

How Phase-based Interpretations Dictate the Typology of Nominalizations

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0 Introduction and Outline

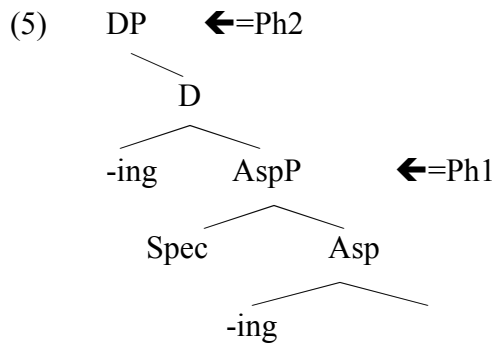
A classic conundrum is the relation of inflectional morphology to derivational morphology: why are they sometimes the same and what properties carry over from inflectional to derivational structure? To be explicit, why, for instance, do we have a progressive morpheme *-ing* in nominalizations like (1) and *-ing* in a result form like (2) and in the intermediate form (3):

- (1) John's singing songs beautifully
- (2) the drawings
- (3) John's singing of songs beautifully.

An expression like *his singing beautifully* carries the activity reading of inflectional *-ing*, but no progressive meaning. The result nominals carry no activity whatsoever:

- (4) his strange singing surprised everyone

A parallel set of theoretical questions arise for Phase theory. A number of papers, beginning with Fu, Roeper, and Borer, have argued for the presence of a VP within the DP, using ellipsis, adverbs and aspectual evidence, and it is assumed in most subsequent analyses (Barrie 2006; Alexiadou (et al.) 2007; Sichel 2009). Under this assumption, two Phases arise:



Under the Strong Minimalist Thesis, Transfer to Interpretation is called for at both Phases: DP and vP (or ASP-P, which we will assume).

We will argue that the pattern of interpretation and the exclusion of aspectual information follows from the SMT applied at these two points. The argument entails that one see English as containing two *-ing* morphemes, which *prima facie* may seem surprising, but is reinforced by cross-linguistic comparison, because in German one meaning is captured with *-ung* and the other with *-en*. – We will argue that the internal structure of gerunds includes verbal structure, but that the nature of Phase interpretation will eliminate a set of meanings linked to Aspect. Thus we argue that deep principles of syntax affect morphology. Evidence from the periphery of grammar for fundamental principles is the strongest evidence that they are real.

In particular the derivation introduces Phase boundaries when DP is projected which, under the Strong Minimalist Thesis, blocks access to material inside lower VP Phase boundaries. The SMT requires interpretation at the Phase Edge. If the verb is raised into the DP, then lower Aspectual nodes are no longer visible, under the assumption that the vP is a Phase. We thus reproduce within nominalizations a variety of Phase-level restrictions found elsewhere in syntax and the interpretive restrictions of the Strong Minimalist Thesis.

The execution of this perspective involves a classic mode of argument, found in long-distance wh-movement. If the verb+object remain in the lower vP, they are interpreted there, together with possible aspectual information, as in:

(6) the mowing of the lawn in two hours

Under minimalist theory, if the verb+object moves out of the lower Phase to the higher Phase, then they are only interpreted at a later point, at which the lower Aspectual information is no longer available because the Phase is over. In order to capture these Phase properties correctly, we therefore argue that aspectual information is only preserved when the interpretation occurs in the first (i.e. lower phase) vP-Phase but blocked when the interpretation occurs in the second, (i.e. higher) DP Phase. The Phase-Head (e.g. CP) is not transferred, only the Phase-complement (e.g. IP). In order to execute this mechanism, the lower verb+object must move into the Phase-Head, which remains for interpretation until the next Phase, while the Phase-complement undergoes Transfer. This is just like a wh-word moving into a lower clause CP, before cyclic movement, and avoiding Transfer of the Phase-complement. Therefore we argue that the lower verb+object (e.g. *mow lawn*) moves out of the VP into the ASP node, when VP is transferred.

A natural question to ask is: why would the verb+object (i.e. *mow lawn*) move as a unit? If the object occupies the clitic position, advocated in Keyser and Roeper (1992), which is a part of a verb and the launching site for incorporation, then they would naturally move together, and be available for incorporation. Thus, before movement the argument is moved into the clitic position, or alternatively, the THEME is directly projected into the clitic position and forced out if it is a Phrase not a Head. If the ultimate incorporation occurs within a DP, then the event is pluralizeable as well, and we predict the possibility of such forms:

(7) the lawn-mowings

And we predict the impossibility of:

(8) *the lawn-mowings in two hours

because the Aspect information is too low and could not be interpreted in the first Phase without the verb present.

These are the extreme cases and many intermediate cases occur with varying degrees of grammaticality which we will discuss. What happens if the object is not incorporated, but still in

the DP? Then we find that of-insertion occurs to provide case, as argued classically, pluralization is still possible, but aspect is still ruled out:¹

- (9a) the mowings of the lawn (were interminable)
- (9b) *the mowings of the lawn in two hours.

We will now present this argument in greater detail and show its connection to other theories.

1 The basic structures

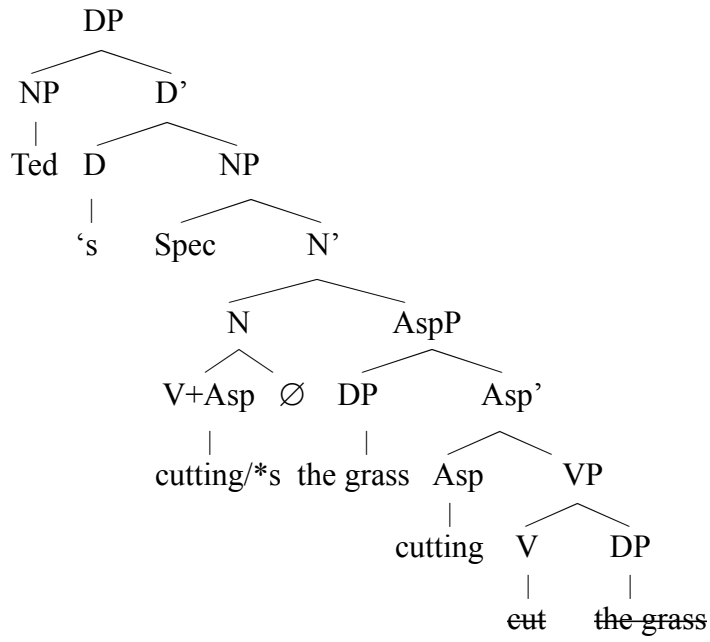
As we have shown, contrary to standard assumptions in the literature (cf. e.g. Grimshaw 1990, Alexiadou, Iordăchioaia and Soare 2009) nominal gerunds allow for pluralization in their incorporated as well as in their non-incorporated forms:

- (10a) Ted's/The cutting of (the) grass
- (10b) Ted's/The grass-cutting
- (10c) Ted's/The cuttings of (the) grass
- (10d) Ted's/The grass-cuttings

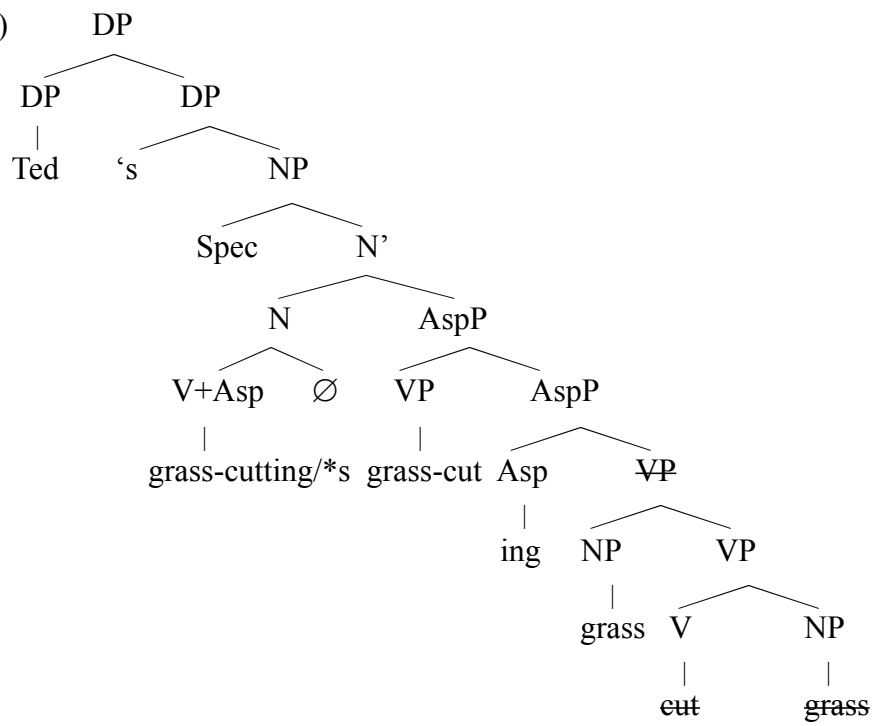
The corresponding structures for the forms in (10) are the following, where we assume the two Phases mentioned above and the movement to the Phase Head:

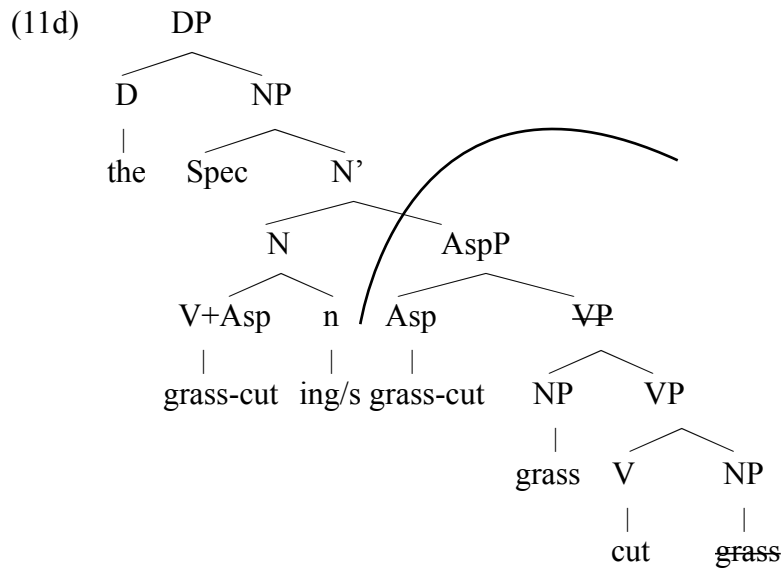
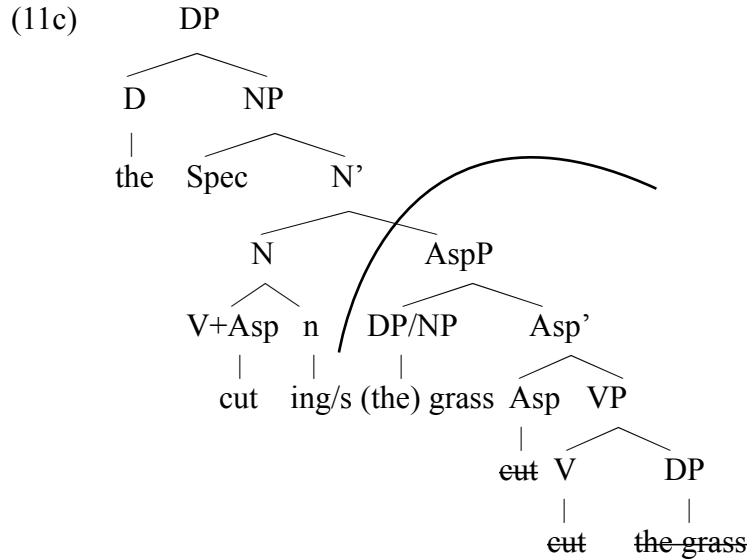
¹ The form in (9b) is often marked ?? or even * because it appears that it could belong to the vP level phase. We argue that semantics indicates that it is a part of the DP-level phase and therefore receives a Manner or Style reading rather than a simple direct object reading.

(11a)



(11b)





While (10c)/(11c) and (10d)/(11d) show that nominal gerunds can be pluralized, these forms cannot be modified by aspectual PPs or adverbial phrases despite the fact that they contain aspectual structure, which follows naturally from the assumption that a Phase boundary blocks access to the lower verbal functional structure:²

- (12) The grass-cuttings/cuttings of (the) grass
 *[_{PP} with a scythe]

² Note incidentally that this is absolutely compatible with the assumption that adjunction is Late or at least Later Merge as noted for instance in Boeckx (2008), Chomsky (1993) and Lebaux (1988).

- *[_{PP} for hours]
- *[_{PP} in an hour]
- *[_{AdvP} immediately]
- *[_{AdvP} unfortunately]
- *[and Bobby's doing so too]

Also, nothing about everyday meaning rules out the illicit modifications as is illustrated by the example in (13) where not even under a multiple event reading the aspectual modifier *for hours* is licensed:

- (13) *the shootings of Jews for hours in the holocaust did not bother the participants

Here again the Phase boundary below the nominalizing *-ing* suffix blocks access to the aspectual phrase that is adjoined below the nominal node.

In effect, then, we argue for a distinction between two types of *-ing* affixes. One is an aspectual affix that is generated in a lower vP Phase where also aspectual modifiers are licensed and one is a nominalizing affix that is merged as the Phase head of a higher Phase. This N-head can thus host plural features and, by virtue of constituting a Phase boundary, it blocks access to lower functional structures, in line with the PIC. Further support for making a distinction between two types of *-ing* in English comes from German, where the aspectual *-ing* structures are nominalized infinitives and the the nominal *-ing* structures are *-ung* nominalizations.

2 A closer look

2.1 Non-incorporated non-plural nominal gerunds

Abney (1987) in his seminal analysis of different types of gerunds argues that gerundives, (i.e. verbal gerunds of the ACC-ing, POSS-ing and potentially also PRO-ing type) contain verbal structure that is adjoined in syntax, while nominal gerunds (i.e. *-ing of* gerunds) do not contain

any verbal functional structure above V and the *-ing* affix is a lexical affix here that is adjoined in morphology. The verbal properties Abney identifies for these gerunds, namely that they tolerate particles and that they cannot be passivized without passive morphology (cf. *ibid* 214-17) are not further discussed in his account and do not have any impact on his structural classification. Siegel (1997) basically follows Abney's representation and focusses on gerundives, saying little about nominal gerunds. Alexiadou, Iordăchioaia and Soare (2009) capture the distinction between nominal and verbal gerunds in terms of boundedness and argue for nominal functional projections above VP in their account, hence following Abney's classification of nominal gerunds as not containing any verbal functional structure, yet, in this account *-ing* attachment is a syntactic rather than a morphological process.

Van Hout and Roeper (1998) and Fu, Roeper and Borer (2001) on the other hand point out that complex event nominals or argument structure nominals in the sense of Grimshaw (1990) and thus also nominal gerunds might have the external distribution of derived nominals or NPs - just as Abney indicates - but that they also show a significant amount of verbal properties, indicating that they contain verbal functional structure and in particular an aspectual projection (which according to Alexiadou, Iordăchioaia and Soare (2009) is only present in verbal gerunds). Evidence for the fact that verbal structure is licensed comes from the following examples:

- (14a) Ted's cutting of the grass in an hour
- (14b) Ted's cutting of the grass with a scythe/immediately
- (14c) Ted's cutting of the grass and Bobby's doing so too
- (14d) *Ted's cutting of the grass unfortunately

(14a) illustrates that nominal gerunds license (even telic!) aspectual modifiers, which are most likely adjoined to the AspP in (11a). Furthermore, non-sentential adverbial and prepositional modifiers are licensed, as (14b) shows, which again points to verbal functional structure in these types of nominals. The fact that sentential modifiers are not licensed (cf. 14d) follows naturally from the structure in (11a) where TP or higher functional projections are missing. Finally, (14c) indicates that the appropriate non-tensed form of the *do-so* anaphor is licensed as well, which is

yet another indication that TP is missing but verbal functional structure below that and in particular AspP is projected.

Finally, when comparing the forms in (14) to the forms in (15) below, what *prima facie* looks like a counter-argument to the analysis suggested here actually provides further support for the assumptions made:

(15a) ?John's cutting of the lawn for hours but never finishing it was a problem

(15b) John's cutting the lawn for hours but never finishing it was a problem

When the DP object stays in situ as it does in (15b) the aspectual reading is more naturally available. In (15a), however, the object raises and the meaning of the DP is fixed in the 2nd Phase, therefore the first *v*P/aspectual Phase cannot be accessed. Notice that in (11a) a nominal Phase does occur, however, it is on top of the aspectual node with its *-ing* head. This is the second Phase, which adds definiteness that can be seen as creating an implicature of completeness as is familiar and standardly assumed for cases like the following:

(16) John ate the pie

Hence, the subtle distinctions between (15a) and (15b) corroborate the assumption that the *-ing* affix is an aspectual affix also in the nominal gerunds, instead of undermining it.

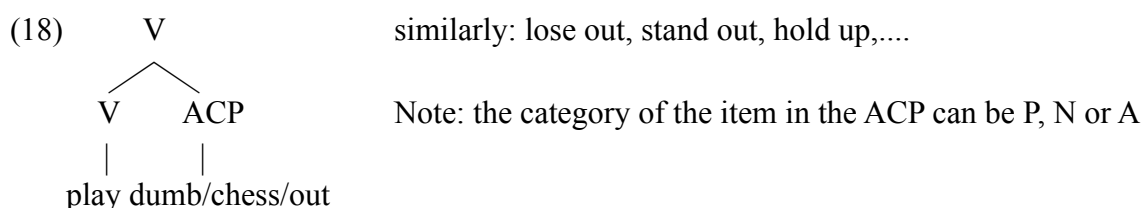
2.2 Incorporated non-plural nominal gerunds

The question that immediately arises from the discussion in the previous section is, whether the incorporated forms of nominal gerunds also contain verbal functional structure or whether the incorporation site is low in the tree, resulting in the structures that Abney (1987), Siegel (1997) or Alexiadou, Iordăchioaia and Soare (2009) suggest for nominal gerunds, i.e. excluding any

verbal functional structure above V(P). A comparison of incorporated and non-incorporated nominal gerunds to the corresponding verbal structure allows for the following conclusion:

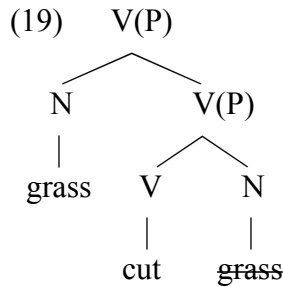
- (17a) Ted's grass-cutting
- (17b) Ted's cutting of the grass
- (17c) Ted cuts the grass

Following the line of reasoning in Kratzer (1994), van Hout and Roeper (1998) point out that in (17c) the eventuality variable is closed off via existential closure by the tensed T head, which leads to the event interpretation of this structure. The incorporated nominal in (17a), on the other hand, is ambiguous between an event and a result reading, which is the result of generic binding of the event variable.³ The interpretational difference between the verbal forms and the incorporated nominals that follows from the different licensing properties of the event variable (i.e. existential closure vs. generic binding), leads van Hout and Roeper (1998) to the conclusion that the incorporated element is a non-maximal projection, i.e. a head. This head is base generated in the abstract clitic position (ACP) of the verb, originally identified in Keyser and Roeper (1992) for (among others) verb-particle constructions. Under this analysis clitics are base-generated in a position to the right of the verb:



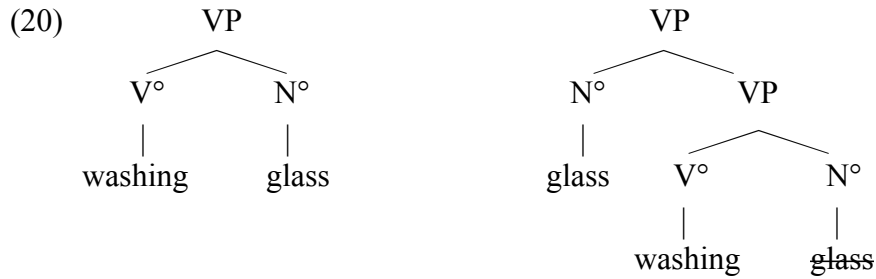
In the verbal/sentential domain the clitics move to LF covertly, but in the nominal domain the clitic is incorporated overtly, leading to the structure in (19) (cf. also Keyser and Roeper 1997):

³ In fact, existential closure is not an option in (17b) either, because here (as shown in section 2.1) TP is not projected either. So the event interpretation in this structure might also arise from generic binding.



Van Hout and Roeper (1998) go on arguing that the structure in (19) then is incorporated into a nominalizing affix, which means that in this approach there is no indication for verbal functional structure on top of the incorporated verbal form. While this account provides a natural explanation for the interpretational difference between (17a) and (17c) it remains silent about why the form in (17b) can get an event interpretation just like the form in (17a) but not the result interpretation of that latter form. One possible answer is that the variation for the form in (17a) is due to the fact that the incorporated element is not an argument of the verb. In fact, Harley (2009) argues that the incorporated element can be analyzed either as an unanalyzed root with incorporation being triggered by a case feature or it can be analyzed as having undergone category change to a nominal category prior to *-ing* attachment. The distribution of the incorporated element then is strongly distributional, basically mirroring the effect of the ACP in van Hout and Roeper (1998). Though Harley's analysis offers a solution for getting to grips with the two readings of (17a) that correlate with the non/argument status of the incorporated element, additional problems arise. First of all, the status of the case-feature that triggers incorporation is left unclear in her account, thus leaving open the question why overt LF-movement leads to the two interpretational variants in (17a) while one of these is blocked in the non-incorporated form in (17b). Furthermore, Harley's account, just like van Hout and Roeper's, does not provide for any verbal functional structure on top of the VP and in both analyses the incorporated forms result from head-movement, an assumption that is not unproblematic in modern minimalist theorizing.

Barrie (2006) avoids the problem of head-movement and argues for phrasal movement of the internal argument, which is forced by a symmetric c-command relation between the verb and its complement, thus following a weak-antisymmetry approach in the spirit of Moro (2000):



Here the verb and the internal argument, i.e. a bare N, are in mutual c-command and thus cannot be linearized (cf. Kayne 1994). This symmetric c-command relation is dissolved by adjoining the N in the specifier of VP. So, this approach avoids the problems of head-movement but still does not provide an accurate explanation for the interpretational variants attested for (17a), nor does it license verbal functional structure on top of VP. In fact, Barrie's analysis does not provide any information on the status of the *-ing* suffix, which makes the verbal projection and the lack of functional projections on top of it even more problematic and leaves the external nominal distribution of the gerund totally unaccounted for.

When, in analogy to the non-incorporated forms, the *-ing* suffix is analyzed as an aspectual affix the incorporation of the nominal argument can still be determined by a symmetric c-command relation between that argument and the verb, resulting in the structure in (11b). Under this account the properties exhibited in (21) follow naturally:

- (21a) Ted's grass-cutting and Bobby's doing so too
- (21b) Ted's grass-cutting with a scythe
- (21c) Ted's grass-cutting for hours
- (21d) *Ted's grass-cutting in an hour
- (21e) Ted's grass-cutting immediately
- (21f) *Ted's grass-cutting unfortunately
- (21g) Ted_i enjoyed PRO_i rock throwing

Just like for the non-incorporated forms, the relevant form of the *do-so* anaphor is licensed (cf. 21a) and non-sentential adverbial and prepositional modifiers are licensed (cf. 12b and 21e), while the sentential modifier in (21f) is again illicit. The contrast between (21c) and (21d)

illustrates that only atelic modifiers are licensed, which is expected because the incorporated element is a bare N that is not quantized. If it were quantized, it would not be in a symmetric c-command relation to the verb thus not necessitating incorporation in the first place. (21g) finally shows that even control is possible which again underlines the eventuality interpretation of this form, because this is where the PRO-form is expected to be generated and licensed.

However, the incorporated and the non-incorporated form of the nominal gerund do not pattern exactly alike. It has been indicated already that the incorporated nominal alternates between an event and a result interpretation. When interpreted as eventive, the incorporated nominal gets a Kind reading while the non-incorporated form is Specific:

(22) Ted's rock-throwing ---- kind

(23) Ted's throwing of the rocks ---- specific

So, the incorporation here establishes a Kind reading, which is in line with observations originally made in Williams that incorporated nouns are not arguments, but rather Manner phrases, which nonetheless absorb the THEME argument projection of the verb. Thus we have:

(24) John likes opera-singing

which indicates a preference for a style, but it is still incompatible with THEMES:

(25a) *John likes opera-singing of Verdi

(25b) *John likes opera-singing of songs

but if it is explicitly manner adverb incorporation becomes possible:

(26) John likes opera-style-singing of songs

Thus, incorporation refers to Kinds, and differs from object projection via an of-phrase.⁴

Incidentally, the Kind vs. Specific distinction offers another way to motivate movement by meaning. If we assume that the incorporation position can have a Kind-feature projection, then it could serve as a motivation for movement rather than an abstract kind of case. We will not explore the question further here.

2.3 Non-incorporated plural nominal gerunds

As has been pointed out in the previous section, nominal gerunds show strong evidence for the existence of verbal functional structure on top of the VP node and particularly for an aspectual projection - this being the place where the *-ing* affix is generated. It has also been pointed out that some forms are actually ambiguous between an event and a result reading. Non-incorporated plural nominal gerunds do not seem to display this ambiguity, which raises some questions about their internal structure, but justifies the fact that incorporation is not obligatory.

In light of Grimshaw's (1990) analysis of complex event nominals, pluralized forms of nominal gerunds are completely unexpected and should not be grammatical. As the examples in (10c)/(11c) illustrate, however, these forms are attested. In fact, Roodenburg (2006) already suggests that the availability of plural marking is parameterized with Romance languages allowing for pluralized argument structure nominals while in Germanic languages they are not well-formed. This, however, does not account for the plural marker on the English forms. As shown in Alexiadou, Iordăchioaia and Soare (2009), (based on insights from Iordăchioaia and Soare (2008) on nominalizations of Romanian infinitives and supines) what Roodenburg describes as inter-language variation rather is an intra-language variation phenomenon. Alexiadou, Iordăchioaia and Soare (2009) describe the distinction between nominal and verbal

⁴ Note, that this cannot be captured under Harley's account either, where the ungrammaticality of (i) is left unexplained:

- (i) *the truck-driving of Fords

Keyser and Roeper (1992) argue that the head is moved into the clitic position from the argument position after the THEME has been satisfied. Alternatively, one can allow the verb to project the THEME theta-role to the clitic position. In any case, as the example above shows it is not a pure adjunct.

gerunds in these terms, arguing that only the former can be pluralized and do not display any verbal functional structure on top of the VP node.

Essentially they argue for a distinction in terms of boundedness, with the aspectual projection in verbal gerunds and the classifier projection in nominal gerunds being in complementary distribution, thus reflecting the distinction between inner and outer aspect. In fact, the structure that Alexiadou, Iordăchioaia and Soare (2009) suggest for verbal gerunds is on a par with the structure suggested for nominal gerunds in (11c) above. The main motivation for excluding verbal functional structure from nominal gerunds in Alexiadou, Iordăchioaia and Soare (2009) is that adverbial modifiers are illicit in these structures. This is illustrated in the following sample sentences (cf. *ibid*):

(27a) *The carefully restoring of the painting took six months

(27b) The prompt answering of the question surprised the critics.

However, as pointed out for complex event nominals other than *-ing of* nominals in Fu, Roeper and Borer (2001) and as discussed in section 2.2 for nominal gerunds, adverbial modification is possible in these structures, as long as these modifiers are generated in a post-head position in the right periphery. This is still expected to hold for nominal gerunds that contain verbal functional structure below a nominalizing node. The fact that adverbial modifiers are licit only in the right periphery and adjectival modifiers show up only in the left periphery is what naturally follows from the configuration in (11c). Hence, the criterion of adjectival vs. adverbial modification in the left periphery is not sufficient to rule out verbal functional structure in nominal gerunds nor does it provide an argument for the existence of verbal functional structure in verbal gerunds:

(28a) *His/him carefully restoring the painting

(28b) His/him restoring the painting carefully

(28c) ?His/him restoring carefully the painting

(28d) His restoring of the painting carefully

The question that remains, however, is why the forms in (10c)/(11c) license plural markers. The examples in (29) show that pluralized nominal gerunds do not show the characteristics that have been pointed out for their non-pluralized counterparts in sections 2.1 and 2.2.

- (29a) *The/Ted's cuttings of the grass immediately
- (29b) *The/Ted's cuttings of grass for hours/in an hour
- (29c) *The/Ted's cuttings of grass with a scythe
- (29d) *The/Ted's cuttings of grass and Bobby's doing so too

Neither the *do-so* anaphor, nor non-sentential adverbial modifiers or aspectual modifiers are licensed.

These data become less puzzling when we observe a subtle distinction. Nominal Event-plurals do not denote an event but either a result (30a) or a plurality of individualized and distinguishable events (30b) - (30c):

(30a) Result:

The cuttings of grass

(30b) Event Variation:

The illegal shootings of the deer in the forest happened in very different circumstances, so different fines were levied.

The renderings of the murder in court testimony were sharply at odds

The distinction between a result interpretation and that of a plurality of individualized events rests on the nature of the direct object in so far, as a direct object that is a definite description allows for the plurality of individualized events interpretation, while a bare noun object does not:

- (31a) The roastings of coffee >different roasts, e.g. strong and mild coffee
- (31b) The roastings of the coffee >same coffee roasted more than once

The same effect can be observed when the direct object is a plural form:

- (32a) The screenings of movies
- (32b) The killings of journalists
- (32c) The firings of guns
- (32d) the snatchings of cell phones
- (32e) the bombings of Hiroshima and Nagasaki
- (32f) the trouncings of Germany at major tournaments

These stand in contrast to the forms in (33) and (34):

- (33) *?the mowings of the grass

where different styles of mowing are imaginable, but not normal, hence either a * or ? judgement.

- (34) ??the shootings of the journalists

Being THEMES requires the DPs to be generated inside the same Phase as the gerund form. This, however, is not the case. The affix *-ing*, which is not an aspectual but a nominalizing affix here, is generated in a higher Phase (cf. 11c), where plural morphology attaches to this nominalizing Phase-head. This nominal Phase then blocks access to the lower verbal functional structure and in particular to Spec, Asp, where the THEME DP is projected.

Notice, however, that the forms in (30) - (32), which are not THEMES and which are not definite DPs are licit. This strongly implies that aspectual structure is projected in these nominal gerunds as well and that it is just not accessible, as is also evidenced by the inadmissibility of the aspectual modifiers in the examples in (29). Thus once the first Phase is complete, the aspectual features are inaccessible, but the THEME argument is marginally accessible, either because it raises via the verb's clitic position as a bare noun or because the verb still projects a THEME

from the higher DP, reaching into an already completed Phase, hence the sense of marginality or ungrammaticality.

This is supported by the distinction between inner and outer morphology presented in Marantz (2007). At the level of inner morphology a little *x*-head is merged with a category-neutral root, which is what corresponds quite closely to the structure in (11a) and (11b), where *-ing* is an aspectual affix. At the level of outer morphology a category changing affix is merged with an already categorized head, which corresponds to the nominalizing affix in (11c). Again, following the analysis in Marantz, the nominalizing *-ing* affix - on a par with other category changing little *x*-heads - constitutes a Phase head. In line with standard assumptions of Phase theory (Chomsky 2008) only the Edge of the Phase is active for further computation. The inaccessibility of lower functional projections and in particular the aspectual projections for modification follows from this quite naturally. The adjunction of aspectual modifiers, like all adjunction, is an instance of Later-Merge (cf. Boeckx 2008a), and upon Spell-Out of the Phase complement the Edge Property makes the lower functional projections inaccessible for adjunction just as much as it blocks the licensing of THEME DPs as internal arguments.

2.4 Incorporated plural nominal gerunds

In 2.3 it has been shown that the apparent ambiguity between an event and a result interpretation of singular nominal *-ing of* gerunds is dissolved upon pluralization. While the singular forms are ambiguous between those forms discussed in 2.1 and 2.2 where the affix is an aspectual affix and those discussed in 2.3 where the affix is a true nominalizing affix, the plural forms can be clearly dissociated from the former. Pluralization is only possible in those cases, in which the *-ing* affix is a nominalizing affix. It is thus expected that the same diagnostics apply to incorporated pluralized nominal gerunds as well. As illustrated in (35) these are (somewhat unexpectedly) abundant:

- (35) grass-cuttings, beer-brewings, coffee-roastings, chair-stringings, movie-

screenings, gravel-pilings, paper-writings, deer-shootings, wood-splittings, forrest-clearings, picture-framings, appointment-plannings, stone-carvings, church-burnings, blood-testings, river-bendings, network-programmings, road-crossings, interview-schedulings, lap-timings, peace-makings, lip-kissings, pipe-sealings, rock-throwings, ghost-sightings, heart-monitorings, mine-stoppings, stove-heatings, inmate-beatings, gun-firings, book-readings, news-reportings, city-bombings...

None of these plural forms allows for a single-type event interpretation. Instead these forms (just like their non-incorporated counterparts in 2.3) are all interpreted either as a result or as a plurality of individualized events. As expected, without the plural marker on the *-ing* suffix the forms can still be interpreted as results, but an event reading, which actually corresponds to the aspectual *-ing* affix, is recoverable:

- (36a) The picture-framing (carefully)
- (36b) The road-crossing (by bike)
- (36c) The stove-heating (with wood)
- (36d) The chair-stringing (for hours)
- (36e) John's pipe-sealing (and Bill's doing so too)

This is not surprising because the lower verb+object allows incorporation as well.

In non-inflected NN incorporations, on the other hand, it is not possible, to recover an event interpretation, which follows naturally from the fact that verbal functional structure is not involved in these forms:

- (37a) *The movie screen for hours
- (37b) *Dick's gun fire and George's doing so too
- (37c) *The stove heat with wood
- (37d) *The lap-time accurately

The incorporated plural forms of *-ing of* gerunds do not license aspectual modifiers, non-sentential adverbial modifiers, prepositional modifiers or the *do-so* anaphor either, nor is control of PRO licit here:

- (38a) *The movie-screenings for hours
- (38b) *The stove-heatings with wood
- (38c) *The lap-timings accurately
- (38d) *Dick's gun-firings and George's doing so too
- (38e) *Jack_i enjoyed PRO_i rock-throwings

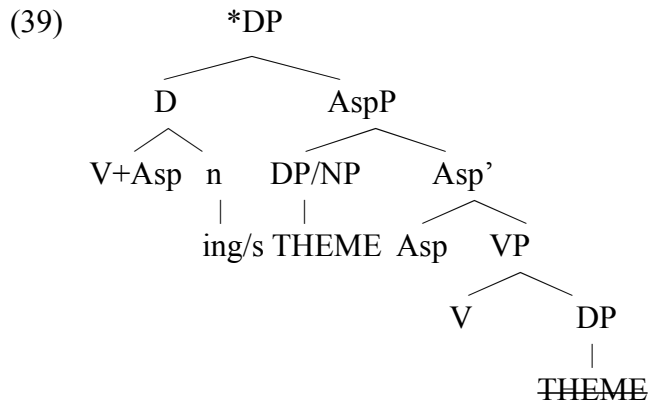
As argued for the non-incorporated forms in 2.3, these modifiers are not licensed, because lower verbal functional structure is not accessible to material adjoined by Later-Merge, in a higher cycle. Once again the Edge Property of the Phase-inducing nominalizing *-ing* affix blocks the lower projections which again determine the crucial contrast between an exclusive result interpretation for incorporated mass terms and that of a plurality of individualized events for bare N incorporations.

In effect, the pluralized forms show the same variation between the incorporated forms and their non-incorporated counterparts with respect to the interpretation of the direct objects as the singular forms, where the *-ing* affix is an aspectual affix. If the object DP is incorporated it is not an argument and it gets a Kind-reading.

Our analysis comports well with other recent approaches to morphology. Just like in the non-plural cases incorporation can be seen as forced by a symmetric c-command relation between the verb and its complement (cf. Barrie 2006, Moro 2000, Kayne 1994) that is resolved by Comp to Spec roll-up. As a result, the V+N complex is merged with the nominalizing *-ing* affix as a complex head and thus can escape the lower Phase.

If the DP is not incorporated though, it moves to AspP separately. From there, however, it cannot move together with the V-head to the nominalizing node, which is in a higher Phase. This is why these forms are blocked and why only non-THEME DPs can be merged in this position. So, here the higher Phase, which is instantiated by the nominalizer *-ing*, does not only block

aspectual modifiers but also prevents THEME objects in Spec, Asp in the non-incorporated forms.



Hence, the higher Phase has the effect of allowing objects only when they are incorporated, which has the effect of creating a set of DP-events whose aspectual structure is completive by virtue of the implications of the DP itself. This is why the multiple event reading is available in addition to the result reading. The aspectual structure in the lower Phase, however, cannot be accessed here, nor can it be accessed in the non-incorporated plural cases:

(40a) *the grass-cuttings in an hour

(40b) *the cuttings of the grass in an hour

In sum, the two Phase analysis, based on the SMT and the Phase-head Phase-complement distinction, which is linked in turn to a verbal clitic position allowing Verb+object to move as a unit, provides a syntactic analysis with independent roots but which, as we have demonstrated, provides a semantic (interepretive) analysis of subtle aspectual behavior in nominalizations.

3 A closer look at German

The English nominal *-ing of* gerunds discussed in the various sections of chapter 2 correspond to two different types of nominalizations in German: the nominalized infinitive in *-en* and nominalizations in *-ung*.

- (41a) das Spalten des Holzes
the split-en(inf) of the wood
'the splitting of the wood'
- (41b) das Holzspalten
the wood-split-en(inf)
'the wood-splitting'

- (42a) die Spaltung des Holzes
the split-ung of the wood
'the splitting of the wood'
- (42b) die Holzspaltung
the wood-split-ung
'the wood-splitting'

Just like their English counterparts, both types of nominalizations in German can be incorporated and the distinction between the two types in German pattern quite closely with the characteristic features of the two types distinguished above for English.

Alexiadou, Iordăchioaia and Soare (2009) point out in their analysis of argument supporting nominalizations that the German nominalized infinitive corresponds to English verbal gerunds. We argue that this is rather the structure for those nominal gerunds, where the *-ing* affix is an aspectual affix and where verbal functional projections below the nominalizing node are accessible for modification by phrases adjoined by Later Merge. German *-ung* nominalizations, on the other hand, correspond to English nominal gerunds where the *-ing* affix is a nominalizer

that induces a Phase and thus blocks access to lower functional projections in the complement domain of the Phase head. We now explore the correspondence in depth.

3.1 Nominalized infinitives

Much like their English counterparts, nominalized infinitives in German can be formed from transitive (cf. 43a) and intransitive verbs (cf. 43b) just as well as from ditransitive (cf. 43c) or reflexive verbs (cf. 43d):

(43a) das Küssen
the kiss-en(inf)
'the kissing'

(43b) das Laufen
the run-en(inf)
'the running'

(43c) das Geben
the give-en(inf)
'the giving'

(43d) das Rasieren
the shave-en(inf)
'the shaving'

As far as the modificational properties are concerned, German nominalized infinitives again reflect the same pattern that has been outlined for English gerunds that host an aspectual affix. Prepositional modifiers and non-sentential adverbial modifiers are licensed in incorporated and non-incorporated nominalized infinitives in German:

(44a) das Mähen des Rasens mit einer Sense

- the mow-en(inf) the lawn-gen with a scythe
 ‘the mowing of the lawn with a scythe’
- (44b) das Rasenmähen mit einer Sense
 the lawn-mow-en(inf) with a scythe
 ‘the lawn-mowing with a scythe’
- (45a) Das Mähen des Rasens gestern/heute abend
 the mow-en(inf) the lawn-gen yesterday/this evening
 ‘the mowing of the lawn yesterday/this evening’
- (45b) Das Rasenmähen gestern/heute abend
 the lawn-mow-en(inf) yesterday/this evening
 ‘the lawn-mowing yesterday/this evening’

Aspectual modifiers pattern in German nominalized infinitives also on a par with their English -
ing of counterparts.

- (46a) Das Mähen des Rasens in zwei Stunden/für zwei Stunden
 the mow-en(inf) the lawn-gen in two hours/for two hours
 ‘the mowing of the lawn in two hours/for two hours’
- (46b) Das Rasenmähen für zwei Stunden/*?in zwei Stunden
 the lawn-mow-en(inf) for two hours/in two hours
 ‘the lawn-mowing for two hours/in two hours’

As has been observed above for nominal gerunds in English, in the incorporated forms only
 atelic aspectual modifiers are licit. This follows from the fact that the incorporated element is not
 quantized and thus does not license a telic reading (cf. e.g. Borer 2005).

Another parallel between the German and English structures can be observed when
 looking at control phenomena:

- (47a) Jack_i bevorzugt das PRO_i Mähen des Rasens
 Jack prefers the PRO mow-en(inf) the lawn-gen
 ‘Jack prefers the mowing of the lawn’
- (47b) Jack_i bevorzugt das PRO_i Rasenmähen
 Jack prefers the PRO lawn-mow-en(inf)
 ‘Jack prefers (the) lawn-mowing’

Once again, nominalized infinitives in German pattern like nominal gerunds with an aspectual -*ing* suffix in English. None of the German forms in (43) - (47) can be pluralized, which is what is expected as well.

Another interesting fact about the German structures is that progressive forms in this language show the same affix that is used in the nominalized infinitives (cf. Barrie 2006) and these progressive forms allow for incorporated and non-incorporated variants as well:

- (48a) beim Mähen des Rasens
 ‘while mowing the lawn’
- (48b) beim Rasenmähen
 ‘while lawn-mowing’

This in turn can be seen as yet another indication that German nominal infinitives host verbal functional structure below the N-node, and in particular an aspectual projection in which the distinction not only between quantized and non-quantized direct objects but also between progressive and non-progressive is reflected.

As for the incorporated structures of the nominalized infinitives in German, it is worth noticing that only accusative marked direct internal arguments can be incorporated. External arguments cannot be incorporated:

- (49a) Der Mann läuft
 The man runs

- (49b) das Laufen des Mannes/des Mannes Laufen
 the run-en(inf) the man-gen/the man-gen run-en(inf)
- (49c) *das Mannlaufen
 the man-run-en(inf)

In the nominalized form the genitive marked external argument can precede or follow the nominalization, but incorporation is not possible, this is only licit for direct internal arguments such as *Marathon* in (50):

- (50a) der Mann läuft einen Marathon
 the man runs a marathon
- (50b) das Laufen des Marathons (des Mannes)
 the run-en(inf) the marathon-gen the man-gen
 ‘the running of the marathon of/by the man’
- (50c) das Marathonlaufen des Mannes
 the marathon-run-en(inf) the man-gen
 ‘the marathon-running of/by the man’

Indirect internal arguments cannot be incorporated either, neither in German nominalized infinitives nor in English *-ing of* nominal gerunds:

- (51a) der Mann gibt dem Jungen das Geschenk
 the man-nom gives the boy-dat the present-acc
- (52b) das Geben des Geschenks an den Jungen
 the give-en(inf) the present-gen to the boy-acc
- (52c) das Geschenkgeben an den Jungen
 the present-give-en(inf) to the boy-acc
- (52d) *das Jungegeben des Geschenks
 the boy-give-en(inf) the present-gen

- (53a) The man promises the boy a present
- (53b) The promising of a present to the boy
- (53c) The present-promising to the boy
- (53d) *the boy-promising of the present

In both languages the direct internal argument (which is marked for accusative Case in German) can be incorporated into the nominal form, but the indirect internal argument is not licensed as an incorporation under nominalization. This is what is expected under dynamic antisymmetry in the sense of Moro (2000). The verb and the internal argument are in a symmetric c-command relation that violates the linear correspondence axiom of Kayne (1994). This symmetry-relation is resolved by complement specifier roll-up (cf. Barrie 2006) and thus leads to LCA compliance at Spell-Out. External arguments and indirect internal arguments, however, are not generated under symmetry, hence, they should not be available for incorporation in the first place. The same logic applies to the reflexive structures in (54):

- (54a) der Berg spiegelt sich im Wasser
the mountain reflects self in the water
- (54b) das Spiegeln (des Berges) im Wasser
the reflect-en(inf) (the mountain-gen) in the water
- (54c) *das Wasserspiegeln
the water-reflect-en
- (54d) das Sich-Spiegeln (des Berges) im Wasser
the self-reflect-en(inf) (the mountain-gen) in the water
- (54e) *das Bergspiegeln im Wasser
the mountain-reflect-en(inf) in the water

In (54a) the verb *spiegeln* is a reflexive form that can be nominalized without incorporation as in (54b).⁵ This reflexive form is the only one that is available for incorporation and it blocks incorporation of any other arguments (cf. 54c and 54e). Again this is the logical consequence from the reflexive being the only constituent that is available for a symmetric c-command relation in the first place. All other constituents are embedded under V asymmetrically and thus need not move to a higher projection to break symmetry in order to be LCA compliant upon Spell-Out.

Further evidence for this claim comes from the derived structure with particles in English, where no incorporation is possible if there is a particle, although the thematic role remains a THEME:

(55a) apple-picking

(55b) *apple-picking up cf. [pick apples up]

Thus our account of this morphological operation fits the symmetry diagnostic for movement in syntax.

3.2 Nominalizations in *-ung*

In sharp contrast to the nominalized infinitives discussed in the preceding section the formation of *-ung* nominals in German is much more restricted. Interestingly, restrictions apply to all types of verbs:

(56a) *die Küssung

the kiss-ung

(56b) *die Laufung

the run-ung

⁵ Note that *das Sich-Spiegeln des Berges im Wasser* is also fine.

(56c) *die Gebung
the give-ung

(56d) *?die Rasierung
the shave-ung

Regardless of whether the verb is transitive (56a), intransitive (56b), ditransitive (56c) or reflexive (56d), nominalization is not possible, as the examples above illustrate. While it still needs to be determined, what actually rules out the forms in (56), it is to be noted that a simple blocking operation from result nominals such as those in (57) does not qualify as a case in point:

(57a) der Kuss
the kiss

(57b) der Lauf
the run

While these forms, that might potentially block the forms in (56a) and (56b), do exist, there are no zero derived result nominals for the forms in (58) that could lead to blocking effects:

(58) *die Singung, die Schreibung, die Liebung, die Jagung, die Gehung, die Sehung,
die Essung, die Kratzung, die Kommung, ...

Transitivity on the other hand seems to be a vital criterion for the formation of *-ung* nominals. All intransitive verbs lack this type of nominalization (while they are fine as nominalized infinitives as has been shown in section 3.1). As the examples in (59) illustrate, however, transitivity is a necessary but not a sufficient criterion for nominalization in *-ung*. The transitive verb *schreiben* cannot be nominalized while the prefixed verbs *beschreiben* and *ausschreiben* can:

(59) schreiben *die Schreibung beschreiben die Beschreibung

ausschreiben die Ausschreibung

Quite remarkably though, whether the prefix can be stranded under nominalization or not does not play any role for the availability of the nominalized form:

(59'a) er schreibt den Auftrag aus
*er ausschreibt den Auftrag

(59'b) er beschreibt den Weg
*er schreibt den Weg be

This transitivity sensitivity suggests that, much like English *-ing of* nominal gerunds where the *-ing* affix is a nominalizing affix, verbal structure is involved in the forms in (59). Again, paralleling the characteristics of their English counterparts and in stark contrast to German nominalized infinitives, German *-ung* nominals can be pluralized:

(60a) die Beschreibungen des Weges
the describe-ung-pl the way-gen
'directions'

(60b) die Ausschreibungen des Auftrags
the bid-ung-pl the contract-gen
'the bidding of the contract'

(61a) die Beschreibungen der Wege
the describe-ung-pl the way-gen-pl
'directions'

(61b) die Ausschreibungen der Aufträge
the bid-ung-pl the contract-gen-pl
'the bidding of the contracts'

What the examples in (60) and (61) show is that in German the distinction between what has been identified as a result interpretation in English and that of a plurality of individualized events

depends on the nature of the direct object as well and is determined here by whether the direct object is marked for plural or not. This distinction naturally gets lost under incorporation, because, as expected, only one form is available for incorporation.

(62a) die Auftragsausschreibung/en

the contract-gen bid-ung/pl

'the contract-bidding/s'

(62b) die Wegbeschreibung/en

the way describe-ung/pl

'the direction/s'

However, the fact that the non-incorporated forms are sensitive to this distinction is yet another indication that verbal structure is involved in these forms.

Not surprisingly, though, the *-ung* nominalizations do not license non-sentential adverbial modifiers or prepositional modifiers nor aspectual modifiers neither in their incorporated nor in their non-incorporated variants:

(63a) *die Spaltung des Holzes gestern

the splitt-ung the wood-gen yesterday

(63b) *die Spaltung des Holzes in zwei Tagen

the splitt-ung the wood-gen in two days

(63c) *die Spaltung des Holzes für zwei Tage

the splitt-ung the wood-gen for two days

(63d) *die Spaltung des Holzes mit der Axt

the splitt-ung the wood-gen with an axe

(64a) *die Holzspaltung in zwei Tagen

the wood-splitt-ung in two days

(64b) *die Holzspaltung für zwei Tage

- the wood-splitt-ung for two days
- (64c) *die Holzspaltung gestern
the wood-splitt-ung yesterday
- (64d) *die Holzspaltung mit der Axt
the wood-splitt-ung with an axe

Just like for the English *-ing of* nominal gerunds, this inaccessibility of the lower verbal functional projections can be explained by the fact that the *-ung* affix is generated under a category changing, nominalizing node on top of the embedded functional structure that induces a Phase. Adjunction understood as an operation of Later Merge is thus not possible for structures that are not located on the Phase Edge. Since the functional projections are in the complement domain of the nominalizing node, these will thus not be accessible. Interestingly, *-ung* nominalizations can be interpreted reflexively only via a PRO_{arb} reading (cf. also Sichel 2009), which can be seen as yet another indication that a Phase is involved which cannot be accessed after nominalization:

- (65a) die Anmeldung der Gäste
the register-ung the-gen guests
- (65b) das Anmelden der Gäste
the register-en the-gen guests
- (66a) *die Sich-Anmeldung der Gäste
the self-register-ung the-gen guests
- (66b) das Sich-Anmelden der Gäste
the self-register-en the-gen guests

The ungrammaticality of the form in (66a) is even more surprising and significant, when taking into account that incorporation in *-ung* nominals is not limited to direct internal arguments. In fact, indirect arguments of ditransitives or reflexives and modifiers can be incorporated:

- (67a) die Stadtführung
city-guide-ung
- (67b) Er führt sie durch die Stadt
'He guides them through the city'
- (68a) die Wasserspiegelung (*des Berges)/?des Berges Wasserspiegelung
the water-reflect-ung (the mountain-gen)
- (68b) der Berg spiegelt sich im Wasser
the mountain reflects self in the water
- (69a) die Flussbiegung
the river-bend-ung
- (69b) der Fluss biegt sich
the river bends self

As the examples in (67) - (69) illustrate, German *-ung* nominals can incorporate more freely than their nominalized infinitive counterparts. However, incorporation of an element that is not a direct internal argument is only possible, if the incorporated element is a first sister of the incorporating head (as argued in Roeper (1978), Harley (2009)). Any intervening direct internal argument is illicit:

- (70a) Er führt die Touristen durch die Stadt
'He guides the tourists through town'
- (70b) Seine Führung der Touristen durch die Stadt
His guide-ung the tourists-gen through town
- (70c) Seine Stadtführung (*der Touristen)
His town-guide-ung (the tourists-gen)

If the direct internal argument *tourists* is present in the incorporated nominal, the structure is ungrammatical. Only in the absence of that argument can the PP argument realized as *town* being

incorporated into the *-ung* nominal. The same principle is at play in (68) and most likely also in (69), where the argument *Fluss* is an internal argument of the unaccusative verb *bend*. Thus, the examples show that for incorporation there still needs to be a symmetric c-command relation between the incorporated element and the nominalized form. Intervening arguments that are closer to the *-ung* form block incorporation if they are realized overtly. This is perfectly in line with the motivation for incorporation being a symmetry relation (cf. e.g. Moro 2000).

In contrast to the relatively unconstrained incorporation possibilities illustrated in (67) - (70) there is a relatively strict limitation on the incorporated element. Similar to the pattern found in nominal root compounds (cf. Bauke 2009), the incorporated element in *-ung* nominals must be specified for plural, for genitive case or it must be a bare stem. Nominalized infinitives, on the other hand, are much less restrictive here:

- (71a) die Straßenkreuzung
the street-pl-cross-ung
- (71b) *die Straßekreuzung
the street-sg-cross-ung
- (71c) *die Straßkreuzung
the street-stem-cross-ung

- (72a) das Straßekreuzen
the street-sg-cross-en(inf)
- (72b) das Straßenkreuzen
the street-pl-cross-en(inf)

There is an interpretational difference between the forms in (72a) and (72b). The former refers to an event of crossing one (or more) street(s), while the latter indicates an event of crossing more than one street. This distinction cannot be captured in (71), where the only grammatical form available leads to a result interpretation. This is what is expected under a Phase-based approach. Only nominalizations in *-ung* involve a higher Phase. Inflectional marking must therefore be

fixed before the DP Phase level, i.e. before incorporation, because the Edge Property will once again block access at the lower level. In the nominalized infinitives a lower Phase is involved.

4 Consequences

It has been argued that two types of nominal *-ing of* gerunds need to be distinguished in English. Both of these types project verbal functional structure on top of a V-node, and in particular an aspectual projection. The distinction between the two types of gerunds identified rests on the projection site for the *-ing* affix. When this affix is projected under the aspectual head licensing of aspectual modifiers, of non-sentential adverbial and prepositional modifiers, of the anaphor *do-so* and of a PRO-element is what is expected and attested. Sentential modifiers are not licensed, which can likewise be explained by the absence of a licensing TP or higher projection. Naturally, nominal gerunds of this type cannot be pluralized either, because the *-ing* suffix is not a nominal affix and thus unable to host nominal inflectional morphology.

When the *-ing* affix is projected under the nominal node instead, plural morphology is licensed. This does not mean, however, that this type of nominal gerund does not project verbal functional structure below the nominalizing node. On the contrary, the sensitivity to the quantized nature of the nominalized verb's internal argument the sensitivity to non-incorporated THEME DPs and the distinction between Kind- vs. Specific-interpretations point into the opposite direction. This functional structure is not accessible for those modifiers that are licensed with the other type of nominal gerund, however, because the nominalizing node is a Phase boundary whose Edge Property blocks accessibility of projections in the complement domain of the Phase-head.

Both types of nominal gerunds allow for incorporation structures and the distinction between the incorporated and non-incorporated forms of the respective types of nominal gerunds reduces to a symmetry-distinction. If the direct internal argument is licensed in an *of* clause the nominalized verb and its argument enter into an asymmetric c-command relation and incorporation is blocked. In the absence of such a projection, a bare internal argument enters into

a symmetric c-command relation that is dissolved by moving this argument from the complement to a higher specifier position.

In sum, this paper follows the tradition that syntactic principles should apply in the lexicon. We have argued that the abstract notion of Phase and the SMT in fact predict exactly where subtle interpretive differences linked to aspect can occur. It is precisely the ability of a theory to predict seemingly peripheral data which illustrates its strength.

References:

- ABNEY, STEVEN PAUL. (1987). 'The English Noun Phrase in Its Sentential Aspect'. Doctoral Dissertation. MIT.
- ALEXIADOU ARTEMNIS, GIANNA IORDĂCHIOAIA and ELENA SORARE. (2009). 'Plural marking in argument supporting nominalizations'. In: Cabredi-Hofherr, P. & Laca, B. (eds.) *Layers of Aspect*. CSLI Publications.
- BARRIE, MICHAEL. (2006). 'Dynamic antisymmetry and the syntax of noun incorporation.' PhD dissertation. University of Toronto.
- BAUKE, L. (2009). Nominal root compounds in German. Ms. UMass Amherst.
- BOECKX, CERDIC. (2008). 'On the locus of asymmetry in UG'. Ms. Harvard University.
- BOECKX, CEDRIC. (2008a). *Bare Syntax*. Oxford: OUP.
- BORER, HAGIT. (2005). *Structuring Sense*. Vol I+II Oxford: OUP.
- CHOMSKY, NOAM. (1970). 'Remarks on nominalization', *Readings in English Transformational Grammar*, (eds.) Roderick Jacobs and Peter Rosenbaum. Waltham MA: Georgetown UP 184 - 221.
- CHOMSKY, NOAM. (1993). *The Minimalist Program*. Cambridge MA: MIT Press.
- CHOMSKY, NOAM. (1995). 'Bare Phrase Structure'. *Government and Binding and the Minimalist Program*, (ed.) Gert Webelhuth. Cambridge MA: Basil Blackwell, 383-440.
- CHOMSKY, NOAM. (1995). 'Minimalist inquiries: the framework', *Step by Step: Essays on Minimalist Syntax*, (eds) Roger Martin; David Micheals and Juan Uriagereka. Cambridge MA: MIT Press, 89-155.
- CHOMSKY, NOAM. (2001). 'Derivation by Phase' In: Kenstowicz, M. (ed.). *Ken Hale: A life in language*. Cambridge MA: MIT Press. 1-52.
- CHOMSKY, NOAM. (2008). On Phases. In *Foundational Issues in Linguistic Theory*, ed. by: R. Freidin, C. Otero and M.-L. Zubizarreta. Cambridge MA: MIT Press. 133-166.
- FU, JINQUI, THOMAS ROEPER and HAGIT BORER. (2001). 'The VP within process nominals: evidence from adverbs and the VP anaphor *do-so*'. *Natural Language and Linguistic Theory* 19, 3: 549-82.
- GRIMSHAW, JANE. (1990). *Argument Structure*. Cambridge MA: MIT Press.

- HARLEY, HEIDI and ROLF NOYER. (1998). 'Licensing in the non-lexicalist lexicon: nominalizations, vocabulary items and the encyclopaedia', *Papers from the University of Pennsylvania/MIT Roundtable on Argument Structure and Aspect*, (ed.) Heidi Harley. (MIT Working Papers in Linguistics 32). Cambridge MA: MIT Press. 119-38.
- HARLEY, HEIDI. (2009). 'Merge conflation and head movement'. *Proceedings of the North Eastern Linguistic Society 34*: 239-54. Amherst MA: GSLA Publications, University of Massachusetts.
- IORDĂCHIOAIA, GIANNA and ELENA SORARE. (2008). 'Two kinds of event plurals: evidence from Romanian nominalizations'. *Empirical issues in syntax and semantics 7*, (eds.) O. Bonami & P. Cabredo Hoffher. 193-216. (<http://www.cssp.cnrs.fr/eiss7>).
- KAYNE, RICHARD. (1994). *The antisymmetry of syntax*. Cambridge MA: MIT Press.
- KEYSER, SAMUEL J. and ROEPER, THOMAS. (1992). "Re: The abstract clitic hypothesis". *Linguistic Inquiry* 23: 89 - 125.
- KEYSER, SAMUEL J. and ROEPER, THOMAS. (1997). 'Anti-symmetry and leftward movement in morphology'. Ms: MIT and UMass.
- KRATZER, ANGELIKA. (1994). 'Severing the External Argument from its Verb.' *Phrase Structure and the Lexicon*.(eds.). J. Rooryck and L. Zaring. Dordrecht: Kluwer. 109-137.
- LEBAUX, DAVID. (1988). *Language Acquisition and the Form of Grammar*. Doctoral dissertation. University of Massachusetts, Amherst. Reprinted 2000. Philadelphia/ Amsterdam: John Benjamins Publishing Company.
- MARANTZ, ALEC. (1997). "No Escape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon". *University of Pennsylvania Working Papers in Linguistics: Proceedings of the 21st Annual Penn Linguistics Colloquium*. Volume 4,2: 201-25.
- MARANTZ, ALEC. (2001). 'Words' Ms. MIT.
- MARANTZ, ALEC. (2007). 'Phases and Words'. Ms., NYU.
- MORO, ANDREA (2000). *Dynamic Antisymmetry*. Cambridge MA: MIT Press.
- ROEPER, THOMAS and VAN HOUT ANGELIEK. (1999). 'The impact of passive *-able* and middle: Burzio's generalization and feature-movement in the lexicon'. *Papers from the University*

- of Pennsylvania/MIT Roundtable on the Lexicon*, (eds.) Liina Pykkänen, Angeliek van Hout & Heidi Harley. (MIT Working Papers in Linguistics 35). Cambridge MA: MIT Press 185-211.
- ROEPER, THOMAS, WILLIAM SNYDER and KAZUKO HIRAMATSU. (2002). "Learnability in a Minimalist framework: Root compounds, merger, and the syntax-morphology interface". In: Lasser, I. (ed.). *The process of language acquisition*. Frankfurt: Peter Lang.
- ROEPER, THOMAS and WILLIAM SNYDER. (2005). "Language learnability and the forms of recursion." In: Di Sciullo, A. M. (ed.). *UG and external systems*. Amsterdam: John Benjamins. 155-69.
- ROODENBURG, J. (2006). "The role of Number within Nominal Arguments". Rutgers University: LSRL 36.
- SICHEL, IVY. (2009). "New evidence for the structural realization of the implicit external argument in nominalizations". *Linguistic Inquiry* 40;): 712-23.
- SIEGEL, JULIA. (1997). "Gerundive Nominals and the Role of Aspect". In: Austin, J. & Lawson, A. (eds.). *Proceedings of the Fourteenth Eastern States Conference on Linguistics*. Ithaca: CLC Publications. 170-9.
- VAN HOUT, ANGELIEK and THOMAS ROEPER. (1998). 'Events and aspectual structure in derivational morphology', *Papers from the University of Pennsylvania/MIT Roundtable on Argument Structure and Aspect*, (ed.) Heidi Harley. (MIT Working Papers in Linguistics 32). Cambridge MA: MIT Press 175-200.