

RESEARCH

D and N are different nominalizers

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In this paper I argue for a split between NP and DP by showing that it accounts for crucial distinctions in the behavior of nominalizations. The NP-DP split is challenged not only by competing frameworks or theories that argue, for instance, that NPs and not DPs are selected. Another challenge comes from derivational theories that reject the existence of possibly covert lexical categorizers such as N and posit instead overt functional categorizers like Classifier and especially D for nominalizations. In this latter trend, it is the NP (not the DP) whose existence is questioned. This paper argues in favor of the lexical categorizer N and for D as a necessary but exceptional nominalizer.

Keywords: nominalization; lexical and functional categorizers; English; Spanish; Romanian

1 Introduction

Nominalization is among the first phenomena for which a DP functional projection was posited in the '80s (Abney 1987), next to possessor agreement in Hungarian (Szabolcsi 1983) and other crosslinguistic facts in nominal syntax (Hellan 1985). Notably, Abney's use of the DP in his account of nominalization had a decisive contribution to the success of the DP-hypothesis and its further consequences for linguistic theory.

This paper follows the tradition of Abney (1987) and offers evidence for the NP-DP hypothesis on the basis of deverbal nominalizations in English, Spanish, and Romanian, as well as some additional insights from German and Polish. All the nominalizations that I consider inherit argument structure from their base verbs, realizing at least the internal argument. For a verbal construction as in (1a), in English we can build what I will call the verbal gerund in (1b), which realizes the object with accusative case and the subject with the possessive, the nominal gerund (or Chomsky's 1970 *mixed nominalization*) in (1c), which differs from the verbal gerund in realizing the object with a prepositional *of*-genitive, and what Chomsky (1970) calls a *derived nominal* in (1d), which employs a nominalizing suffix different from *-ing*. Other suffixes that appear in derived nominals are *-ance* (*annoyance*), *-(at)ion* (*destruction, realization*), *-ment* (*amusement*) or zero (*the climb*).¹

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|-----|----|-------------------------------------|-----------------|
| (1) | a. | John refused the offer. | |
| | b. | John's refusing the offer | verbal gerund |
| | c. | John's refusing of the offer | nominal gerund |
| | d. | John's refusal of the offer | derived nominal |

¹ Chomsky (1970) also employs derived nominals with further suffixes like *-ness* (*eagerness*), *-th* (*growth*), but these will not concern us here, because either they are not deverbal, or do not typically realize nominals with argument structure.

I will argue that a proper treatment of nominalization requires both an NP and a DP projection in the nominal syntax, which are responsible for two different nominalization types with contrastive properties. I will build on some of the ideas in Abney (1987), but my focus will be on the restricted use of determiners in some nominalizations, which was noticed as early as in Lees (1960) and further mentioned in Lakoff (1970), Chomsky (1970) and many others, but has not received a satisfactory analysis yet.

As illustrated in (2) (Zucchi 1993: 21), the verbal gerund differs from the nominal gerund and derived nominals in rejecting determiners, in spite of its compatibility with the possessive in (1b). I will call the nominalizations compatible with all lexical determiners *full nominalizations* and those that show restrictions *defective*, for reasons that will become clear in Section 3. Since I am considering only nominalizations that realize argument structure, my full nominalizations correspond to the *complex event nominals* in Grimshaw (1990) and *argument structure nominals* in Borer (2013).

- (2) a. **the/a/that** performing/performance of the song
 b. John's/***the**/***a**/***that** performing the song

In Iordăchioaia (2014) I show that the same contrast holds for nominalizations in Romanian, Spanish, and German, as illustrated in (3) for the nominal and verbal infinitive nominalization in Spanish. The Spanish nominal infinitive patterns with the English nominal gerund and derived nominals in realizing its argument with a genitive (see *de las fuentes* in (3a)), and the verbal infinitive resembles the English verbal gerund in realizing the internal argument with accusative case (Plann 1981; Migual 1996). Further crosslinguistic comparisons will be discussed in Section 3.

- (3) a. *Spanish nominal infinitive nominalization*
el/ese/aquel/un murmurar de las fuentes
 the/this/that/a murmur.INF of the fountains
 ‘the/this/that/a murmuring of the fountains’
- b. *Spanish verbal infinitive nominalization*
el/*ese/*aquel/*un haber él escrito esa novela
 the/this/that/a have.INF he written that novel.ACC
 ‘his having written that novel’

An important difference between English and these other languages is that defective nominalizations in the latter are compatible with the definite determiner as in (3b), while in English they employ the possessive instead (see (1b) vs. (2b)). The contrast in (3) essentially shows us that the determiner in defective nominalizations has a different nature from that in full nominalizations, even when it is realized by the same lexical item. Building on Iordăchioaia (2014), I will take the contrast in the status of D to be directly related to the presence of unrestricted nominal internal syntax in full nominalizations and the lack thereof in defective ones. In the syntax-based model of Distributed Morphology (DM) I will analyze the former as nominalizations by a lexical head N (or *n* in DM) and the latter as missing a lexical categorizer and being instead nominalized by D.

While this idea is reminiscent of Abney (1987), my account contributes new important insights for both the study of nominalization and the NP-DP debate. First, on the basis of comparative evidence from English, Spanish, Romanian, and Polish, I argue for a well-defined syntactic domain, the TP, which N/*n* cannot nominalize — only D can — and show how a theory of Agree as in Pesetsky & Torrego (2007) accounts for the use of lexical determiners in the different types of nominalization. This analysis offers a refinement

of the theory of mixed categories proposed in Borsley & Kornfilt (2000) and Kornfilt & Whitman (2011). Second, I provide new evidence that the English verbal gerund represents a nominalization of a TP by possessive D. I show how this account is superior to previous ones, and especially the more recent one in Panagiotidis (2014), which posits a special functional categorizer for verbal gerunds. In my account, D alone fulfills this task.

Third, from the perspective of the NP-DP debate, my contribution brings evidence for the need of a DP in order to account for defective nominals as nominalizations by D, but also for the need of lexical categorizers like N/*n* to account for the internal nominal syntax of full nominalizations. In the absence of a DP projection, we cannot explain the empirical facts in Spanish and Romanian, where the definite determiner turns a fully verbal structure into a nominalization, as in (3b). Additional support for the DP-hypothesis comes from CP-nominalizations by D in Polish, an articleless NP-language in Bošković's (2005) tradition. Fourth, I argue against recent trends in syntactic theories of word formation (Borer 2005; 2013; De Belder 2011), which dispense with lexical categorizers and employ functional heads like D to implicitly categorize the structures they attach to. In such approaches, however, it would be impossible to account for the difference between the two Spanish infinitive nominals in (3), unless one introduces another categorizer, say Classifier, that would be present in full nominalizations and absent in defective ones, as I argue for *n*.

I start in Section 2 with an overview on how the DP has been employed in previous work on nominalization. In Section 3 I summarize the properties of the two patterns of nominalization in the different languages and show how these correlate with a nominal and a verbal internal syntax. Section 4 explains this contrast in terms of the presence of an *n*P layer in full nominalizations and its absence in defective ones: the nominal features of D are valued via Agree with *n* in the former, allowing all lexical determiners to appear, but receive a default value in the latter, which explains the lexical restriction on determiners. In Section 5 I further investigate how complex a verbal structure must be to form a defective nominalization and for *n* not to be able to nominalize it – I conclude that it must be a TP. Section 6 discusses this proposal in the context of a typology of nominalizations and some implications for the NP-DP debate. Section 7 presents my conclusions.

2 The use of the DP for nominalization

Chomsky (1970) highlights a fundamental contrast in the behavior of verbal gerunds and derived nominals, in that, among others, the predominantly nominal behavior of the latter requires a treatment different from the transformationalist accounts offered at the time (Lees 1960; Lakoff 1970), which would only suit the verbal behavior of the former. On the one hand, the verbal gerund in (4) is compatible with the auxiliary *have* and requires adverbial modification. On the other hand, derived nominals as in (5) cannot accommodate auxiliaries and require adjectival modification.

- (4) a. John's refusing/**having** refused the offer
 b. John's **quickly**/***quick** refusing the offer

- (5) John's **quick**/***quickly** refusal of the offer

2.1 Abney (1987)

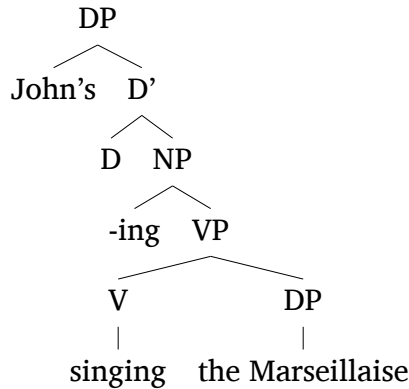
The empirical challenge that leads Abney (1987) to posit a DP is the dual behavior of the verbal gerund (what he calls the *poss-ing gerund*) in (1) and (4), which combines nominal behavior — evidenced by the possessive external argument *John's* — and verbal behavior

— evidenced by accusative case marking, use of the auxiliary and averbial modification. In particular, the principles of the evolving X-bar theory promoted in Chomsky (1970) disallow an exocentric structure with mixed nominal and verbal projections as in (6), which represents the straightforward make-up of the verbal gerund in (4) with NP standing for *John's* and VP_{ing} for *(quickly) refusing the offer* or *having (quickly) refused the offer*.

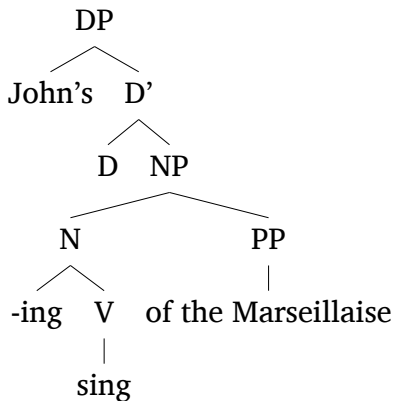
(6) [_{NP} NP VP_{ing}]

Abney proposes a complex structure for the nominal phrase, in which D may select a VP or an NP. The exact implementation is not trivial, as shown by the many options he discusses. His final account for the verbal and the nominal gerund (his *poss-ing* vs. *ing-of*) is given in (7) and (8) (Abney 1987: 223).² Both are nominalized by the suffix *-ing*, which attaches to VP and V, respectively, and turns their feature specification from [−N] to [+N]. Needless to say, the syntactic status of *-ing* is peculiar, as it “affixes to a verbal projection, converting it directly into a nominal projection, without projecting any structure of its own” (Abney 1987: 224).

(7) John's singing the Marseillaise (poss-ing)



(8) John's singing of the Marseillaise (ing-of)



2.2 Nominalization with or without NP/nP

Building on Chomsky (1970), syntactic frameworks of word formation like Distributed Morphology (Marantz 1997; Harley & Noyer 2000; Alexiadou 2001; Arad 2005; Marantz 2007) and the Exo-Skeletal Model (Borer 2005; 2013) assume acategorial roots, which

² Abney also discusses the *acc-ing* gerund, which is a nominalization of an IP by D in his analysis. Here, I follow Pires (2006), according to which *acc-ing* lacks a DP layer, and limitedly refer to the *acc-ing* for comparison in my analysis of the *poss-ing* in Section 5.2.

must combine with functional heads to build words. When a root combines with such a head, it becomes categorized as a noun, verb or adjective, a fact that stays implicit, for instance, in Marantz (1997) or is specifically implemented by means of a functional *non-lexical* head as in Alexiadou (2001: 19).

Borer (2005; 2013) and De Belder (2011) explicitly argue against ‘lexical’ categorizers and employ functors to indirectly categorize roots. For nominalizations as in (9a,b), Borer (2013) takes the suffixes *-ion* and *-ing* to represent different functors of some type $C_{N[V]}$, which turn a structure of category V into a nominal as in (9c) — a simplified abstraction of her structure (134a) (Borer 2013: 179): DP1 stands for *the court* and DP2 for *the crime*.³ The other option is for D itself (or another extended projection) to nominalize a root as in zero-derived nominals. In (10), a root like \sqrt{WALK} may be turned into a noun or a verb by some nominal or verbal extended projection represented by D and T (Borer 2013: 324). There is therefore nominalization of verbs by functors introduced by suffixes or simple nominalization/categorization of roots by D (or another head of the nominal extended projection).

- (9) a. the court’s **investigation** of the crime
- b. the court’s **investigating** of the crime
- c. $[_D DP1’s [extended\ nominal\ structure\ [_N C_{N[V]} [event\ structure\ [of\ DP2\ [_{C=v} \sqrt{XYZ}]]]]]]$

- (10) a. $[D [_{C=N} \sqrt{WALK}]]$
- b. $[T [_{C=v} \sqrt{WALK}]]$

Marantz (2007; 2013) argues that lexical categorizers such as *n(oun)/v(erb)/a(djective)* play a crucial role in word formation as phase heads that define the level where idiosyncratic meaning is negotiated between functional categories and roots; everything above them must receive compositional interpretation.⁴ Most of the following work in DM assumes the presence of lexical categorizers in word formation, which categorize roots in a syntactic derivation (Arad 2005; Embick & Marantz 2008; Embick 2010; Panagiotidis 2011; 2014).

Panagiotidis (2011; 2014) fine-tunes this approach by arguing that lexical categorizers like *n* and *v* are necessary for interpreting roots: they have LF-interpretable $[N]/[V]$ features and provide the interpretive perspective for semantically deficient roots. Much in the spirit of Abney (1987), Panagiotidis argues that non-lexical functional heads like D lack descriptive content and cannot categorize the underspecified semantics of roots (Baker 2003).

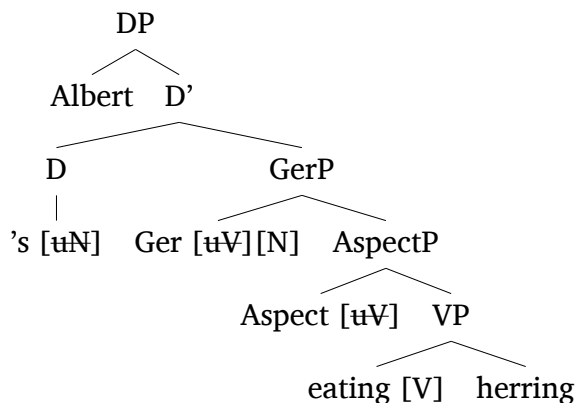
To account for mixed projections, Panagiotidis (2014: Section 6.5) posits a special *functional* (vs. lexical) categorizer — a *switch*, as he calls it —, which bears both interpretable (i.e., lexical) and uninterpretable (i.e., functional) categorial features, and mediates between nominal and verbal projections. For verbal gerunds as in (1)/(4), the switch is Ger(und) and has an interpretable $[N]$ and an uninterpretable $[uV]$ feature. The former allows Ger to appear with a possessive determiner, whose $[uN]$ it agrees with as in (11) (Panagiotidis 2014: 145); the latter is eliminated via categorial Agree with the embedded verbal structure, similarly to the $[uV]$ feature of Aspect.

³ For Borer the functors introduced by Latinate suffixes differ from that introduced by *-ing* in ways that are not important for this presentation.

⁴ All the nominalizations discussed here are instances of compositional word formation above the *vP*, since they all inherit argument structure from the base verb. Cases of pure categorizations of roots would be the often polysemous derived nominals in what Grimshaw (1990) calls *result* and *simple event nominal* readings.

I will not go into further details of Panagiotidis's analysis or a comparison to other proposals (see Section 6.1) but simply point out that (11) fails to account for the contrast in (2). In particular, if the functional categorizer Ger has an interpretable feature [N], nothing can explain why this feature would value the [uN] feature of the possessive D as in (11) but not that of the other English determiners in (2b). I will return to this point in Section 4.

(11) Albert's eating herring



2.3 Interim conclusions

Two interrelated aspects in the previous literature are relevant for the present paper: an appropriate treatment of the two types of nominalization and the status of the DP and the NP in a theory of word formation. For the latter aspect, we find two trends. On the one hand, Abney employs the DP in order to expand the structure of the noun phrase and to accommodate mixed projections like the verbal gerund. On the other hand, current trends in syntactic theories of word formation aim to dispense with lexical categorizers like *n* and posit categorization (of roots) via extended projections like D.

To approach the different types of nominalization, various additional categorizers are promoted. Borer (2013) uses deverbal nominalizing $C_{N[V]}$ functors such as the nominalizing suffixes *-ing* or *-ation*, as well as nominal extended projections (including D) to nominalize a structure. Panagiotidis (2014) posits a functional categorizer Ger for the verbal gerund, which substantially differs from the lexical categorizer *n* contributed by nominalizing suffixes. For Panagiotidis, both types of nominalization project DP.

I will show that the current apparatus available in nominal syntax, which includes both N and D with their corresponding features and properties, is necessary and sufficient for a straightforward implementation of the empirical contrast in (2), without further functors or special categorizers. Arguably, the role that N/*n* plays in my account could be carried out by another nominal projection like Classifier, which would carry the same features that I attribute to N/*n*, in models as in Borer (2013); De Belder (2011). However, the presence of the D-layer is crucial, unless we want to argue that lexical determiners are ambiguous between instantiating D, N, and/or a special categorizer like Panagiotidis's switch, which would be undesirable.

3 Full and defective nominalizations

The contrast between the two nominalization patterns exemplified for English in (2) and for Spanish in (3) is also found in Romanian and German, as shown in Alexiadou et al. (2011) and Iordăchioaia (2014). In the interest of space, I restrict my attention to Romanian here, which I illustrate in (12). The infinitive nominalization in (12a) patterns with

full nominalizations in that it accommodates adjectives and all lexical determiners, while the supine nominal in (12b) counts as defective, since it is incompatible with adjectives (takes adverbs instead) and only allows for the definite determiner.

- (12) a. *Romanian infinitive nominalization*
 spălarea/{o/acea} spălare bună a rufelor
 wash.INF.the/a/that wash.INF good of laundry.GEN
 ‘the/a/that good washing of the laundry’
- b. *Romanian supine nominalization*
 spălatul/{*un/*acel} spălat bine/*bun al rufelor
 wash.SUP.the/a/that wash.SUP well/good of laundry.GEN
 ‘well washing the laundry’

The crosslinguistic instantiations of the full vs. defective nominalization patterns in (2), (3), and (12) vary to some degree. The defective nominalization marks the external argument with (possessive) genitive in English (2b) but with nominative case in Spanish (3b) (or as a *by*-phrase in Romanian, see (24)). The internal argument receives accusative case in English and Spanish but genitive in Romanian (see overview and further references in Alexiadou et al. 2010; 2011). Some of these differences will be addressed in Section 5, but for now we focus on the properties that make one nominalization fall into one category or the other – namely, the compatibility with determiners and their nominal properties, as exhibited by adjectival modification.

3.1 Adjectival modification

The essential property of nominalizations that flexibly allow determiners is their compatibility with adjectives, which indicates a nominal internal syntax (Iordăchioaia 2014). In (4b) and (5) we saw that derived nominals in English pattern this way, while the verbal gerund does not. The nominal gerund (or ing-of) in (13) behaves like a full nominalization. The same contrast is visible for Romanian in (12) and for Spanish in (14): the full nominalization can be modified by adjectives, while the defective one requires adverbs.

- (13) *English nominal gerund*
 John’s **quick** refusing of the offer
- (14) a. *Spanish nominal infinitive nominalization*
 el **suave** murmurar de las fuentes
 the soft murmur.INF of the fountains
 ‘the soft murmuring of the fountains’
- b. *Spanish verbal infinitive nominalization*
 el (***constante**) escribir ella novelas **constantemente**
 the constant write.INF she novels.ACC constantly
 ‘her constantly writing novels’

In confirmation of the correlation between determiner selection and adjectival modification, the German minimal pair in (15) (Iordăchioaia 2014: 183) shows that, when modified by an adjective as in (15a), an infinitival nominalization may also combine with any determiner; however, when modified by an adverb as in (15b), it is only compatible with the definite determiner *das*, as in Spanish and Romanian. (15a) patterns with full nominalizations and (15b) with defective ones.

- (15) a. *German infinitive nominalization with adjective*
 das/jenes/ein **ständige(s)** (die) Sterne Beobachten
 the/that/a constant the stars.ACC observe.INF
 ‘the/that/a constant observation of the stars’
- b. *German infinitive nominalization with adverb*
 das/*jenes/*ein **standing** (die) Sterne Beobachten
 the/that/a constantly the stars.ACC observe.INF
 ‘constantly observing the stars’

3.2 Nominal features

Adjectival modification indicates that full nominalizations have nominal internal syntax. More support comes from properties that show that these nominalizations have gender features. Although in Spanish and Romanian both full and defective nominalizations exhibit morphological gender, I will argue that only the former have valued gender features; the latter receive a default value like CPs.

For Romanian, Iordăchioaia & Soare (2008) argue that the feminine form of the infinitival nominalization represents valued gender, while the neuter form of the supine is a default specification similar to that of CPs. In (16a), the CP is felicitously referred back to by the default gendered anaphor *asta*, but not by *aceasta* or *acesta*, which bear valued feminine and masculine-neuter features. The infinitive nominalization in (16b) contrasts with the CP in being compatible with *aceasta*, as its suffix is inherently feminine. The supine in (16c), however, disallows the anaphor *acesta*, which carries valued masculine-neuter gender, and allows instead the default gender anaphor *asta*, patterning with the CP, which lacks nominal internal features altogether.

- (16) *Gender features in Romanian nominalizations*
- a. [Că Ion a venit], **asta/*aceasta/*acesta** știi.
 that John has come, it/this.F/this.M-N know.1.SG
 ‘That John came, I know it.’
- b. Am vorbit despre **interpretarea** rolului Hamlet în
 have.1.PL spoken about interpret.INF.the role.GEN Hamlet in
 general. Se pare ca **aceasta/??asta** îi consacră indubitabil
 general. REFL seems that this.F/it them validates undoubtedly
 pe actorii tineri.
 ACC actors.the young
 ‘We spoke about the interpretation of Hamlet in general. Apparently, it undoubtedly validates the young actors.’
- c. Am vorbit despre **interpretatul** rolului Hamlet în general.
 have.1.PL spoken about interpret.SUP.the role.GEN Hamlet in general.
 Se pare ca **asta/*acesta** îi atrage pe toți actorii tineri.
 REFL seems that it/this.M-N them attracts ACC all actors.the young
 ‘We spoke about the interpretation of Hamlet in general. Apparently, it attracts all the young actors.’

Plann (1981) and Miguel (1996) argue for a similar difference between the nominal and the verbal infinitive nominalization in Spanish. (17a) indicates that the nominal infinitive has full gender features like the masculine pronoun *él*, while (17b) shows that the more verbal infinitive has default gender like the neuter pronoun *ello* (see also Alexiadou et al. 2011 for German).

- (17) *Gender features in Spanish nominalizations*
- a. Acostumbrado **al dulce mirar de su amada**, ya no podía
 used to.the sweet gaze.INF of his beloved, now not could
 vivir sin **él/*ello**.
 live without him/it
 ‘Used to the sweet gaze of his loved one, he could no longer live without it.’
- b. **El comer carne** no es tan importante que no se puede
 the eat.INF meat.ACC not is so important as not REFL can
 prescindir de **ello/*él**.
 do.without of it/him
 ‘Eating meat is not so important as not being able to do without it.’

Besides gender features, Iordăchioaia & Soare (2008) argue that the two patterns of nominalization in Romanian also contrast in availability of number features and case declension. The conclusion is that, in conformity with the hypothesis that full nominalizations exhibit entirely nominal syntax, they also present evidence of valued nominal features in languages in which these are visible (see (16b) and (17a)). In contrast to these, defective nominalizations are not nominal internally, since they pattern with CPs in receiving default gender values in contexts such as in (16c) and (17b).

4 Nominalization by *n* vs. nominalization by D

I account for the determiner selection contrast between full and defective nominalizations by arguing for the projection of an *nP* layer in the former and the lack thereof in the latter. The valuation of the nominal features on D in the presence/absence of *n* explains the differences above.

Previous literature accounted for the internal syntax of these nominalizations in various ways that I cannot review here. I follow Iordăchioaia & Soare (2008) in their proposal that the Romanian full nominalization (i.e., the infinitive) projects an NP layer, which, next to further nominal extended projections like Classifier and Number, accounts for its nominal properties. In their analysis, the supine lacks such a layer and has only a DP that attaches to a verbal AspectP. The N/*n* head has often been argued to carry noun declension information, including gender, case, and number features (Picallo 2006; Lowenstamm 2008; Kramer 2015). Accordingly, the fully nominal infinitive includes an NP/*nP* in its structure, while the supine does not. Similar proposals have been made in Iordăchioaia & Soare (2008) and Alexiadou et al. (2010; 2011) for the two nominalization pairs in Spanish and English, as well as comparable nominalization pairs in German.

(18) schematically summarizes the essential syntactic projections in full and defective nominalizations:

- (18) a. $[_{DP} [_{nExtP} [_{nP} ([_{vExtP}] [_{vP} [\sqrt{ROOT}]]]]]]]]$ full nominals
 b. $[_{DP} [_{vExtP} [_{vP} [\sqrt{ROOT}]]]]]$ defective nominals

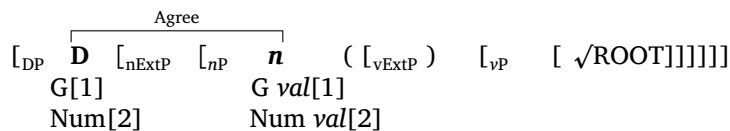
All nominalizations project a *vP*, which maps the root onto a verb from which the nominalization is derived. Most nominals inherit a variable number of further verbal extended projections (*vExtP*): defective nominalizations always do; full nominalizations inherit at least the projections responsible for argument structure (Alexiadou et al. 2010). In Section 5 we will discuss how high such a *vExtP* may be for *n* to still be able to nominalize it. Concerning the new nominal category, both full and defective nominalizations have the distribution of nouns, that is, they have an external nominal syntax uniformly accounted for by the presence of the DP layer in both (18a) and

(18b). However, unlike defective nominalizations, full nominalizations have an internal nominal syntax contingent on an *nP* layer (and its further nominal extended projections summarized under *nExtP*), which allows adjectives and accounts for the interpretable nominal features.

We saw in Section 3 that the absence of the nominal internal syntax (i.e., adjectival modification and nominal features) represented by *nP* in (18a) is responsible for the restriction on determiners in defective nominalizations. That is, when *nP* is present, all lexical determiners are possible, and when *nP* is absent, only one is accepted. This suggests that the restriction must arise from the impossibility of determiners to access some information on *n* that they need. I propose that this information concerns the valued nominal features for gender and number that *n* carries (Picallo 2006; Lowenstamm 2008; Kramer 2015); cf. the interpretable [N] features on *n* in Panagiotidis (2014). As also pointed out in Pesetsky & Torrego (2007), nouns have lexically valued number and gender features. This explains the existence of pluralia tantum nouns like *scissors* and the fact that the gender value usually comes with the lexical entry of a noun as in *girl* or *boy*. Determiners are not specified for gender and number lexically; they acquire a value via agreement with the noun with which they combine. In Pesetsky & Torrego’s terms, determiners have unvalued gender and number features that they must value via Agree with the lexically valued features on nouns.

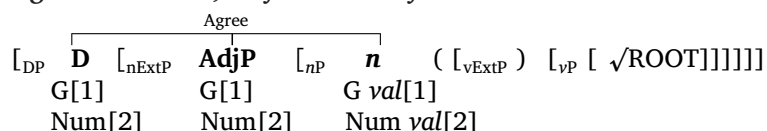
The contrast between full and defective nominals in allowing determiners can be explained as follows. Full nominalizations have an *nP* layer with valued gender and number features, which determiners agree with to value their unvalued features, as sketched in (19), where G and N stand for gender and number features, while [1] and [2] specify the coindexed values.

(19) *Agree between D and n in full nominalizations*

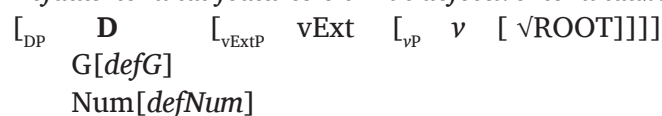


The configuration in (19) also accounts for the agreement of adjectives with nouns, implicitly explaining the tight connection between adjectival modification and flexibility with determiners in full nominalizations. Adjectives carry unvalued number and gender features just like determiners and value them via Agree with *n*. The unvalued features on AdjP and on D agree with each other without valuation but also agree with the corresponding valued features on *n* with valuation. Eventually, all instances of unvalued nominal features acquire the same value, as in (20).⁵ Given the proper valuation of the nominal features on D, all lexical determiners are fine in these constructions, the same way they are with underived nouns, for which *n* would immediately categorize the root in (19)/(20).

⁵ The same schema can also account for demonstrative determiners, which Giusti (2002) argued to be maximal projections. It should have become clear by now that I use D as the leftmost functional projection in the nominal phrase, as in Longobardi (1994), and, in this respect, my D nominalizer corresponds to Giusti’s (2002) FP^{max}, the position for articles and Case (see also Wiltschko 2014: Chapter 6). Should we distinguish between this DP/KaseP/FP^{max} layer and a lower position for lexical determiners with valued nominal features like demonstratives, my analysis may be reformulated such that defective nominalizations have only the former upmost functional layer, while full nominalizations include the intermediate layer hosting lexical determiners that agree with *n*.

(20) *Agree between D, AdjP and n in full nominalizations*

By contrast, defective nominalizations lack an *nP* in (18b), so *D* fails to value its gender and number features in this configuration and receives a default value as in (21), where *defG/defNum* stand for the default gender/number that each language would associate to this *D* (see Section 3.2). This default value on the nominal features of *D* is understood as a default morphological exponence following ‘failed agreement’ in the spirit of Preminger (2014). Kramer (2015: 193–195) assumes a similar mechanism in her implementation of gender with specific reference to the Romanian supine.

(21) *Default nominal features on D in defective nominalizations*

The restriction on determiners is due to the fact that lexical determiners are typically incompatible with default values. English employs the possessive in such constructions, while Spanish and Romanian use the definite determiner. In the configuration in (21), such default-valued determiners act as pure nominalizers — they map a highly verbal structure (as I argue in Section 5) onto a nominal external context (Chierchia 1984). This analysis accounts for the contrast between the two types of nominalization and especially for the determiner restriction in defective nominalizations without positing a special functional categorizer like Panagiotidis’s switch *Ger* in (11), which cannot account for the determiner contrast.

An interesting question that deserves a separate study is why English differs from the other languages in terms of which lexical determiner is compatible with default nominal values. I refer the reader to Iordăchioaia & Soare (2015: Section 6), who establish a correlation between the definite determiner in the Romanian supine and its non-referential use in generic contexts to denote kinds, in a similar fashion to the bare plural (or bare mass nouns) in English. If ‘s in English is just a case form assigned by a covert *D* (as Abney’s structure in (7) suggests), we could assume that the English verbal gerund has the DP specification of a bare mass noun.⁶ The precise implementation of the crosslinguistic variation remains, however, to be determined, since the defective nominalizations in English, Romanian, and Spanish do not have identical structures, as I show below.

5 Structures nominalized by *D* and *n*

In this section, I investigate which extended verbal projection requires nominalization by *D* and cannot be nominalized by *n*. A comparative investigation of the Spanish verbal infinitive, the Romanian supine, and the English verbal gerund with some additional data from Polish nominalizations will allow me to argue that TP is the verbal layer that can be nominalized only by *D*, while below it nominalization by *n* is in principle possible.

⁶ In line with these observations, Giusti (2002: 82) takes the Saxon genitive ‘s to occupy the same leftmost functional projection in the nominal phrase that she assumes for articles in other languages (cf. fn. 5).

5.1 Between TP and AspectP

As observed in Section 3, the defective nominalizations in the languages addressed here exhibit different degrees of verbiness and could be argued to form a scale from least to most verbal nominalized structures (Alexiadou et al. 2011). The Spanish verbal infinitive is very high up on the verbal scale: besides disallowing adjectives (like all defective nominals; see (14b)), it realizes auxiliaries and its internal and external arguments bear accusative and nominative case, respectively (see (3b)). These properties suggest the presence of a TP layer, which ensures the same structural case assignment as in full sentences. In confirmation of a TP, the Spanish verbal infinitive allows clitics in (22a) (Plann 1981), which are typically hosted by TP. By contrast, its more nominal version with genitive case on the internal argument cannot host the clitic: cf. (22b)–(22c) (Pesetsky & Torrego 2002).

(22) *Spanish infinitive nominalizations with clitics*

- a. lavar = **se** la cabeza mas de cuatro veces al día
wash.INF = REFL the head more than four times at.the day
'washing your head more than four times a day'
- b. el afeitar = **se** la barba Juan
the shave.INF = REFL the beard.ACC Juan.NOM
'Juan shaving his beard'
- c. *el afeitar = **se** de la barba(Juan/de Juan)
the shave.INF = REFL of the beard(Juan.NOM/of John)
'(Juan's) shaving of his beard'

The Romanian supine has the smallest verbal structure: only its incompatibility with adjectives and the restricted compatibility with determiners make it a defective nominalization. Cornilescu (2001) argues that the supine involves a form of atelic aspectual value, an observation that Iordăchioaia & Soare (2008) further refine by showing that the supine nominalization carries a pluractional operator (over events), which makes it similar to imperfective aspect and requires grammatical AspectP in its structure. This projection is also syntactically confirmed by the ability of the supine to incorporate the aspectual particle *mai* 'anymore' in (23a) (Alboiu 2002). Unlike the Spanish verbal infinitive, the supine cannot host clitics in (23b). Following Iordăchioaia & Soare (2008), the supine represents a nominalized AspectP structure as in (24b), where PO stands for 'pluractional operator' and VoiceP introduces the external argument.

(23) *Romanian supine with aspectual particles and clitics*

- a. ne-**mai**-frecventatul cursurilor de către Ion
not-more-attend.SUP.the courses.the.GEN by to John
'John's not attending classes anymore'
- b. (***se**) spălatul Anei pe mâini
REFL wash.SUP.the Ann.GEN on hands
'Ana's washing her hands'

- (24) a. spălatul rufelor de către Ion
wash.SUP.the laundry.GEN by to John
'the washing of the laundry by John'

- b. [_{DP} -(u)l [_{AspectP} PO [_{VoiceP} de către Ion [_{VoiceP} [_{vP} rufele [_{vP} spălat]]]]]]]

5.2 The English verbal gerund (poss-ing)

The English verbal gerund (or poss-ing) has generated an unsolved controversy. Previous approaches vary between proposing that it projects up to VoiceP/vP (Moulton 2004), AspectP (Siegel 1998; Wiltschko 2014) or TP (Johnson 1988). Panagiotidis (2014) follows Siegel (1998) and takes it to embed an AspectP, as in (11). Moulton (2004) inspects the realization of external arguments and argues that it is a nominalization of a vP, where *v* stands for the head introducing the external argument, which I take here to be Voice (Kratzer 1996; Alexiadou et al. 2015). A confounding factor in some earlier approaches is that they try to unify all the varieties of the gerund under the same construction, although they differ in many ways (Siegel 1998; Pires 2006; Lowe 2019). In addition, the VP in (7) (Abney 1987) may correspond to several projections in current theory: vP/VoiceP (Moulton 2004), AspectP (Siegel 1998; Panagiotidis 2014) and possibly more. Below I argue that the verbal gerund projects up to TP.

Pires (2006) argues that the acc-ing gerund embeds a TP projection, which the poss-ing allegedly cannot do. This is supported by the former's compatibility with sentential adverbs in (25a) and *there*-insertion in (25b), where the poss-ing is excluded (Pires 2006: 18). Given that DPs normally disallow *there*-insertion (see (25c) from Moulton 2004: 132), Pires concludes that acc-ing cannot be a DP. The lack of a DP in acc-ing brings it closer to *to*-infinitives, contra Abney (1987) and other previous approaches, which assume a DP for all gerunds that appear in case positions.

- (25) a. [Mary (*'s) **probably** being responsible for the accident] was considered by the DA.
 b. Paul counted on [**there** (*'s) being many people in the party].
 c. ***there's** appearance to be sick

I will argue that Pires's contrast between acc-ing and poss-ing in that only the latter involves a DP explains their difference in subject realization, but they actually both embed a TP (see Lowe 2019 for a similar LFG-approach). First, following Cinque (1999), *probably* does not modify T but epistemic Mood, which is right above T (past) in his functional hierarchy. The adverb *once*, however, modifies T(past) and it can appear with the poss-ing gerund as in (26) (from the enTenTen15 web corpus at <https://www.sketch-engine.eu/>).

- (26) a. The sadness discernible in some marshes arises, perhaps, from [their **once** having harbored cranes].
 b. The Times posts mention [your **once** having worked with the great psychologist].

Second, and more importantly, just like acc-ing in (27a) and (27b) (Pires 2006), poss-ing bears tense specification, as shown by its compatibility with temporal adverbs different from those of the main clause in (27c) and (27d).

- (27) a. Jo worried **yesterday** about [Pat coming to dinner **tonight**].
 b. Sue favored **yesterday** [Anna moving to Chicago **today**].
 c. Jo worried **yesterday** about [Pat's coming to dinner **tonight**].
 d. Sue favored **yesterday** [Anna's moving to Chicago **today**].

The data in (26) and (27) clearly indicate that poss-ing nominalizations include a TP, like the Spanish verbal infinitive. The latter seems to also host Mood-modifiers like *probably*

as in (28), which indicates that it may be slightly more complex than the verbal gerund in English.

- (28) [El haber escrito ella **probablemente** esta novela] es algo que
 The have.INF written she.NOM probably this novel is something that
 el comité tundra en cuenta.
 the committee will.take in account
 ‘Her probably having written this novel is something that the committee will take into account.’

Siegel (1998) and Moulton (2004), who propose lower verbal structures for the verbal gerund, did not investigate its properties in (26)–(27) beyond data as in (25a). Moulton’s argument that it must include a projection for the external argument is straightforward, since VoiceP is below Aspect. I will demonstrate, though, that *-ing* in the verbal gerund does not instantiate Aspect, as claimed by Siegel (1998) and Panagiotidis (2014). First, as Zucchi (1993) and Siegel (1998) show, the verbal gerund cannot denote events (see (29a)). The Romanian supine, whose highest verbal projection is AspectP, can denote events (see (29b) from Iordăchioaia & Soare 2015). This shows that the verbal gerund must be more complex than AspectP (Zucchi 1993).

- (29) a. *[Bill Clinton’s destroying the memo] **took place at noon.**
 b. Culesul merelor **a avut loc peste noapte.**
 harvest.SUP.the apples.the.GEN has had place over night
 ‘The harvesting of (the) apples took place overnight.’

Second, the verbal gerund *-ing* is compatible with stative verbs in (30b), which indicates that it does not have any grammatical aspect meaning that would conflict with the lexical aspect of the base verb. This is indeed the case with progressive *-ing* realizing Aspect, which is incompatible with stative verbs (see (30a)). As Iordăchioaia & Soare (2015) show, the Romanian supine is also sensitive to the lexical aspect of the base verb and incompatible with states in (30c), which is explained by its carrying pluractional Aspect.

- (30) a. Helen **knows**/***is knowing** the truth. progressive
 b. Helen’s **knowing** the truth surprised us all. verbal gerund
 c. ***cunoscutul**/***înțelesul** adevărului supine
 know.SUP.the/understand.SUP.the truth.the.GEN
 ‘knowledge/understanding of the truth’

Having shown that the verbal gerund presents properties indicative of TP and that its suffix *-ing* does not realize Aspect, I propose that *-ing* realizes a nonfinite tense form like *to*-infinitives under T. The verbal gerund receives the structure in (31) and the Spanish verbal infinitive that in (32b).

- (31) John’s having refused the offer
 [_{DP} John [_{DP} ’s [_{TP} *-ing* [_{AspectP} have [_{VoiceP} [_{VP} the offer [_{VP} refused]]]]]]]]

- (32) a. el haber ella escrito esta novela
 The have.INF she written this novel.ACC
 ‘her having written this novel’
 b. [_{DP} el [_{MoodP} Mood [_{TP} ella [_{TP} T [_{AspectP} haber [_{VoiceP} [_{VP} esta novela [_{VP} escrito]]]]]]]]]]

Two clarifications are in order here. First, one may have reservations about the multifunctionality of verbal *-ing* between T and Aspect. However, this is not unusual for this suffix in the history of English. It is well known that at the origin of the progressive and the gerund is a full nominalization similar to the present-day nominal gerund, which in time developed verbal properties (Alexiadou 2013; Iordăchioaia & Werner 2019). Alexiadou argues that *-ing* acquires (more and more) verbal traits in its historical development, which can be viewed on a scale of grammaticalization in the verbal functional domain. As a deverbal derivational suffix, *-ing* first exhibited lexical aspectual properties in the competition with other nominalizations (see the nominal gerund in Iordăchioaia & Werner 2019; cf. Borer 2013), which then led to expressing progressive grammatical aspect with verbs. It is conceivable that *-ing* may have undergone one further step of grammaticalization and come to also contribute nonfinite tense in gerundive contexts (see van Gelderen 2018: Chapter 9 and references therein on parallel examples of grammaticalization from lexical into grammatical aspect and eventually into tense marking).

Second, the question arises as to why the verbal gerund in English does not license nominative case like the Spanish verbal infinitive. There are several aspects to consider here. First, as I have shown, the Spanish infinitive is more complex than the English verbal gerund, in that it licenses Mood-modifiers as in (28). Second, English has another gerund construction that (possibly) exhibits nominative (besides accusative) subjects like the Spanish infinitive: it is the acc-ing gerund in (25a)–(25b), which also allows Mood-modifiers. We may be tempted to conclude that the English correlate of the Spanish verbal infinitive is acc-ing. This picture is complicated, however, by an important difference between the Spanish verbal infinitive and the English acc-ing. Pires (2006) convincingly argues that acc-ing lacks a DP layer and, for this reason, its T carries the unvalued Case feature that a D normally would. To value the Case feature of its subject, the T head of acc-ing is bound to first value its own Case feature in the matrix clause (see distributional evidence in Pires 2006: 52–55).⁷ By contrast, the Spanish verbal infinitive has a DP, which will value its Case feature in the matrix clause without any influence on the T head. Unlike in the acc-ing, the T head of the Spanish infinitive has a valued Case feature which can value the unvalued Case of its subject with a nominative form.

In conclusion, the T head of the English gerund (whether poss-ing or acc-ing) cannot value the Case feature of its subject, similarly to T in *to*-infinitives.⁸ This leads to two versions of the gerund. One is the acc-ing, which lacks a DP and carries an unvalued Case feature on T. This Case feature needs to be valued by the matrix T for it to then also value the Case feature of the subject. The other version is the poss-ing/verbal gerund in (31), which realizes a DP layer (see also Lowe 2019). Its D carries an unvalued Case feature that will be valued by the matrix T, but it also carries a valued genitive/possessive Case feature, which will value the Case feature of its subject in SpecDP. The EPP feature of its T head will be valued by its subject, which, however, will move further to SpecDP to value its Case feature, since the T head of poss-ing has no Case feature. The impossibility of the poss-ing gerund to realize an expletive subject, as in (25b), is due to the latter's Case being valued in SpecDP, a position that bans expletives (see discussion in Moulton 2004).

5.3 Can AspectP be nominalized by *n*?

In our investigation of defective nominalizations, we saw two instances that are (at least) as high as TP (the Spanish verbal infinitive and the English verbal gerund) and one that has been argued to be as low as (grammatical) AspectP (namely, the Romanian supine).

⁷ This dependency on the matrix clause in order to value the Case feature of its subject may also explain the indeterminacy between nominative and accusative subjects in acc-ing.

⁸ See Kornfilt & Whitman (2011) for a similar case on defective T in Turkish nominalizations.

Since we want to know which verbal layer prevents nominalization by *n* so that only D can attach to it, the question is whether it must be AspectP or TP. Polish nominalizations, which also realize AspectP, indicate that *n* can nominalize AspectP.

Based on the aspectual parallelism with the verbal constructions in (33), Alexiadou et al. (2010) argue that the corresponding Polish *nie*-nominals in (34) project AspectP: perfective verbs and nominalizations are both compatible with *in-* but not with *for-*adverbials. Furthermore, (35) shows that both perfective and imperfective *nie*-nominals denote events.

(33) *Polish perfective/imperfective verbs*

Jan **przeczytał**/*czytał gazetę w/*przez 2 godziny.
John read.PFV/read.IPFV newspaper.ACC in/for 2 hours
'John read the newspaper in two hours.'

(34) *Polish perfective/imperfective nominalizations*

przeczytanie/*czytanie gazety w/*przez 2 godziny
read.PFV.NIE/read.IPFV.NIE newspaper.GEN in/for 2 hours
'the reading of the newspaper in two hours'

(35) **Przeczytanie/czytanie** gazety **zajęło dużo czasu.**
read.PFV.NIE/read.IPFV.NIE newspaper.GEN took a.lot.of time
'The reading of the newspaper took a long time.'

In these respects, Polish *nie*-nominalizations are similar to the Romanian supine. Yet, unlike the latter, they prefer adjectival modification. Adverbs are not entirely excluded, as (36b) illustrates, but adjectives are better.⁹

(36) *Adjectival/adverbial modification in Polish nominals*

a. **Nieustanne/Ciągłe** pomijanie szczegółów przez Janka zmusiło jego
incessant/constant omit.IPFV.NIE details.GEN by John made his
szefa do zwolnienia go.
boss to fire him
'John's constant omitting of details made his boss fire him.'

b. ?Pomijanie **nieustannie/ciągłe** szczegółów przez Janka zmusiło jego
omit.IPFV.NIE incessantly/constantly details.GEN by John made his
szefa do zwolnienia go.
boss to fire him
'John's constantly omitting details made his boss fire him.'

Alexiadou et al. (2010: 565) analyze these nominalizations as projecting AspectP and being nominalized by *n* followed by further nominal projections (i.e., Classifier and, possibly, Number for perfective nominals) as in (37), where their VP equals our VoiceP with full argument structure.

(37) [_{NumberP} [_{ClassifierP} [_{nP} -*nie* [_{AspectP} PFV [_{VP} ...]]]]]

⁹ Adverb(ial)s have been shown to be restrictedly possible in other nominalizations that I would take to be nominalized by *n*: see Fu et al. (2001) on English and Alexiadou (2001) on Greek and Hebrew. If the nominalization inherits the verbal projection that the corresponding adverb modifies (e.g., AspectP in (36)), this is expected (Alexiadou 2001), but the nominal environment introduced by *n* will favor its adjectival realization.

Polish nominalizations indicate that crosslinguistically we do find cases of AspectP nominalized by *n*, and not all such structures must be nominalized by D as in the Romanian supine. Following this last piece of evidence, we can conclude that AspectP is the level at which nominalization by both *n* and D can apply, a matter to be decided by further linguistic factors.

5.4 TP must be nominalized by D

The behavior of defective nominalizations in English, Spanish, and Romanian has shown us that the level at which nominalization by *n* is not possible anymore is TP. Intuitively, TP is reasonably high on the verbal scale as not to allow a lexical categorizer, especially if D is indeed the nominal counterpart of C, following the tradition of Abney (1987): D or C could come above T, but nothing lower than D should (cf. Wiltschko's 2014 universal domains). More precisely, *v*P traditionally represents the 'lexical', and TP the functional domain. AspectP is in between and predictably should lend itself to either of the two domains, which is exactly what we find in nominalizations: AspectP directly combines with the functional nominalizer D in the Romanian supine, but with the lexical *n* in Polish nominalizations with the suffix *-nie*.

Further study is needed to determine how the lexical categorizer *n* is technically prevented from attaching on top of functional TP. It may be that lexical categorizers (as standard derivational suffixes) need to Agree with their embedded structure either by imposing their lexically valued features onto an acategorial root (the basic case; cf. Kramer 2015: Section 3.4) or via some feature congruence, as argued for the Aspect-Classifier countability mapping in Alexiadou et al. (2010), who show that, e.g., in Polish, only perfective nominalizations are countable and allow plural, while the imperfective ones behave like mass nouns. Arguably, this cross-categorial interaction may proceed via the feature specification of *n*P, Aspect, TP, and DP. If Aspect (but not T) carries phi-features, as the verbal correspondent of nominal Number (see Wiltschko 2014), it may get these valued by *n*. However, T values Case features, which are carried by D, not by *n*. Case feature valuation can proceed between TP and DP, but there is no feature valuation possible between TP and *n*, since the former has no phi-features, and the latter no Case feature for the other to value. Agreement between *n*P and TP is thus impossible, since the two projections share no features.

6 Theoretical implications

In this section I briefly discuss the current analysis in the context of other views on mixed categories and nominal syntax.

6.1 Mixed categories in nominalization

My analysis of mixed projections in nominalization comes in a long series of approaches, to which I cannot do justice here.¹⁰ However, I would like to address some recent typological ideas and show how they resonate with the contrast between nominalization by D and by *n*. Following the insightful observation in Borsley & Kornfilt (2000) that mixed categories are organized in two well-defined categorial domains which cannot intermingle (e.g., low verbal and high nominal structure in deverbal nominalization), an important research question pursued in the literature has been, what amount of structure can be preserved from the original category? A broad variety of nominalization patterns have been

¹⁰ Panagiotidis (2014: Chapter 6) offers a brief and comprehensive overview on the long and diverse tradition of approaches to mixed categories from the '70s until recently, which includes insights from HPSG and LFG. See also Lowe (2019) for a recent LFG-approach to mixed categories in nominalizations and participles, as well as comparisons across frameworks.

identified across and within individual languages (Alexiadou et al. 2010; 2011; Kornfilt & Whitman 2011). Kornfilt & Whitman (2011), in particular, present four types of nominalization hosting a CP, a TP, a VoiceP (i.e., their vP) or a vP (i.e., their VP).

CP-nominalizations involve full clauses with overt complementizers, as shown for Spanish in (38) from Plann (1981) (see also Polish in Section 6.2).

- (38) *Spanish CP-nominalizations*
 [El que tú vengas] no me importa.
 [the that you come] not me interests
 ‘I don’t care if you come.’

Under TP-nominalizations Kornfilt & Whitman (2011) analyze Turkish nominalizations with overt [\pm realis] morphology. They argue, however, that this T head is defective, as it fails to license nominative subjects, which reminds us of the English poss-ing gerund in Section 5.2. Interestingly, Kornfilt and Whitman also take the poss-ing to include a TP, but for reasons different from the ones presented above. Their evidence is the presence of what they call a [+realis] value, which they use to explain the fact that the poss-ing in (39a) bears a cancelable presupposition that Kim finished the sonata, which is absent in the acc-ing gerund in (39b).

- (39) a. Robin imagined [Kim’s finishing the sonata].
 b. Robin imagined [Kim finishing the sonata].

VoiceP- (or their vP-) nominalizations are illustrated by Italian infinitives as in (40) from Zucchi (1993), which license accusative objects.

- (40) *Italian infinitive nominalizations*
 Il suo **continuo** eseguire la canzone impeccabilmente
 the his/her continual perform.INF the song.ACC impeccably
 ‘his continuously impeccably performing the song’

Kornfilt & Whitman (2011) follow the standard assumption that accusative case is licensed by VoiceP/vP (cf. Wiltschko 2014: 76, where AspectP is responsible for accusative case). However, we saw in (24) that the Romanian supine includes a VoiceP (see Iordăchioaia 2008 for concrete evidence) next to AspectP, but realizes its object in the genitive. Moreover, the English nominal/ing-of gerund has also been argued to project VoiceP, given that it excludes self-action interpretation, similarly to the verbal passive: see (41) from Kratzer (2002: Chapter 1) (see also Alexiadou et al. 2009). The only interpretation available for (41) is that somebody else dresses the children, which indicates that a covert external argument is licensed in VoiceP. This means that VoiceP (or even AspectP) does not impose accusative on objects in nominalizations, since genitive objects are possible, as well.¹¹

- (41) The report mentioned [the painfully slow dressing of the children].

¹¹ This conflict can be accounted for if we take accusative to be dependent (and not structural) case, assigned in opposition to the subject argument (Marantz 1991), whether the subject receives nominative as in clauses (see Spanish verbal infinitive) or possessive (see English poss-ing). The fact that in all other situations, arguments are marked with genitive in nominalizations suggests that genitive may be default case in nominal phrases.

A question that arises now with respect to (40) is whether these infinitives are not more complex than just VoiceP — possibly as high as TP, as argued here for *poss-ing*. Counterevidence for this comes from their compatibility with adjectives (besides adverbs). In my approach, infinitives as in (40) must include an *nP* to allow for adjectival modifiers, which in turn suggests that their structure cannot be as high as TP, since this would exclude an *nP*. Thus, the infinitive in (40) may be as high as AspectP or just VoiceP, as Kornfilt & Whitman (2011) analyze it.

In Kornfilt and Whitman's approach, *vP*- (or their *VP*-) nominalizations include all the other deverbal nominals that realize objects with genitive case and exhibit no indication of VoiceP (their *vP*). This includes the full nominalization patterns in Section 3 and Chomsky's (1970) derived nominals.

Kornfilt & Whitman (2011) do not go to great lengths on the nominal structure above CP/TP/VoiceP/*vP* and do not address the determiner restriction in (2). However, their assumptions are similar to mine, in that they take adjectival modification in (40) to indicate the presence of nominal structure lower than DP and analyze CP-nominalizations as involving only a D head above the CP. The former idea relates to my nominalization by *n*, and the latter to my nominalization by D. In conclusion, the typology in Kornfilt & Whitman (2011) is fully compatible with the distinction between nominalization by D vs. by *n*: their CP- and TP-nominalizations map under my defective nominalizations by D, and their *vP*- and *VP*-nominalizations are accounted for under my nominalization by *n*.

6.2 The NP-DP debate

One last point I would like to address concerns the predictions of my two posited nominalization processes for the NP-DP debate in nominal syntax. Bošković (2005) (and subsequent work) argues for a so-called NP/DP parameter that predicts crucial structural differences between languages with articles, which project a DP, and languages without articles, which are argued to project no DP, but only an NP. This idea is later supported, but also seriously challenged in other approaches (Caruso 2012; Kornfilt 2018).

The languages discussed in Section 3 all have articles, and my proposal of two nominalization patterns by *n* and by D raises the question of what nominalizations might tell about the NP/DP parameter claim: do they support or challenge it? If languages were indeed split between realizing and lacking a DP, depending on the (un)availability of articles, as Bošković argues, we would expect nominalization by D not to be available in articleless languages — a nominalizing suffix would always be required. If we find, however, such nominalizations, they would support the competing analyses, which posit a DP also in languages that do not have overt articles.

In Section 5.3, we briefly addressed Polish nominalizations, which realize overt aspectual markers and project AspectP. Polish is an articleless language that Bošković includes in the class of languages that lack a DP. The nominalizations presented in Section 5.3 all involve the nominalizing suffix *-nie* and project *nP*. However, Borsley & Kornfilt (2000) and Kornfilt & Whitman (2011) show that Polish exhibits CP-nominalizations as in (42) (see also Miechowicz-Mathiasen 2012; Bondaruk 2014).

(42) Polish CP-nominalizations

- a. Jan oznajmił [to że Maria zmienia pracę].
Jan announced this that.COMP Maria is.changing job
'Jan announced that Mary is changing her job.'
- b. [To że Maria zmienia pracę] Jan oznajmił.
this that.COMP Maria is.changing job Kan announced
'Jan announced that Mary is changing her job.'

- c. A: Co Jan oznajmił?
 what Jan announced
 A: ‘What did Jan announce?’
 B: To że Maria zmienia pracę.
 this that.COMP Maria is.changing job
 B: ‘That Mary is changing her job.’

Borsley & Kornfilt (2000) and Kornfilt & Whitman (2011) convincingly argue that, like similar constructions in Greek, the Polish *to* + CP sequence represents one constituent and not two as in English *it* + CP in (43a): the nominalization *to* + CP may be fronted in (42b) and can appear as a sentence fragment in (42b), unlike *it* + CP in (43b)–(43c).

- (43) a. They resented [it that he was invited].
 b. *[It that he was invited], they resented.
 c. A: What did they resent?
 B: *It that he was invited.

The data in (42) indicate that Polish indeed can employ the demonstrative *to* ‘this’ as a determiner to nominalize a full CP, similarly to the definite article *el* in Spanish (38) — another case of nominalization by D.¹² This is in line with the literature that argues against Bošković’s NP/DP parameter and posits a DP layer even in articleless languages, which is often lexicalized by demonstratives or some numerals (Caruso 2012).

7 Conclusions

In this paper I have argued for two syntactic patterns of nominalization: nominalization by *n* — the standard derivation by means of a nominalizing suffix which instantiates a lexical categorizer *n* — and nominalization by D — an exceptional non-derivational type, in which a special lexicalization of D imposes nominal external syntax on an otherwise entirely verbal structure. This division successfully accounts for the crosslinguistic contrast between full and defective nominalizations in their internal syntactic properties (whether nominal or verbal) and their potential to combine with lexical determiners.

I have further provided evidence that TP is the syntactic layer that requires nominalization by D, since a full nominal structure, as contributed by *n*, is not attested in nominalized TPs, like the Spanish verbal infinitive and the English *poss-ing*. Identifying the TP layer as the lowest verbal extended projection that cannot be the input of nominalization by *n* brings the modeling of mixed projections one important step further and offers a hypothesis to follow in explaining several crosslinguistic contrasts documented in Borsley & Kornfilt (2000); Kornfilt & Whitman (2011); Alexiadou et al. (2011). In addition, nominalization by D represents a natural and elegant solution to the problem of mixed projections, without the need for construction-specific functional categorizers as in Panagiotidis (2014) or Borer (2013).

The empirical contrast between nominalizations by *n* and by D indicates that we need both lexical categorizers like *n* and a functional D in their Agree-based interaction, in order to grasp the combinatorial properties of categorially different projections. Without a lexical categorizer *n*, we would need special constraints on lower functional categorizers such as Classifier depending on their structural context; without a D head, we would

¹² Moreover, as predicted by my analysis, *to* ‘this’ is the only lexical determiner possible in this nominalization (e.g., *tamto* ‘that’ would not be acceptable in (42); p. c. Bożena Rozwadowska and Maria Bloch-Trojnar) — just as in the other cases of nominalization by D.

have to posit lexical and functional versions of *n* to account for its sometimes restricted compatibility with determiners.

Abbreviations

ACC = accusative, COMP = complementizer, *DefG* = default gender value, *DefNum* = default number value, F = feminine, G = gender (feature), IPFV = imperfective, INF = infinitive, M = masculine, M-N = masculine-neuter, NOM = nominative, Num = number (feature), nExtP = nominal extended projections, PO = pluractional operator, PFV = perfective, PL = plural, REFL = reflexive, SG = singular, SUP = supine, vExtP = verbal extended projections.

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Competing Interests

The author has no competing interests to declare.

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