

To explain the anti-telicity of English *–ing* nominalizations and the available variety of argument interpretation of the possessives and of-genitives with the English *–ing* nominalizations, Borer argues that *–ing* is associated with (generated in?) the **Event** projection. The SPEC(E) hosts the E argument, which in transitive contexts raises to SPEC(DP). The structure for complex event nominal is as follows (volume II, p. 242, ex. [57])

(43) $[_{DP}... [_{NP}$ V-*ing*$[_{EP}$ DP ~~V-*ing*~~ <e>$_E$ ... $[_{VP}$ ~~V~~]]]

Crucially, the VP in () includes projections of *activity* and *originator* (i.e. two arguments can be located in the SPECs). The distinction between the variety of English nominals (volume III, chapters 4 and 12) is thus explained by the variety of available projections inside the V(P), each of which hosts a

[20] Veselovská and Karlík (2004) tentatively propose that the agreement morphology on passive participle represents in fact a kind of PF nominalization. Veselovská (2018) argues for a similar analysis of Czech adjectival agreement. If these proposals are roughly correct, Czech does have PF nominalizers, which can be licensed in some different contexts.

specific feature (e.g. licenses an argument with specific interpretation, e.g. originator or participant), and the movement of the arguments to higher SPECs.[21]

6. Summary

In this study I demonstrated (using the examples of nominalizations in English and Czech) how categorial change can be described in present day generative grammar. Following a history of the studies dealing with nominalizations, I summarized diagnostics signalling the existence of several distinct kinds of derived nominal and illustrated several alternative analyses used for the data in various stages of the generative approach.

In the final section, I made an analysis of the three English kinds of nominalization combining various aspects of Distributed Morphology and the Tripartite Level of Insertion models. I proposed that the three attested kinds of nominalization (in English) reflect the existence of three kinds of nominalizing affixes – only two of which have counterparts in the Czech repository of grammatical morphemes.

In particular, the nominalizing affixes are inserted in the derivation (combined with the root √) at distinct stages/levels, depending on the moment when they are required by a nominal feature in their external context. The trigger for the insertion is identical: it is the [+N] feature merged in the structure: with RNs, the nominalization takes place at the level of the a-categorial root √, and it is triggered by the head Num. With CEN, the projection of √ is first assigned a verbal category, and only then is the nominalization forced by a nominal (e.g. D) head. With the English gerund, the nominalization is post-syntactic (non-interpreted), and it is triggered by a DP external selector.

In the proposed framework, the nominalizing morphemes are described with respect to their context (subcategorization). For example, the English nominalizer *–ing* is an alternative realization of an N^0 feature, which surfaces on (requires a context of) a root. Its source in the morphology can be found in distinct places. It can be:

(44) Variants of English nominalizing suffix *–ing*

a.	an inner suffix	=	lexical (derivational) suffix	=	RN
b.	an outer suffix	=	syntactic (derivational) suffix	=	CEN
c.	a post-syntactic suffix	=	post-syntactic (inflectional) suffix	=	GER

None of the traditional nominalizers (grammatical morphemes) in Czech is really post-syntactic, and therefore Czech has no formal equivalent of English gerunds.

Starting with the very traditional taxonomy of morphemes, I demonstrated that that the traditional concepts based on empirical data and paradigms have not been ignored and rejected. Instead, they have been taken into account, reformulated (and often relabelled) in terms of a new framework to achieve more general scale and explanatory value integral to the framework.

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[21] The correlations are described in detail in Borer (2005-2013, volume III, chapter 4 and 12). The author provides (and justifies) structures for a variety of Hebrew nominalizations and English *–ing* nominalizations with the projections often more complex than (43). I refer the interested reader to the literature mentioned in the bibliography to find existing parallels between languages (Polish data are in Borer's framework discussed in e.g. Rozwadowska [2018]).

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