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Afterword: Nominalizations in syntactic theory☆

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ABSTRACT

This afterword constructs a working typology of nominalizations, based on but not restricted to the papers collected in this special issue. The typology is based on what we call the Functional Nominalization Thesis (FNT), a version of the model of "mixed projections" proposed in Borsley and Kornfilt (2000) which claims that nominal properties of a nominalization are contributed by a nominal functional projection; above that projection the structure has nominal properties, below it, verbal properties. We argue for four possible levels of nominalization, CP, TP, *v*P and VP. We show that certain internal syntactic phenomena are characteristic of different levels of nominalization: genitive subjects of nominalization at TP and below, genitive objects of nominalization at *v*P and below. We suggest that the inventory of categories implicated in nominalization is quite restricted: D, and nominal counterparts of 'light' verbal categories. We examine two alternatives to the FNT, the framework of Panagiotidis and Grohmann (2009) and Bresnan's (1997) head-sharing approach, and argue that our treatment is more appropriate under a minimalist approach, as it accommodates the facts within an independently motivated inventory of functional categories, without positing a special type of category limited only to nominalizations. We counter Bresnan's objections against a syntactic derivation of nominalizations by showing that a word's lexical integrity can be successfully violated by "suspended affixation" in syntactically derived nominalizations in Turkish while such integrity has to be respected in lexically derived nominalizations.

1. Introduction: The category of nominalizations

The problem of syntactic categories – their inventory and definition – is as old as the field itself. Approaches to the problem may be roughly divided into "distributionalist" and "essentialist." Distributionalist approaches attempt no extrasyntactic definition of categories. Instead, categories (or categorial features) are assigned following basic principles of selection (e.g. V, P select N). Essentialist approaches define categories in terms of extrasyntactic properties.

Nominalizations bring the problem of category definition directly to the fore because they have both nominal and verbal properties. Among the contributions to this issue, both distributionalist and essentialist approaches are represented. Baker's contribution draws on the theory of syntactic categories in Baker (2003), which has both essentialist and distributionalist elements. In this theory, nouns are defined as categories which bear referential indices, an extrasyntactic property. On the

☆ A list of abbreviations can be found at the end of this *Afterword*.

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other hand, verbal categories are characterized by the ability to license a specifier, a distributional property in the sense that it can be confirmed by inspection of the syntactic representation alone. Reuland's contribution draws on Vinokurova's (2005) theory of categories, which defines verbs as inherently relational and nouns as inherently not. This approach is essentialist in that it defines categories in terms of basic lexical semantic properties. However, Reuland's refinement of the approach, couched in terms on Reinhart's (2002) theory of thematic roles and lexical mapping, is arguably distributionalist. Reuland argues that nouns and verbs may assign the same inventory of thematic roles but that they differ with respect to "merging instructions" (what Reinhart, 2002 calls "lexicon marking"), which specify where – and whether – arguments of a predicate are realized in the syntax. The critical datum for Reuland is the fact that argument realization is optional for certain types of nominalizations, such as the object in Dutch nominal infinitives, and even, Reuland argues contra Grimshaw (1990), English complex event nominals.

The approach that we adopt in this essay is that the nominal properties of nominalizations are contributed by the functional categories that dominate them. This is an approach made possible by the theory of functional categories initiated by Chomsky (1986) and applied to nominalizations by Borsley and Kornfilt (2000). Throughout this afterword, we refer to the Borsley and Kornfilt treatment as the Functional Nominalization Thesis (FNT). The FNT is stated in (1):

(1) **The Functional Nominalization Thesis**

Nominal properties of a nominalization are contributed by a nominal functional projection. The nominalization has verbal properties below the nominal functional projection, nominal properties above it.

Under the FNT, a nominal functional head selects a verbal projection and "closes off" the verbal properties of the structure: It is verbal below that point and nominal above. As noted by Baker in his contribution, this approach offers the possibility of expressing a rich typology of nominalizations, calibrated by the height in the structure where the nominal functional category is introduced. Bowers' contribution shows how this general approach can handle the properties of English non-event nominals, nominalizations that are quintessentially "low" in that they license neither adverbs nor accusative case. An example is the agent nominalization in (2):

(2) the frequent consignor to Sotheby's *(of) major painting collections (*frequently)

On Bowers' analysis, core arguments are introduced by dedicated "light" heads: agent arguments in the specifier of Ag(ent)P, themes in the specifier of Th(eme)P, etc. Following the basic idea of Marantz (1997), these heads come in both verbal and nominal flavors. An agent nominalization like (2) involves the light noun Ag_n selecting the lexical root *consign*. The crucial property distinguishing light nouns from their light verb counterparts is that the former do not c-select a specifier: Thus, agent nominals cannot realize an agent argument, result nominals a theme argument, etc.

The FNT taken to its logical limit would be a model where no lexical categories are specified as noun or verb at all. This is of course the position of Marantz (1997), a position generally adopted in the framework of Distributed Morphology and in Bowers' article. See Reuland's contribution, however, for arguments against this position based on Vinokurova's data from Sakha. We leave open the question of whether roots must (or can) be categorially specified; from the standpoint of the FNT as adopted here, the crucial point is that the typology of nominalizations reduces to the question of at what point a nominal functional head is introduced into the structure.

Is the FNT essentialist or distributionalist? Some claims made by essentialist approaches lend themselves to natural reformulations under the FNT. For example, Baker's criterion that nominal categories bear referential indices may reduce to the fact that referential indices are properties of the D(eterminer)-system. The approach that we develop in this essay is that the essentialist/distributionalist question is part of the research program: Once the typology of nominalizing functional projections is made clear, we can begin to ask about a motivation for their distribution from beyond the narrow syntax.

The following section takes the first steps towards establishing such a typology. Section 3 examines two alternatives to the FNT, the framework developed by Panagiotidis and Grohmann (2009) (which is, in its essence, quite similar to the FNT model, with differences we shall address), and Bresnan's (1997) head-sharing approach. In this section we defend a syntactic "derivation" of nominalized verbs in the syntax (via head movement), as we, B&K, and a number of the contributions in this special journal issue have assumed, against Bresnan's criticism.

2. The typology of nominalizations

As we saw in the introduction and in some of the contributions, nominalized clauses can differ according to properties such as the case of the subject, the case of the (direct) object, or whether modifiers of the nominalized predicate can be adverbs or adjectives. A typology of nominalizations is called for; what would be an insightful way of organizing such a typology? The model proposed by Borsley and Kornfilt (2000; below B&K), introduced in (1) as the Functional Nominalization Thesis, provides the basis for such a detailed typology of nominalizations, differentiated by the point at which a nominal functional projection is introduced into the structure. In the following discussion, we illustrate the FNT typology by reviewing some of the examples that B&K addressed, and we briefly mention, as appropriate, the application of the model to data discussed in some of the contributions to this special issue.

A basic type of construction cited by B&K (2000) and many researchers on nominalizations is the English poss/-*ing* gerund. The properties of poss/-*ing* gerunds are well known. They are clearly verbal through at least the level of aspectual *be* and *have*, they license VP adverbs, and the verb (in more recent approaches, ***v***) licenses structural case on the internal DP-argument.

(3) John's not having vigorously criticized the composer

Poss/-*ing* gerunds are, however, just as clearly nominal in their higher parts, as the external argument is in the pre-D position of an *'s* genitive. We return below to the long-contested issue of just how high the verbal projection goes in poss/-*ing* gerunds, but a clearer case is provided by nominal infinitives, such as the determinerless Dutch infinitives discussed by Reuland in his contribution, and Italian nominal infinitives as discussed by Zucchi (1993).

(4) **Dutch determinerless nominal infinitives**

bomen kappen (door de industrie) is schadelijk (Reuland, this issue)
trees felling (by the industry) is harmful

(5) **Italian nominal infinitives**

il suo continuo eseguire la canzone impeccabilimente (Zucchi, 1993)
the his/her continual perform.inf the song impeccably

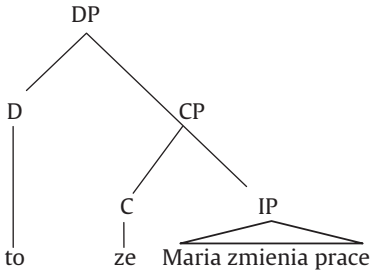
Nominalizations of this type must contain a fully verbal ***v***P because they license accusative case. On the other hand, as the Italian example (5) shows, they must contain a nominal category that can host adjectives between D and ***v***P, as adjectives attach under D. Under the FNT, we label such patterns ***v*P nominalizations**, referring to the highest verbal projection that we know the pattern must contain.

In contrast, in some languages, the level of nominalization is higher; e.g. Polish, where the entire clause is "verbal": The clause looks like a root clause even in its highest levels, with the subject in the nominative. Under the FNT, lower levels must be "verbal" as well, and this is the case, as the direct object in the accusative and adverbs are permitted. The level of nominalization is clearly higher than TP, and even CP, given that an overt complementizer is possible. The complementizer is preceded by a determiner, the sole "nominal" element in the projection of the embedded clause:

(6) Jan oznajmil [to ze Maria zmienia prace].
Jan announced that (DET) that (COMP) Maria is-changing job
'Jan announced that Mary is changing her job.'

Under the FNT, (6) is analyzed as in (7):

(7)



Here verbal functional projections, CP-TP-***v***P, continue through the CP level, where the "verbal spine" of the projection path switches to a nominal functional projection, DP, at the highest level of the embedded clause. Let us call nominalizations of this type **CP nominalizations**. Under the FNT as developed by B&K, the empirical differences between nominal infinitives such as (4–5) and Polish embedded clauses with a determiner are captured by the different levels where the verbal projection terminates and a nominal functional projection takes over: In the nominal infinitives, that level is ***v***P, while in the Polish embedded clauses with a determiner, it is CP.

Polish is not exceptional in this regard; Greek also displays CP nominalizations:

(8) Dhen amfisvito [to oti efighe].
NEG dispute-1.SG the-ACC that left-3.SG
'I do not dispute that he left.'

At this point, one could claim, for both the Polish and the Greek examples, that *to* is not a determiner, but a kind of pronoun, so that we would not be dealing here with a DP which immediately dominates a CP and which is part of the "spine"

of the projection, but rather an external noun, with interpretations along the lines of 'John announced it—(namely) that Maria lost (her) job' for (6), and 'I do not dispute this—(namely) that he left' for (8).

However, it is possible to show that in both languages, the sequence of *determiner + clause* behaves as a single constituent with respect to movement, and the sequence can appear as the answer to a question; this is illustrated below for Greek:

(9) [To oti efighe] dhen amfisvito.
the.ACC that left.3.SG NEG dispute.1.SG
'I do not dispute that he left' (Lit.: 'That he left I do not dispute.')

(10) a. Ti se stenoxori?
what you.ACC upset.3.SG
'What upsets you?'
b. To oti efighe.
the.ACC that left.3.SG
'That he left.'

Similar examples can also be found in other languages, e.g. in Spanish, which provide similar evidence for CP nominalizations.[1]

Indicative nominalizations in Turkish and the Turkic languages instantiate a pattern intermediate between *v*P and CP nominalizations. The morphology in Turkish indicative nominalizations distinguishes between future and non-future, a contrast not expressible in the nominal infinitive patterns in (4) and (5). On the other hand, Turkish indicative nominalizations make no finer tense distinctions, in contrast with non-nominalized, fully verbal clauses. This is taken by B&K to argue against positing a TenseP with the same content as in fully verbal clauses. At the same time, the nominalization morphemes signal mood distinctions which are quite similar to the indicative versus subjunctive moods in some of the better-studied Indo-European languages:

(11) Hasan [uşağ-ın oda-yı temizle-diğ -in]-i söyle-di.
Hasan servant-GEN room-ACC clean-FNom-3.SG-ACC say-PST (3.SG)
'Hasan said that the servant cleaned the room.'

(12) Hasan [uşağ-ın oda -yı temizle-me-sin]-i söyle-di.
Hasan servant-GEN room-ACC clean-NFNom-3.SG-ACC say-PST (3.SG.)
'Hasan said that the servant should clean the room.'

Thus, at least in those contexts where both of the main types of nominalized clauses in Turkish can be used with one and the same matrix verb, we see that the type we glossed here as factive nominalization corresponds to indicatives, and the type glossed here as nonfactive corresponds to subjunctives.[2] Fully verbal matrix verbs also distinguish what is traditionally known as indicative and subjunctive embeddings, that is with [±realis] status, by means of a verbal suffix:

(13) Hasan [uşak oda-yı temizle-di] de-di.
Hasan servant(NOM) room-ACC clean-PST say-PST (3.SG)
'Hasan said that the servant cleaned the room.'

(14) Hasan [uşak oda-yı temizle-sin] de-di.
Hasan servant (NOM) room-ACC clean-OPT/SBJNCT (3.SG) say-PST (3.SG)
'Hasan said the servant should clean the room.'

The optative or subjunctive morpheme (as labeled in traditional literature and in reference grammars) on the fully verbal predicates in root and in fully verbal embedded clauses corresponds in its semantics to the non-factive nominalization morpheme. Likewise, the (definite) past tense morpheme has often been referred to as a marker not only of tense but of (indicative) mood (e.g. in the generative literature Sezer, 2001, albeit indirectly). Its semantics are very similar or identical to those of the factive nominalization marker. Therefore, it, too, can and should be referred to as an indicative marker.[3] From the point of view of selectional restrictions, nominalized and verbal complements behave in similar ways as well. For example, a

[1] See B&K (2000), where data in Plann (1981) are analyzed as consisting of a determiner which takes a CP as its complement.
[2] The terms "factive" and "non-factive" nominalization follow Lees (1965).
[3] We thus differ from Kornfilt (1997), where the absence of other mood markers on fully finite verbs, i.e. null marking, is viewed as an expression of indicative mood, rather than the tense marker itself.

verb such as *iste* 'want' typically selects complement clauses in the subjunctive rather than in the indicative, as expected from its semantics. This is so both with the verbal and the nominalized indicative. Thus, the verbal indicative clause in (15a) is ill-formed in all three tense/aspect forms, as are nominalized indicative clauses in (15b) for present and past, and (15c) for future:

(15) a. *Hasan [uşak oda-yı temizle-di/temizli-yor/temizle-yecek] isti-yor.
Hasan servant(NOM) room-ACC clean-PST/clean-PR.PRG./clean-FUT want-PR.PRG. (3.SG)
'*Hasan wants that the servant cleaned/is cleaning/will clean the room.'

b. *Hasan [uşağ-ın oda-yı temizle-diğ-in]-i isti-yor.
Hasan servant-GEN room-ACC clean-FNom-3.SG.-ACC want-PR.PRG. (3.SG)
'*Hasan wants that the servant cleans/cleaned the room.'

c. *Hasan [uşağ-ın oda-yı temizle-yeceğ-in]-i isti-yor.
Hasan servant-GEN room-ACC clean-FutFNom-3.SG-ACC want-PR.PRG. (3.SG)
'*Hasan wants that the servant will clean the room.'

Likewise, verbal and nominalized clauses are both equally well-formed as complements of this same matrix verb:

(16) a. Hasan [uşak oda-yı temizle-sin] isti-yor.
Hasan servant (NOM) room-ACC clean-OPT/SBJNCT (3.SG) want-PR.PRG. (3.SG)
'Hasan wants that the servant should clean the room.'

b. Hasan [uşağ-ın oda-yı temizle-me-sin]-i isti-yor.
Hasan servant-GEN room-ACC clean-NFNom-3.SG-ACC want -PST (3.SG)
'Hasan wants that the servant should clean the room.'

Notice that the same morphological slot is occupied by the nominalizing affixes in nominalized clauses and the tense affixes in verbal clauses. This, together with the semantic and selectional parallels described above, suggests that this morphological slot marks the terminus of the verbal projection in nominalizations. The syntactic position corresponding to this slot can be no lower than *v*P, since in all of the nominalized clauses illustrated so far, the direct object has a licensed verbal structural case, i.e. an accusative in Turkish, showing that *v*P is verbal. Furthermore, modifiers of the predicate are uniformly adverbial:

(17) Hasan [uşağ-ın oda-yı dikkatli-ce temizle-me-sin]-i isti-yor.
Hasan servant-GEN room-ACC care-with-ADV clean-NFNom-3.SG-ACC want-PST (3.SG)
'Hasan wants that the servant should clean the room carefully.'

The claim that higher levels of the projection are nominal is illustrated by the examples shown so far, as well. For example, the nominalized clauses such as those in (16b) and (17) are marked with a case marker licensed by the matrix verb, while the corresponding verbal embeddings such as in example (16a) are not. This shows that at the highest level, a nominalized clause is a DP immediately dominated by a KP, while a verbal clause is not a DP and thus also not a KP: Instead, it is a verbal projection up into its higher layers of functional projections, i.e. CP and whatever internal layers the CP may have.

The high nominal layering of nominalized clauses can also be seen with respect to the subject of a nominalized clause. Such subjects are in the genitive, again as in (16b) and in (17), as opposed to the subjects of verbal clauses, which are in the nominative, as in (16a). The subjects of a nominalized clause move from the specifier of verbal *v*P via the specifier position of the projection headed by the nominalizing morphology to the specifier of the DP, where genitive is licensed by the D-head. B&K also illustrate distributional properties such as the ability of nominalized clauses to show up as complements of postpositions, which they share with simple DPs, while verbal clauses cannot show up in such positions.

So what is the syntactic position occupied by the nominalizing morphology? We have seen that it bears Tense features, but the features are defective, expressing only [±Future]. The position also bears a Mood feature, [±Realis]. Current theory offers two broad options. On a cartographic approach (Rizzi, 1997), the TP domain is layered into T, M(ood), and A(spect) levels, associating each of these features with distinct projections. This would lead us to identify the verbal terminus in Turkish nominalizations as MoodP, a functional projection bearing the features [±Realis], with a lower defective TP whose T-head hosts [±Future].[4]

The second option is to posit a single T head bearing Tense, Mood, and other features. In the interest of developing our typology of nominalizations, we adopt this second option, and identify the highest verbal projection in Turkish nominalizations as TP. We maintain B&K's generalization that the head of this projection cannot have the properties of a fully verbal T^0: It is defective in three specific respects. First, it does not contain the full complement of Tense features, as we have seen. Second, it does not license nominative case: As we saw above, the subject DP in nominalizations moves through Spec,

[4] Yet another possibility is to place the defective TP above the MoodP, with the proviso that this would be a nominal and not a verbal functional projection. While somewhat counterintuitive, this would be in parallel to Cole & Hermon's nominal *v* for certain Quechua nominalizations and may explain the deficient nature of the nominal T and its projection.

TP and checks its genitive case feature in Spec, DP. Third, it does not bear Agreement (phi) features; we assume that such features are incompatible with a defective T. Since George and Kornfilt (1981) and Kornfilt (1984), it has been known that subject case in Turkish is licensed by Agreement. The position of Agreement in Turkish nominalization is not obvious from the surface position of the agreement morphology; in an example like (17), 3rd singular possessor agreement *–sI(n)* could be located in "nominalized" phrase-final T or in D. Based on the analysis of subject genitive case licensing that we have presented above, however, and our assumption that Agreement (phi) features are incompatible with a defective T, we locate the agreement morphology in D.[5] This is supported by the fact that the possessor agreement morphology in Turkish nominalizations is specifically associated with DPs.

On this analysis, Turkish nominalizations instantiate a third type, **TP nominalizations**, intermediate between the nominal infinitive (*v*P) and CP nominalization types. We have seen that a crucial property of the Turkish nominalization type is that T is defective; this accounts for why Turkish nominalizations do not assign nominative case. There are two dimensions of this defectiveness, as we have seen: an incomplete inventory of Tense features and absence of Agreement features. Exactly which dimensions are criterial for TP nominalizations remains a topic for crosslinguistic investigation, but some suggestions are offered by English poss/*-ing* gerunds, to which we now return.

Are poss/*-ing* gerunds TP nominalizations or something lower? Both proposals have been made: Guéron and Hoekstra (1995) argue that gerunds contain TP,[6] while Kratzer (1996) proposes that the highest verbal projection is VoiceP, and Panagiotidis and Grohmann (2009), reviewed in the next section, propose similarly that the highest verbal projection is *v*P. Poss/*-ing* gerunds, just like Turkish nominalized clauses, appear in canonical nominal positions, from which verbal, i.e. *that*-clauses are excluded, such as prepositional complement positions. Thus, their top projection, too, is DP; following essentially Abney (1987), their genitive subjects are licensed by movement to Spec, DP as in Turkish nominalized clauses. Finally, given that direct objects are of the same form as their counterparts in fully verbal clauses, the *v*P in poss/*-ing* gerunds is verbal.

One argument that poss/*-ing* gerunds involve nominalization at a higher level than *v*P is the contrast with patterns like the Dutch and Italian nominal infinitives in (4–5). While the latter allow NP modifiers to the left of the infinitive, gerunds allow none of the nominal modifiers that typically appear under D (18a). Furthermore, although judgments differ, all speakers allow subject-oriented adverbs, and some allow speaker-oriented adverbs (18b):

(18) a. Kim's *continual/continually playing the sonata
b. Kim's thankfully finishing the sonata came just in time.
All speakers: Kim was thankful to have finished the sonata.
Some speakers: The speaker is thankful that Kim finished the sonata.

A final argument is provided by [±realis] status, as in Turkish. Unlike Turkish, English has no overt morphology specifying the [±realis] status of the clause other than modals, restricted to finite clauses. However, there is evidence that gerunds are sensitive to the [±realis] status of the clause. Portner (1995:637) observes that poss/*-ing* gerunds differ from acc/*-ing* gerunds with respect to their presuppostional status (examples based on Portner, 1995:637):

(19) a. Robin imagined Kim's finishing the sonata.
b. Robin imagined Kim finishing the sonata.[7]

While (19a) bears a (cancellable) presupposition that Kim finished the sonata, (19b) does not. This suggests an analysis quite close to what we have proposed for Turkish nominalizations: T bearing [realis] but not Tense features, specified as [+realis] in the case of poss/*-ing* gerunds, but lacking such a specification in the case of acc/*-ing* gerunds.

Thus far we have sketched a typology including CP nominalizations (Polish, Greek, and Spanish), TP nominalizations (Turkish and English poss/*-ing* gerunds, with the caveat that there may be differences in the specification of defective T in these two cases), and *v*P gerunds (Italian nominal infinitives, Dutch determinerless nominal infinitives). In each of these cases, the projection designated denotes the highest verbal category. English complex event nominalizations such as *Ruth's (frequent) reading **of** Anna Karenina* together with the Dutch *het-* and *dat-* nominal infinitives discussed by Reuland instantiate VP nominalizations. The fact that nominalizations of this type do not license accusative case tells us that they do not contain verbal *v*P. Thus, no agent theta-role is assigned to the genitive subject; instead, the genitive DP expresses a general relatedness to the predicate of which the agent relation is only a special case. This accounts for the possibility of non-agent subjects of NP in complex event (and lower) nominalizations as in (20a), but not in poss/*-ing* gerunds as in (20b):

[5] This is in accordance with B&K (2000), where the DP corresponds to an AgrNP, and the D to AgrN.
[6] Strictly speaking, an AgrP, which dominates a Tense node. See Guéron and Hoekstra (1995:87–89).
[7] Portner (1995) accounts for the difference in presuppositional status by analyzing poss/*-ing* gerunds as definite, and acc/*-ing* gerunds as indefinite, while nominalizing them both immediately above "propositonal" VP (vP in current theory). Portner's arguments for not including a full TP in gerunds are based on the fact that *be* does not raise to T in gerunds, and that quantificational subjects of gerunds take obligatory wide scope over negation. However, these properties also hold of infinitives, as Portner acknowledges in the latter case (1995:628 fn.14). As infinitives are generally analyzed to be TPs, whatever account of these properties one prefers for infinitives can carry over to gerunds.

(20) a. yesterday's constant reading of Anna Karenina
b. *yesterday's constantly reading Anna Karenina

In the FNT/B&K framework as we have outlined it, nominalization is accounted for by introducing a nominal functional head above CP, TP, *v*P or VP. In the first two cases, it is sufficient to assume that the nominal functional head is D. In *v*P nominalizations such as the Italian nominal infinitive in (5), an additional nominal projection below D is required to host adjectives. This projection may be analyzed as a nominal counterpart of *v*. In VP nominalizations, we reach the level of what have traditionally been analyzed as lexical nominalizations, exemplified by English derived nominalizations. At this level it no longer suffices to assume that the nominalizing head is a theta theoretically neutral functional projection such as D, because as shown in the contributions by Bowers and Reuland, the theta theoretic properties of the nominalized predicate differ from those of the corresponding verbal projection. Thus, as we see in (20), the subject of the nominalization may be a non-argument, and specific theta positions may be obligatorily (Bowers) or optionally (Reuland) suppressed. Irish argument verbal nouns as analyzed by Carnie in his contribution also show the characteristic properties of VP nominalizations: Accusative case is not assigned, and argument realization is optional. Treatment of nominalizations at this level requires nominal functional heads with specific theta-theoretic properties, as in the analysis developed by Bowers. A thorough overview of the properties of "low" nominalizations of this type is beyond the scope of this essay; for a recent overview, see Alexiadou (2010a,b).

3. Alternatives

Panagiotidis and Grohmann (2009) propose a model very similar to the FNT/B&K approach outlined above. The authors follow Bresnan's Phrasal Coherence principle, according to which a mixed projection "can be partitioned into two categorially uniform subtrees such that one is embedded as a constituent of the other" (Bresnan, 1997:4). Note that this principle is similar to, but more permissive than, the FNT (2) in the B&K model, which claims that once a nominal projection dominates a verbal one, all the higher projections will have to be nominal. The FNT also requires categorially uniform subtrees: a uniform verbal subtree, which is embedded as a constituent of the nominal subtree. However, Bresnan's principle is more permissive (or more general, depending upon one's standpoint), because it permits a reverse hierarchical order, too, i.e. as long as the subtrees are categorially uniform, a "verbalization" can result from a verbal projection dominating a nominal projection.

P&G's objective is to state restrictions on the size of the nominal and the verbal subtrees constituting a mixed projection, and to be able to identify where the switch from the verbal to nominal takes place. What is addressed here as two issues really boils down to the single issue discussed in the previous section: where the change from verbal to nominal projection takes place in the phrase structural hierarchy. When we know at what level in that hierarchy the switch has taken place, we can automatically determine what size each of the subtrees has.

P&G, following previous work by Grohmann (2003), propose that verbal subtrees can only be the size of a Prolific Domain, whereby Prolific Domains are subparts of the derivation which span projections sharing particular contextual information. Grohmann (2003) proposes the following three types of Prolific Domains: "thematic," corresponding to *v*P, "agreement," corresponding to TP, and the "Discourse Domain," corresponding to CP. Note that these three classes correspond to the three classes of CP, TP, and *v*P nominalization distinguished in the preceding section. P&G also acknowledge (fn 8) the need for nominalizations inside the thematic domain, corresponding to VP or lexical nominalizations as discussed in the preceding section. As we noted there, in a non-cartographic approach (e.g., the framework of Chomsky, 1995 and subsequent work), the functional categories available as the terminus of the extended verbal projection are just CP, TP, and *v*P; it is, therefore, not clear what is gained by specifying just these categories as the loci for nominalization, unless the intent is to claim that the additional projections introduced in a cartographic or expanded left periphery approach — for example, projections within TP, such as MoodP and AspP, are not possible sites for nominalization. From an empirical standpoint, we believe that the jury is still out on such matters; in any event, it is clear that the Prolific Domains typology as applied by P&G fails to make some distinctions required by the data. For example, P&G analyze both English poss/-*ing* gerunds and Dutch nominal infinitives like (4) as *v*P level nominalizations. However, as we pointed out in the preceding section, poss/-*ing* gerunds never allow adjectival or other nominal modifiers between D and the gerund, while nominal infinitives do, as we saw in (5) for Italian and P&G demonstrate for Dutch:

(21) Deze zanger is vervolgd voor dat *stiekeme* succesvolle liedjes jatten.
this singer is prosecuted for that sneaky successful songs pinch-INF
'This singer is prosecuted for sneakily pinching successful songs.'

We accounted for this difference by analyzing poss/-*ing* gerunds as TP nominalizations and nominal infinitives as *v*P nominalizations containing a nominal projection (perhaps a nominal counterpart of *v*) able to host adjectival modifiers.[8]

[8] One of P&G's arguments for analyzing poss/-*ing* gerunds as *v*P nominalizations is to distinguish them from acc/-*ing* gerunds, which they argue, contra Pires (2001), to be TP nominalizations. Pires gives extensive evidence that acc/-*ing* gerunds are bare TPs. P&G counter that acc/-*ing* gerunds are possible as complements of prepositions (e.g. *Kim worries about Robin muffing the sonata*), where *that* clauses and infinitives are impossible. However, under Pires' account, acc/-*ing* gerunds are possible here because the subject of the gerund is available to check the uninterpretable D feature of the preposition.

A Prolific Domains approach must be sufficiently articulated to account for this type of variation. Similar questions about whether the Prolific Domain approach is sufficiently articulated to account for the crosslinguistic range of nominalizations are raised by some of the contributions to this special issue. For example, in Baker's analysis of Sakha nominalized clauses, "verbal" CPs embed TP under C, participles embed a verbal projection Ptpl under an agreement-bearing head H, and gerunds embed a nominal projection Ger under an agreement-bearing D head. The level of the category change in both of the latter two types of clauses, i.e. the types with "nominalization," is higher than the vP, Grohmann's lowest Prolific Domain, and they are both lower than the highest Prolific Domain, i.e. the Domain of "discourse," or the articulated CP. They would both belong to the intermediate domain, i.e. the Phi-Domain (TP). P&G would thus be unable to draw the distinctions between these two clausal types according to the phrase-structural height of the category change (in contrast with Baker's elegant approach to this issue), and would presumably have to take recourse to an account based exclusively on category features.

P&G (2009) provide robust and important support for the basic empirical fact of phrasal coherence. Drawing from the discussion of Dutch nominal infinitives in Ackema and Neeleman (2004), they show that (21) coexists with the pattern in (22), where modifiers between D and *v*P are adverbial:

(22) Deze zanger is vervolgd voor dat *stiekem* succesvolle liedjes jatten
this singer is prosecuted for that sneakily successful songs pinch-INF

P&G locate the domain of nominalization as at *v*P in (21) (see the preceding disussion) and TP in (22) (as we proposed for English *poss*/-ing gerunds). P&G provide the following crucial examples illustrating the fact that adverbs cannot precede adjectives, while the reverse order is possible:

(23) *... dat *constant* *stiekeme* [succesvolle liedjes jatten]
that constantly sneaky successful songs pinch-INF
Intended: '(This singer is prosecuted for) that constant sneaky pinching of successful songs.'

(24) ... dat *constante* [*stiekem* succesvolle liedjes jatten]
that constant sneakily successful songs pinch-INF
'(This singer is prosecuted for) that constant sneakily pinching of successful songs.'

As P&G observe, the impossibility of interspersing nominal and verbal elements is a core property of nominalizations, predicted by their account, Bresnan's Phrasal Coherence principle, and the FNT under B&K's approach.

An additional central feature of P&G's approach is the positing of "SWITCH categories" between the highest verbal projection and the lowest nominal functional projection. SWITCH categories bear both nominal and verbal features: For example, in P&G's treatment of gerunds the SWITCH category Ger bears an uninterpretable V feature (checked by the lexical verb) and an interpretable N feature. In contrast, the approach we sketched in section 2 avoids positing a special type of category limited only to nominalizations. CP and TP nominalizations may be analyzed as involving direct selection of CP and TP by D. As we noted in section 2, Dutch and Italian nominal infinitives require a nominal category to host adjectives, but even in this case the facts can be handled by positing a nominal counterpart of ***v*** (or in another independently motivated projection below T, such as Aspect). In our treatment of VP nominalizations, we followed Alexiadou (2001) and Bowers' contribution to this issue in associating nominalization with nominal variants of independently motivated functional heads. Under a minimalist approach, we argue that the most appropriate treatment of nominalized structures is to accommodate the facts within an independently motivated inventory of functional categories.

We now turn our attention to another important work in the literature on clausal nominalizations, Bresnan (1997). We focus on two issues: the question of whether nominalizations are syntactically derived, and the scope of Bresnan's Extended Head Theory.

The proposal for nominalizations or "mixed projections" made in Bresnan (1997) is based on the idea that the verbal and the nominal subtrees share their heads (i.e. a "nominalized" verb is simultaneously dominated by the V-head of the verbal subtree and the N-head of the nominal subtree). Bresnan's head-sharing proposal is similar to the non-head-sharing analyses in the contributions to this special issue in that both place the head of the entire mixed projection in the higher subtree, i.e. into the nominal projection, rather than into the lower, i.e. verbal, projection. Bresnan argues convincingly, based on Arabic, Hebrew, and Dagaare examples, that analyses with the higher placement of the head must be correct (cf. Bresnan, 1997:7–8). The question of the lower versus higher placement of the head arises in head-sharing analyses, while it does not in analyses based on head-raising, where the head of the mixed projection is of course high, as acknowledged by Bresnan. Given this similar property of these otherwise different approaches to clausal nominalizations, we focus on the main aspect which is different, and which is discussed by Bresnan as a point of criticism.

This main criticism against syntactically derived morphological structure, specifically against deriving words via head movement, is based on Bresnan's assumption of the "structural integrity common to lexically and syntactically derived words" (1997:10). Bresnan argues that lexically as well as syntactically derived words are similarly opaque with respect to syntax and morphology: "The putative syntactically derived words are subject to the same morphological principles of structural formation as lexically derived words, and they both share properties of syntactic structural opacity referred to as

'lexical integrity"' (1997:7). Bresnan goes on to ask a central question, which she answers in favor of lexicalist approaches and against transformational, "syntactic" ones: "... syntactic categories can be omitted by ellipsis or extraction gaps, which depend for their meaning on the wider syntactic context; why then do nominalizations never include such empty categories? It is unexplained why the putative syntactically derived words should behave exactly like lexically derived words in these respects. These and other properties are explained by modern lexicalist theories of syntax, ... rather than phrase structure to capture generalizations across morphology and syntax" (Bresnan, 1997:7).

Here we would like to discuss a phenomenon where words, in particular nominalizations, indeed do differ with respect to ellipsis, according to whether they are derived lexically or syntactically,[9] and where "lexical integrity" is observed only by lexically derived words and not by syntactically derived ones, thus presenting a problem for both of Bresnan's empirical claims, i.e. that all words have to obey lexical integrity, and that they do not differ systematically according to how they are derived. This is the phenomenon sometimes called "suspended affixation."[10]

The phenomenon of suspended affixation (SA) in nominal coordination is illustrated by the Turkish example below, where "suspending" the plural morpheme in the following example is fine:

(25) limon ve portakal-lar
lemon and orange-PL
'lemon and oranges' (Non-SA-reading)
'lemons and oranges' (SA-reading)

Such "suspension" is found in verbal coordination, too:

(26) Her sabah bakkal-dan taze peynir al-ır ve ekmek-le ye-r-im.
every morning grocery.store-ABL fresh cheese buy-AOR and bread-with eat-AOR-1.SG
'Every morning, I buy fresh cheese at the grocery store and eat (it) with bread.'

Here, the subject agreement marker (for first person singular) has been "suspended." In verbal coordination, the morphemes expressing tense, mood or aspect cannot be "suspended," when the coordination marker *ve*, a borrowing from Arabic, is used; however, the (Turkic) suffix *–(y)Ip* makes "suspension" of these morphemes, along with the agreement morpheme, possible—in fact necessary[11]:

(27) Her sabah bakkal-dan taze peynir al-ıp ekmek-le ye-r-im.
every morning grocery.store-ABL fresh cheese buy-and bread-with eat-AOR-1.SG
'Every morning, I buy fresh cheese at the grocery store and eat (it) with bread.'

Let us now look at the subjunctive (or non-factive) nominalization marker *–mA* under "suspended affixation," using the coordination marker *–(y)Ip*:

(28) [[[Ali-nin örde̊ğ -i kızar-t]-ıp [krema-yı
Ali-GEN duck-ACC roast-CAUS-and cream-ACC
don-dur]]-ma -sın]-ı söyle-di-m.
freeze-CAUS-NFNom-3.SG-ACC tell-PST-1.SG
'I said for Ali to roast the duck and freeze the cream.'

The nominalizing subjunctive suffix *–mA* and the agreement suffix (as well as the case suffix) distribute successfully over the conjuncts.

Interestingly, there is a suffix which is morpho-phonologically identical to the subjunctive nominalizer, a resultative suffix, which can't be "suspended." This suffix is used to derive deverbal nouns with resultative semantics:

(29) a. don-dur -ma
freeze-CAUS -RESULT
'ice cream'

[9] For an early discussion of lexical versus syntactic nominalized verbs in Turkish and their differences, the reader is referred to Kornfilt and Greenberg (2000).

[10] This phenomenon is described in traditional literature (cf. Lewis, 1967, among others) and in generative literature (cf. Kornfilt, 1996, forthcoming; Kahnemuyipour and Kornfilt, 2011, among others).

[11] In traditional grammars, the suffix *–(y)Ip* is described as one of the suffixes that derive so-called "converbs," i.e. special verbal adjuncts, or "adverbials," as they are also sometimes described. We choose here to follow Kornfilt (1997) in viewing this marker as a verbal coordination marker, just as there also are special nominal coordination markers. Note that this suffix is not limited to lexical coordinations, given that it can follow other verbal suffixes such as reflexive, passive, reciprocal, causative, and negation.

b. kızar -t-ma
roast -CAUS-RESULT
'fried/roasted food'
c. kavur-ma
roast-RESULT
'roasted food'

This resultative morpheme, clearly a lexical derivational affix, cannot be "suspended":

(30) *don-dur-up kızar-t-ma
freeze- CAUS-and roast-CAUS-RESULT
(Ill-formed under the intended reading: 'Ice cream and roast meat' but good under the reading 'freezing and roasting')

This is not surprising, on the assumption that Turkish nominalizations are syntactically derived. Whether "Suspended affixation" is RNR, as proposed in Kornfilt (forthcoming), or whether it is analyzed as some other process of ellipsis, it is clearly a syntactic phenomenon. Therefore, it cannot violate lexical integrity with respect to a word which has been formed within the lexicon. The resultative morpheme is merged with the stem within the lexicon; it therefore cannot undergo the syntactic process of ellipsis and be "suspended." In contrast, the homophonous subjunctive nominalizer is a syntactic head, and the entire word is derived via head raising in the syntax, as proposed here and in B&K (2000). Thus, this head successfully undergoes syntactic processes of ellipsis. We would therefore expect that (30) should be well-formed under a reading where *–mA* is interpreted as a subjunctive nominalizer rather than as a resultative, and this is exactly what we find.

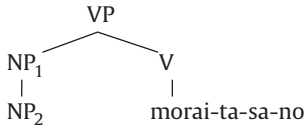
As Bresnan notes (1997:7), a syntactic derivation of nominalizations accounts both for their endocentricity (the fact that they have a nominal head) and phrasal coherence, the fact that verbal and nominal properties are not intermixed (as shown by P&G's data in (23–24), and similar data adduced by Bresnan). Bresnan's strong version of lexical integrity makes her unable to adopt such an approach, as we have seen. Instead, she handles "mixed category" configurations, including nominalizations, by proposing the Extended Head Theory in (31):

(31) **Extended Head Theory** (Bresnan, 1997:11)
(i) A functional category F^0 and its sister correspond to the same f-structure. (Functional heads F^0 are specialized subclasses of lexical heads which have a syncategorematic role in the grammar such as marking subordination, clause type, or finiteness).
(ii) Every lexical category has a(n extended) head. (X is an extended head of Y if X corresponds to the same f-structure as Y, X is of the same/nondistinct category type as Y, and every node other than Y that dominates X also dominates Y.)

The Extended Head Theory as applied to nominalizations captures an important insight: that a functional category inserted in the appropriate point in the structure is responsible for the headedness of the structure and phrasal coherence. This insight is shared with both the FNT approach and P&G's treatment of nominalizations. The approach works straightforwardly in the case of simple nominalizations. However, it is less clear how the approach accounts for the entire array of facts when applied to more complex constructions, such as the Japanese deadjectival nominalizations in (32), discussed by Bresnan (1997:3):

(32) kin.medaru-no morai-ta-sa -no (amari)
gold.medal-GEN receive-want-NOMINALIZER -COPULA excess
'(in excess of) wanting to receive a gold medal.

Bresnan analyzes (32) as a verbalized nominalization. Under the Extended Head Theory, the morphologically complex head *morai-ta-sa-no* 'wanting to receive *copula*' is the extended head of NP_1, and both this complex head and NP_1 correspond to the same f-structure:

(33)


kin.medaru-no
gold.medal GEN receive-want-NOMINALIZER-COPULA

However, as noted above, *morai-ta–sa* 'wanting to receive' itself is morphologically complex, containing the deadjectival nominalizer *–sa* (as well as the desiderative morpheme *–ta* (an adjective) and the verbal root *moraw-* 'receive'). The representation in (33) captures the "mixed" properties of this form at the topmost level of morphology, but its internally "mixed" structure is unrepresented in c-structure. This asymmetry could be remedied by positing a nominal F^0 as the head of NP_1. However, this head would contain no lexical material (since, under lexical integrity, the morphologically complex word must be realized in the highest F^0). It thus appears that the expense of applying the Extended Head Theory to structures involving more than one level of "mixed category" is the positing of empty functional heads.

4. External heads in nominalized clauses

One of the most generally accepted and applied assumptions about phrase structure is that projections are endocentric; in other words, a projection of a given category has to be headed, and that head must be of the same category of the projection. In the preceding section, we discussed Panagiotidis & Grohmann's (2009) and Bresnan's (1997) approach to the issue of endocentricity. In contrast to these, most of the papers in this special issue adopt a position consistent with the FTN and B&K (2000), where the head of a nominalization is an independently motivated nominal functional category.

Some syntacticians have, based on the endocentricity requirement, taken a strict view, ruling out mixed extended projections in one way or another. For example, for Grimshaw (1991), there are no mixed extended projections; i.e. nominal functional categories cannot be associated with a verbal projection (or verbal functional categories with a nominal projection). Thus, the problem of endocentricity does not arise for her. Other proposals are akin to this stand in spirit, e.g. van Riemsdijk's (1998) notion of categorial identity, according to which syntactic nodes connecting the lexical and functional heads within an extended projection terminating with the phrasal node must all be of the same category type.

However, this strict approach cannot be maintained, given the wealth and clarity of the cross-linguistic data showing mixed categorial properties, as we saw in section 2. It is important to note that the discussion there showed systematic and clear constraints on the mixing of categories. We saw there that mixed functional projections consist of two subtrees, each one of which must be categorially homogeneous, and that nominal functional projections dominate verbal functional projections; the reverse order is, as far as we are aware, not found.

Under this more permissive, but still constrained, approach to categorially mixed projections, a problem for endocentricity still remains, albeit a limited one: At the point of category change, a nominal functional projection immediately dominates a verbal functional projection, i.e. the "spine" of the functional projections is not categorially consistent, even though each one of the subtrees (i.e. the verbal subtree and the nominal subtree) is consistent in this way. How can we, then, avoid this problem that mixed extended projections pose to strict endocentricity?

One obvious solution would be to place an external nominal head at the level of category switching, thus creating a structure similar to a noun-complement construction, whereby the external noun takes the verbal clause as its complement.

This approach can be found in generative literature quite early on. Lees (1965), for example, proposed an analysis of the two main types of Turkish nominalized (argument) clauses whereby the embedded nominalized clause is headed by an empty N-head. In other words, the structure is not that of a mixed extended projection, but of a noun-complement clause whose head happens to be phonologically silent, and which takes a verbal projection as its complement. Thus, Lees analyzes nominalized clausal arguments of a matrix verb in a way which is identical to his analysis of noun-complement constructions. In doing so, he is not motivated by theoretical or methodological considerations, such as the problem for endocentricity we just mentioned. Rather, his concern is one of economy with respect to s-selection by verbs. As we saw earlier, there are two main nominalization types in Turkish, which Lees calls factive and non-factive, and which we have called (nominalized) indicatives and subjunctives, respectively, and which would be in our more specific analysis a realis type versus a non-realis, or irrealis, type of nominalized clause. Lees shows that not only verbs, but also nouns appear to select these two types, according to their semantics. Therefore, Lees proposed as a matter of economy to posit nominal heads for these nominalized clauses, whether those nominal heads are phonologically realized or not.[12]

The following two examples would, under this proposal, have the same structure:

(34) Ben [Hasan-ın gel-**diğ-in]-i** bil-iyor-um.
I Hasan-GEN come-**FN-**3.SG-ACC know-PR.PROG-1.SG
'I know that Hasan came.'

(35) Ben [[Hasan-ın gel-**diğ-i]** **gerçeğ-in]-i** bil-iyor-um.
I Hasan-GEN come-FN-3.SG **fact-**CMPDM-ACC know-PR.PROG-1.SG
'I know the fact that that Hasan came.'

[12] A more recent application of the same proposal to Turkish nominalized clauses is to be found in Aygen (2002).

There are, however, empirical problems for the proposal that nominalized indicative argument clauses are externally headed DPs. We illustrate some of these below. All of them establish differences between noun-complement constructions with overt external nominal heads, and argument clauses without such overt external heads, thus making any analysis that attributes identical structures to them unmotivated or, at best, ad-hoc.

An initial problem arises with post-verbal scrambling. Nominalized argument clauses allow for their constituents to move out of them, while noun-complement constructions do not. The next example shows successful movement; in contrast the following example, with an overt nominal head, does not allow such movement:

(36) ?[Hasan-ın t_i nihayet kaç-tığ-ın]-ı duy-du-m karı-sın-dan$_i$.
Hasan-GEN finally escape-FN-3.SG-ACC hear-PST-1.SG wife-3.SG-ABL
'I heard that Hasan finally ran away from his wife.'

Contrast an overtly headed factive clause:

(37) ??/*[[Hasan-ın t_i nihayet kaç-tığ -ı] söylenti-sin] -i duy-du-m karı-sın-dan$_i$.
Hasan-GEN finally escape-FN-3.SG rumor-CMPM-ACC hear-PST-1.SG wife-3.SG -ABL
'I heard the rumor that Hasan finally ran away from his wife'

The contrast becomes even clearer when the whole argument clause is scrambled to verb-final position in the root clause:

(38) t_j Duy-du-m [[Hasan-ın nihayet karı-sın-dan kaç-tığ-ın]-ı]$_j$.
hear-PST-1.SG Hasan-GEN finally wife-3.SG-ABL escape-FN-3.SG-ACC
'I heard that Hasan finally ran away from his wife'

In such examples, post-verbal scrambling of a constituent of the subordinate clause is perfect:

(39) t_j Duy-du-m [[Hasan-ın nihayet t_i kaç-tığ-ın]-ı]$_j$ karı-sın-dan$_i$.
hear-PST-1.SG Hasan-GEN finally escape-FN-3.SG-ACC C wife-3.SG-ABL
'I heard that Hasan finally ran away from his wife.'

This is predicted by an approach in which this type of subordinate clause does *not* have an external nominal head. The well-formedness of this example contrasts with the ill-formedness of corresponding examples where there is an *overt* head:

(40) ??/* t_j Duy-du-m [[Hasan-ın nihayet t_i kaç-tığ-ı] söylenti-sin-i]$_j$ karı-sın-dan$_i$.
hear-PST-1.SG Hasan-GEN finally escape-FN-3.SG rumor-CMPM-ACC wife-3.SG-ABL
'I heard that Hasan finally ran away from his wife.'

For the external noun head hypothesis, there should be no difference between the perfectly fine (39) and the ill-formed (40).

Another type of problem arises with respect to the distribution of indicative versus subjunctive nominalized clauses: Nominalized clauses can differ in their distribution according to whether they have an external nominal head or not. Only two systematic differences (among a number of similar selectional differences) are considered here: Indicative versus subjunctive (or realis versus irrealis) nominalized clauses as objects versus subjects of psychological predicates.

First, psychological predicates allow both the realis and the irrealis nominalization types as complements, without any difference in semantics.

(41) a. [Ali-nin ev-den kaç-ma-sın]-a üzül-dü-m.
Ali-GEN home-ABL flee-NFN-3.SG-DAT sadden-PAST-1.SG
'I was saddened at Ali's running away from home.'
b. [Ali-nin ev-den kaç-tığ-ın]-a üzül-dü-m.
Ali-GEN home-ABL flee-FN-3.SG-DAT sadden –PAST-1.SG
'I was saddened at Ali's running away from home.'

However, when an external noun shows up, only the realis gerund is well-formed for factive semantics:

(42) a. ??/*[Ali-nin ev-den kaç-ma(-sı)] söylenti-sin-e üzül-dü-m.
Ali-GEN home-ABL flee-NFN-3.SG rumor-CMPDM-DAT sadden-PAST-1.SG
Intended reading: 'I was saddened at the rumor of Ali's running away from home.'

b. [Ali-nin ev-den kaç-tığ-ı] söylenti-sin-e üzül-dü-m.
Ali GEN home-ABL flee-FN-3.SG rumor-CMPDM-DAT sadden-PAST-1.SG
'I was saddened at the rumor of Ali's running away from home.'

Second, with the same type of predicates, only the subjunctive type of nominalization is well-formed as subject, despite indicative semantics; however, when such a sentential subject is externally headed, only the indicative type of nominalization is well-formed for indicative semantics:

(43) a. [Ali-nin ev-den kaç-ma-sı] ben-i üz-dü.
Ali-GEN home-ABL flee-NFN-3.SG I-ACC sadden-PAST
'Ali's running away from home saddened me.'
b. *[Ali-nin ev-den kaç-tığ-ı] ben-i üz-dü.
Ali-GEN home-ABL flee-FN-3.SG I-ACC sadden-PAST
Intended reading: 'Ali's running away from home saddened me.'

(44) a. ??/*[Ali-nin ev-den kaç-ma(-sı)] söylenti-si ben-i üz-dü.
Ali-GEN home-ABL flee-NFN-3.SG rumor-CMPDM I-ACC sadden-PAST
Intended reading: 'The rumor of Ali's running away from home saddened me.'
b. [Ali-nin ev-den kaç-tığ-ı] söylenti-si ben-i üz-dü.
Ali-GEN home-ABL flee-FN-3.SG rumor- CMPDM I-ACC sadden-PAST
'The rumor of Ali's running away from home saddened me.'

Additional observations and arguments against the external (nominal) head hypothesis for Turkish nominalized embedded clauses are offered in Kornfilt (2003).

There are also some other considerations against an external N-head. A straightforward one is that if a nominal projection dominating verbal functional projections is headed by an external noun, the highest verbal functional projection would be that noun's complement, as was discussed above. Given the VP-internal subject hypothesis, any movement of such a subject would mean extraction from the complement of a noun; it is widely known that this is not generally possible:

(45) * [John's appearance to be drunk] surprised us.

(46) * [John's continuation to snore] annoyed everyone. (cf. Kayne, 1981; Borsley and Kornfilt, 2000)

An alternative is conceivable where it is claimed that apparent nominal functional categories in a clausal (and thus verbal) projection path are actually unspecified for whatever features distinguish between nouns and verbs. This would allow such categories to combine with a noun and become nominal or to combine with a verb and become verbal. As a consequence, mixed extended projections would be avoided. However, such an approach still could not account for the appearance of these constructions in canonical nominal positions (e.g. as mentioned earlier, they can be the complements of adpositions in many languages, and can show up as overtly case-bearing phrases in Turkish and the Turkic languages, where fully verbal clauses never bear such case morphemes).

5. The internal structure of nominalizations

We have now seen how four types of nominalized clauses can be treated within the FNT/B&K model: CP nominalizations, TP nominalizations, *v*P nominalizations, and VP, or lexical nominalizations. We have suggested that the first two types involve direct selection of a verbal projection, CP or TP, by a nominal functional head, D. The third category, *v*P nominalizations, require a nominal head above *v*P to host nominal modifiers such as adjectives. VP nominalizations are characterized by nominal counterparts of 'light' verbs, which may affect the theta-theoretic properties of the structure.

Each of these types of nominalizations except for the highest, CP nominalizations, shares the property of allowing (or requiring) the highest argument in the verbal projection to appear in genitive case. This is a natural consequence of the assumption that genitive case is licensed (in minimalist terms, checked) by D, and that in patterns where the terminus of the verbal projection is below CP, the external argument is accessible to case licensing (checking) by a higher head.

The contributions to this special issue confirm that genitive subjects span the range of nominalizations below CP. The contribution by Herd et al. shows that in a broad sense, they exceed this range. Herd et al. discuss a remarkable set of facts in Polynesian languages where the DP interpreted as coreferent with the relative clause subject is realized as the genitive-marked possessor of the head noun of the relative clause:

(47) Niuean (Herd et al., this issue)

a. Ko e tama fifine fulufuluola [ne lagomatai **e** **ia**].
Ko child girl beautiful T/A help **ErgP** **3.SG**
'It is the beautiful girl that he helped.'

b. Ko e tama fifine fulufuluola **haana** [ne lagomatai].
Ko child girl beautiful **3.SG.Gen** T/A help
'It is the beautiful girl that he helped.'

In (47a) the subject of the relative clause is realized with ergative case inside the relative clause, but in (b) there is no overt subject inside the relative clause, and the third person pronoun interpreted as coreferent with the relative subject is external to the relative clause, in the position of a possessor of 'girl'. Herd et al. give convincing arguments that the structure of this external genitive construction is as in (47b). They further argue that the external genitive cannot be derived by movement from the relative subject position, and that the relation between the external genitive and the relative subject position cannot be a conventional control relationship. Instead, they argue that relationship involves what they call semantic control, checking only thematic features.

From the standpoint of a typology of nominalizations, what the Polynesian data show is that genitive "subjects," in a pretheoretic sense, are not a definitional property of nominalizations. Relative clauses in the languages discussed by Herd et al. show no nominal properties at all. Herd et al. argue that they are full CPs, and careful analysis shows that they do not contain the genitive "subject" at all. As Herd et al. point out, the Polynesian pattern appears broadly comparable to English examples such as *It is Gabe's game to win*.[13]

Miyagawa's paper presents another example of genitive subjects occurring independently of nominalization. Miyagawa presents an in-depth analysis of the well-known phenomenon of nominative/genitive conversion in Japanese, exemplified by (48):

(48) [kyonen-made danro-no/-ga atta] heya
last.year-until fireplace-GEN/-NOM existed room
'the room where there was a fire place until last year'

As the label "nominative/genitive conversion" suggests, earlier generative research on Japanese has analyzed this pattern as optional, subject to certain constraints to which we return below. One tradition, extending back to Watanabe (1996) and further developed by Hiraiwa (2001), treats the pattern with genitive *no* in (48) in fact as a type of nominalization: These accounts relate the genitive subject to the presence of a nominal feature in C of the relative clause.

Miyagawa instead argues that genitive in Japanese is uniformly licensed by D. He gives convincing arguments that the alternative between genitive and nominative in (48) is the result of a structural difference: Genitive is licensed when the relative clause is TP, making the subject accessible to D; nominative is licensed when the relative clause is a larger projection, namely CP, making the subject inaccessible to D.

On Miyagawa's analysis, the clause internal to Japanese complex NPs is not a nominalization, but Miyagawa's analysis is highly relevant to the typology of nominalizations that we have presented here. As Miyagawa notes, the Japanese pattern and the Turkish indicative nominalizations we discussed in section 2 present a minimal contrast. Japanese allows the alternation between nominative and genitive; Turkish does not. This contrast indicates that the structural variation present in Japanese is not present in Turkish indicative nominalization: Either the latter are uniformly TPs directly selected by D, as we have suggested here, or, following the slightly different set of assumptions adopted by Kornfilt (2008), they are uniformly TPs selected by a C bearing a nominal feature.

Given that genitive subjects are licensed by D on Miyagawa's analysis, in what sense is the genitive subject pattern in (48) not a nominalization? The crucial difference is that D in the Japanese pattern is contributed by the extended nominal structure (specifically, the relative head). In Turkish, TP is directly selected by a nominal functional category, D; we argued extensively in the previous section that in the Turkish case, D is not associated with an external noun head. This difference correlates with the fact that while Turkish indicative nominalizations may serve as the complements of a higher verb, Japanese clauses with genitive subjects may not. Although Japanese clauses with genitive subjects may appear, for example, as the complement of certain postpositions, Miyagawa argues that in such cases an unpronounced head noun is present – exactly the analysis we rejected for Turkish in the preceding section.

[13] An interesting property of the English pattern is that it is limited to contexts where the infinitival relative is the underlying nominal predicate:

(i) It is Gabe's game to win.

(ii) *I saw Gabe's game to win.

(iii) *Tomorrow is Gabe's game to win.

This appears not to be true in Polynesian, as Herd et al give data where the relative clause appears in non-predicate position.

The Japanese facts discussed by Miyagawa relate to a second important property of the internal syntax of nominalizations: the licensing of the object. In nominalizations below *v*P, as we have seen, normal object (accusative) case cannot be realized. Languages respond to this property of "low" nominalizations in a variety of ways: by NP movement to a position where structural genitive is licensed (*the city's destruction*), or insertion of a default case (*the destruction of the city*). Japanese relative clauses and the Quechua nominalization patterns analyzed by Cole and Hermon present a challenging set of data with respect to object licensing. In these languages, the locus of nominalization appears to be higher than VP (in Japanese, as we have seen, the pattern is not nominalized at all), but object case cannot be realized.

The closest parallel involves Huanca and Cuzco Quechua on the one hand, Japanese on the other. Cole and Hermon show that in Huanca and Cuzco, accusative case cannot be realized on the object when the subject is genitive:

(49) Mariyacha muna-n [xwancha-q platanu-(*ta) ranti-**na** -n-ta].
Maria want-3 Juan-GEN banana-(*ACC) buy- Nominalizer-3-ACC
'Maria wants Juan to buy bananas.'

In Japanese, an overt accusative object cannot be realized in a relative clause with a genitive subject:

(50) [John-ga/*no hon-o kasita] hito
John-NOM/GEN book-ACC lent person
'the person to whom John lent a/the book'

Although the two sets of facts are intriguingly similar, there is a crucial difference, and the close analyses presented in the two papers show that they motivate distinct analyses. In Japanese, an overt object is simply unacceptable in a relative clause with a genitive subject. In Quechua, as Cole & Hermon show in (49), accusative case is unacceptable; an overt object is possible, if realized with default (zero) case.

Cole & Hermon account for the Quechua facts by positing a nominal functional category, NomP, between *v*P and VP. Following the FNT (specifically, the assumptions of B&K, which Cole and Hermon adopt), all projections above the NomP, including *v*P, must be nominal. Cole and Hermon's analysis is interesting because it suggests, if correct, that the pattern of nominal counterparts of light verbal heads found in lexical nominalizations (in particular, the cases analyzed by Bowers), may extend all the way to *v*P, the highest 'light' verbal projection. It is also noteworthy that in the Quechua case "nominal" *v* has no effect on the theta-theoretic properties of the structure, as external arguments are realized.

In contrast, Miyagawa accounts for the Japanese facts by adopting the following principle from Alexiadou and Anagnostopoulou (2001, 2007):

(51) **The subject-in-situ generalization (SSG)**
By Spell-Out, *v*P can contain only one argument with an unchecked Case feature. (Alexiadou and Anagnostopoulou, 2007)

Miyagawa argues that genitive subjects remain in Spec, *v*P in Japanese, due to the defective nature of T in such contexts. An overt object (or other argument with an unchecked case feature) would thus violate (51) in a clause with a genitive subject.

We thus see that the Japanese and Quechua object restrictions are empirically distinct, and call for distinct accounts. Both sets of facts, however, show that properties of the top, "nominal" layer of the structure may have consequences even at the level where VP arguments are realized. In Quechua, selection of a nominalization entails selection of a structure with nominal categorial properties down to the level of *v*P. In Japanese, licensing genitive case by D requires selection of a defective T; this in turn has the consequence that the subject remains in *v*P and cannot co-occur with other arguments in *v*P.

6. Conclusion

Our objective in this afterword has been to construct a working typology of nominalizations, based on but not restricted to the papers collected in this special issue. We have argued for four possible levels of nominalization, CP, TP, *v*P and VP. We have shown that certain internal syntactic phenomena are characteristic of different levels of nominalization: genitive subjects of nominalization below TP, genitive objects of nominalization below *v*P. We have suggested that the inventory of categories implicated in nominalization is quite restricted: D, and nominal counterparts of 'light' verbal categories.

Abbreviations

1. First person
3. Third person
ACC Accusative

ADV	Adverb marker
AgrN	Nominal agreement
AgrNP	Nominal agreement phrase
AOR	Aorist
B&K	Borsley & Kornfilt (2000)
CAUS	Causative
CMPDM	Compound marker
Comp	Complementizer
Det	Determiner
ErgP	Ergative phrase
FNom	Factive nominalization
FNT	The Functional Nominalization Thesis
FUT	Future
FutFNom	Future factive nominalization
GEN	Genitive
GER	Gerund
INF	Infinitive
NEG	Negative
NOM	Nominative
NFNom	Non-factive nominalization
OPT	Optative
P&G	Panagiotidis & Grohmann (2009)
PR.PRG	Present progressive
PST	Past
Ptpl	Participle
RESULT	Resultative
SBJNCT	Subjunctive
SG	Singular
T/A	Tense/Aspect

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