

Lexical and non-lexical symmetry breaking:  
an analysis of nominal root compounds,  
nominal gerunds and small clauses

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*For my nan  
- in memoriam -*



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## List of Abbreviations

ACH	abstract clitic hypothesis
ACP	abstract clitic position
AS	argument structure
BPS	bare phrase structure
CED	condition on extraction domain
C-I	conceptual-intentional domain
DM	distributive morphology
ECM	exceptional case marking
ECP	empty category principle
EF	edge feature
EM	external Merge
EPP	extended projection principle
FI	full interpretation
FL	faculty of language
FLN	faculty of language (narrow sense)
IC	inclusiveness condition
IM	internal Merge
ING	incorporated nominal gerund
LCA	linear correspondence axiom
LF	logical form
LE	linking element
LI	lexical item
MLC	minimal link condition
NTC	no-tampering condition
PF	phonetic form
PHON	external system for sound
PIC	phase impenetrability condition
PING	pluralized incorporated nominal gerund
PoS	point of symmetry
P & P	Principles and Parameters (Theory)

RCP	root compounding parameter
SC	small clause
SCHM	successive cyclic head-movement
SEM	external system for meaning
S-H-C	specifier-head-complement order
SIMPL	simplify operation
S-M	sensory-motor domain
SMT	strongest minimalist thesis
SO	syntactic object
<i>u</i> F	unvalued feature
uFF	uninterpretable feature

# **1 Introduction**

## **1.1 Background**

Deeply rooted in the generative tradition, as outlined in Chomsky's writings from early on, (cf. e.g. Chomsky 1955, 1957, 1959, 1964, 1965, 1966 etc.), in recent years Minimalism has developed more and more as the logical next step and as a perfectly reasonable and promising idea to entertain. This, of course, does not mean that a minimalist agenda is not exposed to criticism even with respect to its most fundamental underlying assumptions (cf. also e.g. Hornstein 2009: 1). These fundamental assumptions, which Boeckx (2006: 88-91) identifies as the core of a minimalist research agenda that needs to be protected and defended against all obstacles, have not changed (much) since they were first laid out clearly and extensively in Principles and Parameters (P&P) terms (cf. e.g. Chomsky 1981, 1982, 1986a, 1986b, 1991 and related literature). This alone should suffice to dismantle unsubstantiated criticism and make the minimalist core more than just a scientific guess or belief (cf. Boeckx 2006: 88). Additionally, research in language acquisition produces results that point into the direction of a minimalist theory of language (cf. e.g Roeper 2007, forthcoming) and eventually, research in related disciplines such as evolutionary biology and cognitive psychology (cf. e.g. Hauser, Chomsky & Fitch 2002) further substantiates the idea that minimalism is the closest shot that has been aimed at the target of a biolinguistic approach so far.

Still, this does not imply that all of the criticism directed against a<sup>1</sup> minimalist account is unmotivated. Even among supporters of minimalist thinking criticism is voiced. Some of it is procedural and directed against very specific technical implications, some of it is more fundamental calling into question the overall validity of certain basic assumptions that might even have been regarded as unequivocally sound and proven. Both of this criticism is important and necessary for further advancing the research agenda. Some of it arises naturally from the programmatic nature of the minimalist program (cf. e.g. Boeckx 2006: 85-87) that leaves plenty of room for 'alternative instantiations' (*ibid*: 5; cf. also Hornstein 2009: 4 for a similar point), which eventually might turn out to be contradictory in some aspects. One of these possible instantiations is put forward in the claim that Minimalism is best defined in terms of Occam's razor (cf. e.g Radford 1997:

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<sup>1</sup> I use the indefinite article here in Chomsky's sense.

515). While the role of the razor is hardly ever denied by practitioners of minimalist approaches (cf. e.g. Hornstein 2001:14; 2009: 2) many hasten to point out that it does not qualify as the defining characteristic of minimalism. Boeckx (2006: 7) describes minimalism in Occam's razor terms as a farce<sup>2</sup>, Gallego (2010: 2) makes the important distinction between methodological minimalism and ontological<sup>3</sup> minimalism and argues that the latter crucially 'defines the M[inimalist] P[rogram] as something brand new' that sets it apart from P&P accounts. So, ontological minimalism rather than methodological minimalism is the standard of comparison for the qualification of technical solutions, which, due to the aforementioned programmatic character of the MP are often offered in numerous different and almost indiscriminate guises.<sup>4</sup>

The question that immediately emerges in this context is what the standard of comparison, or what ontological minimalism then is. The answer is that ontological minimalism provides answers to the question how the faculty of language (FL), i.e. the human mind, interacts with other biological systems (cf. Gallego 2010: 2). This includes the question of how much is unique to FL and how much can be accounted for in what Chomsky (2004, 2005, 2008) characterizes as third factor terms and what is needed for optimal interaction between FL and other human systems. The strongest possible assumption, which, as Chomsky himself acknowledges is probably too strong, is expressed in the Strongest Minimalist Thesis (Chomsky 2000: 96):

(1) Strongest Minimalist Thesis (SMT):

Language is an optimal solution to legibility conditions

Nevertheless, it is common practice and quite reasonable to start with the strongest possible assumption in scientific investigations of any kind (cf. Boeckx 2006: 4) and then

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<sup>2</sup> It is also worth noticing that the dualism between global and local economy can be seen as a result of reducing minimalism to methodological aspects only (cf. e.g. Boeckx 2006: 100-101).

<sup>3</sup> Gisa Rauh p.c. remarks that ontological minimalism is also referred to as empirical minimalism in the literature. I treat both terms on *a par* here and will continue using Gallego's term of ontological minimalism.

<sup>4</sup> Tom Roeper p.c. once pointed out to me that when there are too many possible solutions, this is a good indication that something is wrong with your theory, (*viz.* your standard of comparison). A conceptually and theoretically sound argument should allow for only one possible solution. This is immediately evident also from the perspective of language acquisition. It is quite unlikely that - all things being equal - FL allows for more than one option from which the learner has to chose, as this would spuriously delay the learning process.

carefully determine where deviations from this ideal path are necessary. This, as Chomsky (2008: 135) points out, is what in the context of linguistic research leads to a better understanding of how FL evolved and thus provides answers in line with ontological minimalism. To be clear here, Minimalism, which is shaped by methodological **and** ontological aspects, then does not aim at providing a more accurate description of the data than that provided e.g. by the P&P theory. If a more precise description (and explanation) of the data happens to fall out from minimalist investigations, this, of course, is a welcome result, but it is a mere side-effect that follows from a more accurate and precise analysis of FL itself (cf. Boeckx & Uriagereka 2007; Gallego 2010:4).

In line with this tradition, this dissertation aims at both: sharpening the understanding of FL and its interaction with other systems of the human mind and providing for a better and more precise description of heretofore unaccounted empirical data. So all analysis of empirical data is subjected to careful scrutiny with respect to its correspondence to the SMT. The data investigated here are first and foremost nominal root compounds, incorporated and non-incorporated nominal gerunds and small clauses and it is shown that the analyses suggested in this context carry over to related domains such as light verb constructions, verb-particle constructions and subject auxiliary inversion. As expected from research carried out pledging to the standards described above, it turns out that description of the data that is guided by the SMT does not only qualify as explanatorily more adequate than other accounts but also as invaluable in terms of minimalist theory conception.

However, before engaging into detailed analyses a few more thoughts on the SMT are in order. So, the SMT states that language is an optimal solution imposed on FL by interface requirements (cf. also Chomsky 2008: 135), i.e. by requirements that are imposed on FL that are necessary for interaction between FL and other cognitive domains, which are external to FL but internal to the human. The two interfaces that Chomsky identifies as a virtual necessity are the C-I and the S-M interface (cf. Chomsky: 1995a: 168-169). Hence, in the ideal case all demands that arise from the interaction of FL and these two interfaces can be satisfied in line with the SMT. This is probably too strong a statement, but all deviation from this assumption ‘merits close examination, to see if it is really justified’ (Chomsky 2008: 135). Additionally, it needs to be determined whether any one of the two interfaces has prominence over the other or whether interaction between FL and C-

I and S-M is pari passu without any superseding effects. Again, Chomsky points out that language has traditionally been identified as more fit to cope with LF-demands than with PF-demands. This has been the tenor in the study of language carried out in the longstanding humanist tradition of von Humboldt and is corroborated by research in biology most recently (cf. Chomsky 2008: 136; Hauser, Chomsky & Fitch 2002; Fitch, Hauser & Chomsky 2005: 200). If true, which pending qualified scientific research in biology is almost impossible to verify but at least a reasonable assumption, various conclusions can be drawn here. Either, LF actually takes prominence over PF and PF, being the interface that feeds ancillary processes, can be treated as just that, i.e. the place to deal with ancillaries. However, although not totally out of the way, this stands in stark contrast to what minimalist research in the past decade has dealt with (cf. Chomsky 2008: 135). Alternatively, it could be argued that LF and PF do not interface with FL at the same time. A solution that *a priori* does not provide much of an insight on whether one of the interfaces supersedes the other and that is introduced in Chomsky (2000) and controversially discussed in great detail in Epstein & Seely (2002); Sauerland & Elbourne (2002); Marušič (2005); Bošković (2007); Hicks (2009) and others. The still other alternative is that LF might actually be more fit to deal with the requirements of language but that the role of PF-interactions should not be diminished by that. This is the stand taken in this dissertation, which inspects all analyses of empirical data with respect to its LF- and to its PF-compatibility in accordance with the SMT, which, it is important to notice, is formulated in a way that does not give precedence to any of the two virtually conceptually necessary interfaces. Now, it is time to turn to the question of what it is that FL generates that in the ideal case feeds the interfaces systems of PF and LF. In plain terms, this, of course, is a hierarchically ordered, recursively embedding, monotonic syntactic structure (cf. among many others Fitch, Hauser & Chomsky 2005; Chomsky 2005: 7-9; Hornstein 2009: 53ff.; Gallego 2010: 30-31), the derivation of which is discussed in the next chapter.

## 1.2 Merge (Concatenation and Labeling)

Merge<sup>5</sup> is characterized as the one operation that applies freely in narrow syntax (cf. e.g.

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<sup>5</sup> Merge, in this first approximation here, is to be understood as Set-Merge. The distinction between Set-Merge and Pair-Merge will be included in the discussion at a later stage.

Chomsky 2004: 117). As such, this cost-free operation is ‘most fundamental’ (Gallego 2010: 139) and very basic (cf. e.g. Boeckx 2008a: 79) at the same time. It is an operation that applies to lexical items<sup>6</sup> (LIs) and not to features. So, what Merge does is that it takes an LI from the Numeration or straight from the lexicon, depending on which conception proves more viable,<sup>7</sup> and combines this either with another LI taken from the lexicon or the Numeration thus creating a syntactic object (SO), or it combines an LI selected from the Numeration or the lexicon with an already existing SO, also resulting in a SO. Hence, the output of Merge is a SO. Those LIs that are accessible to Merge, i.e. have the property of being potential Merge candidates, bear a feature signaling this property. Chomsky (cf. 2008: 139) identifies this feature as an edge feature (EF).<sup>8</sup> In line with the SMT, this is all that is needed to create SOs that are handed to the interfaces for interpretation. As Chomsky notes, if on the right track, tying the applicability of Merge to EFs has the effect of not only rendering d-structure and s-structure as unformulable, but also eliminating mapping operations, which were needed for mapping d-structure onto s-structure and eventually onto LF in earlier approaches; so ultimately this conception of Merge provides for a purely minimalist account of what used to be cast in terms of generalized transformations in very early approaches (cf. *ibid*). Merge then is a structure building operation - in fact, in line with the SMT it is even more appropriate to characterize Merge as **the** structure building operation - that applies recursively in narrow syntax and that builds syntactic structures. Apparently, the only thing needed to set off the iterative operation, are LIs with EFs. Chomsky points out further, that EFs do not form part of a Match-Valuation process (cf. 2007; 2008). This means that, unlike other features, EFs do not enter the derivation as unvalued features and will never be valued in the course of the derivation. Further, this implies that Merge, when triggered by EFs alone, does not pay any

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<sup>6</sup> Gallego (2010: 6) makes this important distinction and points out that lexical items are to be understood in this context in a non-distributed sense. For the time being this is also how the term is to be understood here. However, the discussion in chapter 2 will provide a more detailed investigation into the question what items Merge can operate on.

<sup>7</sup> The question whether LIs are selected from the Numeration or straight from the lexicon is an important one and is discussed controversially among others in Frampton & Gutmann (2002); Stroik (2009); Grewendorf & Kremers (2009); Richards (2010) and Gallego (2010). Since it does not have a direct impact on the discussion here, however, I remain agnostic to it for the most part (but cf. chapter 5 for some elaboration).

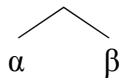
<sup>8</sup> Note that this definition of EF differs significantly from that used in previous analyses in which EFs were basically equated with EPP features on Phase-heads (cf. Chomsky 2008: 154-155 and Gallego 2010: 45-46 for valuable discussion).

attention to further restrictions coded in featural terms (cf. e.g. Gallego 2010: 7). Features do not require features (cf. Adger 2010; Boeckx 2010a: 17). Merge so defined is potentially unbounded and thus yields structures of discrete infinity, which, as Chomsky (2008: 138-139) never gets tired of pointing out, can be regarded as the defining property of FL that lead to the great leap forward in evolutionary terms (cf. also Hornstein 2009 for a detailed but relatively brief overview). However, despite the fact that Merge defined in terms of EFs does not violate the SMT, a number of questions remain unanswered at this point.

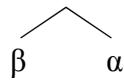
For one, it is not at all clear, what initiates the unbounded operation. For the very first Merge operation only one of the two possibilities described above is at hand. A LI taken from the lexicon/Numeration is merged with another LI also taken from the lexicon/Numeration. Both of these LIs bear EFs that are active, because EFs - unlike other features - are always active and never delete (cf. Chomsky 2008; Gallego 2010; Narita 2009; 2011). Concentrating on EFs may thus suffice to set off a first Merge operation, but it is not clear how the derivation proceeds from this point onwards and in retrospect it is also not clear how the derivation got to this point in the first place. In order to illustrate this more clearly, the output of Merge and the character of the operation itself needs to be taken into account.

The output of Merge is, in any case, a SO not a LI and the operation itself is source independent<sup>9</sup> and order independent (cf. Boeckx 2008a). Hence, in principle any two LIs, with EFs say  $\alpha_{EF}$  and  $\beta_{EF}$ , can be merged in any random order so (2a) and (2b) can be regarded simply as notational variants:

(2a)



(2b)



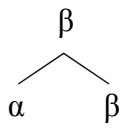
The input to Merge in this case are two atoms, which by virtue of the operation applying to them are combined to a set  $\{\alpha, \beta\}$ . This goes to show that the operation itself is completely symmetric and can just as well be described as concatenation (cf. Boeckx 2008a: 79-80;

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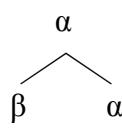
<sup>9</sup> The source independence of Merge is still hotly debated and it is far from clear whether External Merge (EM), i.e. Merge of an LI from the lexicon/Numeration with another LI from the lexicon/Numeration or with an already existing SO, is really on a par with Internal Merge (IM), i.e. Move of an already merged LI/SO to another position (cf. e.g. Hornstein 2009: 128-29 vs. Chomsky 2008: 140-141). This question will be dealt with in detail later on. For now Merge is to be understood as EM only.

Hornstein 2009: 54-55; Pietroski & Hornstein 2009).<sup>10</sup> However, it is widely believed that the output of Merge is not symmetric (cf. e.g. Boeckx 2008a: 79-81; Gallego 2010: 7-9, Chomsky 2008: 145). Hence, in order to introduce asymmetry into the structure arguably a label needs to be determined (cf. also Donati & Cechetto 2010: 1). Determination of a label merits two positive side-effects. First of all, it introduces hierarchical order into the structure, i.e. it does not simply produce a set but an ordered one at that, and secondly, it constrains Merge in such a way that what is described as wild-type Merge (cf. Boeckx 2008b: 3) or chaotic Merge (cf. Gallego 2010: 7) is given far less room than it seems to be granted at first sight. Hence, taking the order independence of the Merge operation seriously, the output of any of the Merge operations described in (2) could be something like either (3a) or (3b)<sup>11</sup>:

(3a)



(3b)



$\{\beta\{\alpha, \beta\}\}$        $\{\alpha\{\beta, \alpha\}\}$

This then means that while the operation of combining two LIs or one LI and an already existing SO is symmetric, the output of this operation is asymmetric, i.e. an ordered set. This, of course begs the question, how this asymmetry is introduced or to be more precise how the label is determined.

One possible solution is to simply determine complements and specifiers in terms of first Merge and later Merge, as suggested in Chomsky (2005: 14). Although this is perfectly viable, it requires the derivation to keep track of the order in which elements were merged, which is an assumption that is hard to maintain unless motivated independently (cf. e.g. Boeckx 2008b for an alternative suggestion going into that

<sup>10</sup> This is an assumption that is not generally agreed upon. Di Sciullo (2005) and di Sciullo & Isac (2008 a,b), for instance, argue that Merge is inherently asymmetric. This is an interesting assumption, however, it comes at the cost of restricting Merge far more narrowly than originally described in SMT terms. How a useful restriction of Merge, that is definitely needed (cf. below), could look like will be discussed in due course.

<sup>11</sup> Actually, concluding that the asymmetry is introduced by making either  $\alpha$  or  $\beta$  the relevant label already presupposes that the label is determined from one of the Merge partners (as required by the Inclusiveness Condition of Chomsky (1995a: 228)) and that it is determined neither by intersection nor by union but rather by identity (cf. ibid 244) - but cf. Citko (2008a, 2008b) for arguments in favor of union.

direction). Two other solutions discussed in the literature (cf. e.g. Guimarães 2000; Fortuny 2006) are to assume that a LI selected from the Numeration/lexicon either merges with an empty set, which automatically makes the LI the label-providing element, or it merges with itself, which again leads to the fact that the LI provides the label (although it obscures which of the two Merge partners is the label producing one and leads to the question how the two instances of the same LI can be justified (cf. also Boeckx 2008a: 80-81 for further criticism)).

Still another possibility is to let the interfaces determine the label of the structure. This is basically, what is suggested in Moro (2000, 2007). Here Merge produces symmetric structures and again very much resembles Concatenation and asymmetry is introduced via a movement operation that moves one of the Merge partners to a higher specifier position. This produces a structure in which the moved element asymmetrically c-commands the unmoved Merge partner and by virtue of that produces a structure that is in line with the Linear Correspondence Axion (LCA) (cf. Kayne 1994). The LCA is a mechanism that maps asymmetric c-command onto linear precedence and thus provides a function for linearizing hierarchical structure at the PF interface.<sup>12</sup>

Although this again is a perfectly sound description of how labels could be determined, this account just rephrases the initial question of label-determination. Instead of asking which of the two Merge partners produces the label, the question is now shifted to which of the two Merge partners is the one that moves. Moreover, this conception of Merge ultimately endorses an account in which the interfaces and here in particular the PF-interface is equipped with its own computational capacities, which, as Boeckx (2008a: 84) argues is an undesirable result. This result is undesired conceptually, for the reasons described above and it is undesired technically, because this is what brings back in the question how the derivation is supposed to proceed after the first Merge operation took place. Further Merge is not licit as long as it cannot be determined what a new Merge partner is merged to (cf. Boeckx *ibid*) and this can here only be determined upon contact with the PF-interface. This then would suggest that every Merge operation requires immediate Transfer at least to the PF-interface. Although approaches that require

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<sup>12</sup> While Kayne (1994) is at great pains to illustrate that the LCA does not apply at PF only, this is the place where Chomsky (1995a) relegates it to. Moro (2000) is not very explicit about whether the LCA applies at PF or in narrow syntax, but it is pretty clear that the movement operations that Moro postulates are performed against considerations on PF-compatibility.

immediate Transfer exist (cf. e.g. Epstein & Seely 2002), this is hardly ever Transfer to PF.

In any case, such an analysis, of course, brings up the question of LF-Transfer. If asymmetry is determined at PF in order to guarantee that the syntactic structure is LCA compliant and can thus be linearized straightforwardly at the PF-interface, then how is the structure interpreted at the LF-interface? One answer could be that the requirements of PF are somehow already taken care of in narrow syntax (cf. also footnote 12). This avoids most of the complications mentioned above but brings up two other questions. The first one is how FL ‘knows’ what the requirements that will be imposed by PF are and the second one is why of all it is PF that somehow guides the computation when this is arguably only the the place for ancillary processes (cf. Chomsky 2008: 136).

So another option is to let LF-requirements do the label-determination. Chomsky entertains this idea in his writings for some time (cf. e.g. 2000, 2001, 2002). Here it is s-selectional requirements, which establish some sort of a ‘is-a’ relation already prominent in Chomsky (1955), that determine which of the Merge partners produces the label. This, however, is problematic from various perspectives and in various respects. If s-selection is post-syntactic in the same way that linearization is on the PF-side, this conception is just as problematic and for the very same reasons. If s-selection is part of narrow syntax, this is an unwelcome deviation from core minimalist assumptions, as Chomsky himself notes (cf. 2004: 112). This then means that s-selection is not a solution to the question of label-determination regardless of whether it might apply in narrow syntax or at LF.<sup>13</sup>

Eventually, any approach that gives prominence to or identifies any one of the two interfaces as the driving force for label-determination runs into the trouble of not being able to explain why labeling plays a role at **both** interfaces in the same relevant way, i.e. either for linearization or for monadic predicate formation (cf. Boeckx 2008a: 66-71; Moro 2000; Pietroski 2002; 2006). This strongly implies that label determination takes place in narrow syntax and the only remaining question then is how this is done. Here three alternatives that are currently floating in the literature are looked at and it will turn out that neither one of them *prima facie* fares well with the structures discussed in this manuscript. The first one is advocated in Gallego (2010: 13-15) and is closely related to Chomsky’s

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<sup>13</sup> Boeckx (2008a: 91-93) shortly discusses s-selection and also c-selection as suggested in Collins (2002) (cf. also Stabler (1998) and Müller (2010) for alternative accounts on c-selection) in narrow syntax as a possible solution, but ultimately discards it in favor of f-selection, i.e. selection on the basis of unvalued φ-features, as the label-determining characteristic, as discussed below.

(2008: 145) labeling algorithm<sup>14</sup>:

- (4) In  $\{H, \alpha\}$ , H is a lexical item (LI), H is the label

This simply means that when a head is merged with an already existing SO, this head is automatically the projecting element. While this might be successful in most cases, it does not provide an answer to the First-Merge problem where arguably two heads are merged (cf. *ibid*: 12) and as Cechetto & Donati (2010: 243-245) point out, is also potentially problematic in a number of other cases. With respect to First-Merge Gallego (2010: 13) argues reminiscent of Boeckx (2009: 47) that this can be accounted for provided that Merge can produce unlabeled structures so long as it does not interact with the interfaces. This clearly dissociates Merge from labeling and allows for the emergence of unlabeled structures in narrow syntax. However, it allows for wild-type Merge right until the structure is sent to the interfaces for the first time, where deviant interpretations are filtered out (cf. Boeckx 2008b for a similar proposal). Again, this is a conception that provides a technically sound solution, but conceptually it raises a number of questions. First of all, it just so stops short of granting the interfaces some computational capacity of their own, which might turn out to be a welcome result given the SMT. However, it brings in the additional questions when Transfer to the interfaces takes place, which in and of itself is a hotly debated issue (cf. e.g. Uriagereka 1999; Marantz 2000; Epstein & Seely 2002; Bošković 2005; Matushansky 2005; Svenonius 2004; Samuels 2008; Chomsky 2008 and many more) and what exactly happens at the interface, which is by no means less controversial (cf. e.g. Chomsky 2004, 2008; Grewendorf & Kremers 2009; Gallego 2010). Economy considerations surely suggest that contact with the interfaces is made relatively early in the derivation. But, unless subscribing to a highly derivational approach in which every single Merge operation is sent to the interfaces straight away, as argued for in Epstein (et al.) (1998); Epstein (1999); and Epstein & Seely (2002), this leads to a

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<sup>14</sup> Actually, Chosmky (2008: 11) introduces a second labeling algorithm

- (i) If  $\alpha$  is internally merged to  $\beta$ , forming  $\{\alpha, \beta\}$  then the label of  $\beta$  is the label of  $\{\alpha, \beta\}$

Since this algorithm is concerned with Internal Merge (IM) and therefore not relevant to the problem of first-Merge, we can afford to ignore it at this point and will come back to it later in the discussion (cf. also footnote 17).

characterization of FL in which the computational system is burdened with a considerable amount of parallel processing right from the start and even if the interfaces are contacted immediately after the first Merge operation, it is still the business of the interfaces to weed out deviant structures that were produced in parallel.<sup>15</sup>

A possible solution to this problem seems to come from Chomsky (2008), where he argues for what seems to be an even more refined version of the labeling algorithm described in (4) above. Particularly in cases of external Merge label-determination is characterized as a dual operation:

The label selects and is selected in E[xternal]M[erge], and is the *probe* that seeks a *goal* for operations internal to the SO: Agree or I[internal]M[erge].  
(Chomsky 2008: 141)

This is a conception of Merge that ties labeling to the application of further operations such as IM or Agree. What is important is that these latter two operations apply within the SO formed by EM. This strongly suggests that the label must be determined prior to Spell-Out, because otherwise the operations IM and Agree were operative across Phase-boundaries in violation of both versions of the Phase Impenetrability Condition (PIC) (cf. Chomsky 2000: 108 vs. Chomsky 2001: 14; 2004).<sup>16</sup>

However, it should not be overlooked that, although this conception of Merge points into the direction that labeling takes place before Transfer to the interfaces, it comes at the price of integrating a selectional mechanism into the definition. This echos the LF-driven approaches to label determination discussed and discarded above. Thus, in order to approach Merge and label determination in such a way that the LF- and PF-independent character of the operation, as described in (4), is reflected and at the same time the additional refinements of Chomsky (2008: 141) are captured, Boeckx suggests a Probe-Label Correspondence Axiom (2008a: 96):<sup>17</sup>

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<sup>15</sup> To be clear here, this is not an argument for crash-proof syntax (cf. Frampton and Gutmann 2002) and against letting the interfaces decide on whether a structure built in syntax is deviant or not. It is simply an argument against letting syntax do parallel computations unless they are absolutely unavoidable.

<sup>16</sup> Not to belabor the point, but if the label is what acts as a Probe for Agree or IM, then the label must be known prior to Spell-Out. Otherwise IM and Agree would operate across the Phase-boundary, which is something that goes directly against the assumption that Merge and thus also IM is always to the edge.

<sup>17</sup> Cf. also Pesetsky & Torrego's (2006) Vehicle Requirement on Merge, which goes into the same direction.

- (5) The label of  $\{\alpha, \beta\}$  is whichever of  $\alpha$  or  $\beta$  probes the other, where the Probe = Lexical Item whose  $u[nvalued]F[eature]$  gets valued.

Paired with the assumption that feature-Valuation never is a mutual process, this guarantees that a label can be determined unambiguously. Hence, even if two LIs (bearing some sort of  $uF$  each) are merged, only one of the  $uFs$  probes and thus leads to feature-Valuation. The other LI may still value its  $uF$  under Agree, but this is dissociated from the process of Merge itself (cf. Boeckx 2008a: 96). In consequence, labels are determined prior to Spell-Out, parallel computations are avoided and neither LF- nor PF-properties are involved in the determination process. This last point is an important one. In particular the implementation of the distinction between valued and unvalued features (cf. Chomsky 2004) instead of the formerly advocated distinction between interpretable and uninterpretable features alleviates FL from selectional restrictions associated with LF-requirements (cf. Gallego 2010: 25-27; Pesetsky & Torrego 2007).

Adger (2003: 91-92) already proposes a similar mechanism and Cecchetto & Donati (2010: 246) offer a labeling algorithm that seems virtually indistinguishable from the one in Boeckx:

- (6) The label of a syntactic object  $\{\alpha, \beta\}$  is the feature(s) that act(s) as a Probe of the merging operation creating  $\{\alpha, \beta\}$ .

However, Cecchetto & Donati reject Boeckx's (2008a) assumption that in the course of the derivation 'only one relevant thing happens at any given time' (*ibid*: 96). Instead in Cecchetto & Donati's (2010: 246) system EFs count as Probes too. Hence, under First-Merge two LIs with EFs would both count as Probes and the LI bearing an additional feature then is a double Probe that wins over the single Probe, i.e. the LI bearing only the EF, and thus provides the label. Several things need to be taken into account in this context. First, on the one hand it seems only reasonable to include EFs into the consideration here, as these are after all the prerequisite for Merge. However, given that EFs never get valued and never delete (cf. Chomsky 2007; 2008), it is questionable whether they are of any relevance beyond the concatenative process of Merge and in

particular whether they play a role in the process of label determination. In light of the fact that feature-Valuation is the crucial indicator for Probes and thus for label-providers in (5), integrating EFs seems to be an undesirable step. Second it is not at all clear how the derivation keeps track of single and double Probes, which would be essential, especially under a derivational approach to double Probes (cf. Cecchetto & Dontai 2010: 246). This is reminiscent of the problem of Merge keeping track of First- and Second-Merge operations by means of a counting mechanism, which is something FL seems to be unable to do (cf. Hornstein 2009: 37).

What gives rise to further skepticism in a ‘double probing’ approach is that probing is a two-step process. The first part is feature-Matching and only the second part is feature-Valuation (cf. Chomsky 2000; 2001; Gallego 2010: 27). Hence, in an algorithm that does not pay particular attention to feature-Valuation, as the one in (6), it is not clear what provides the label in cases of feature-Matching that is not followed by feature-Valuation.<sup>18</sup> Gallego (2010: 27-28) argues further that it is  $\varphi$ -features only that participate in the probing-process and Boeckx (2008a: 97) makes the same point in the context of the labeling axiom in (5). Cecchetto & Donati (2010: 245), however, argue that s-selectional features or categorial features<sup>19</sup> are likewise involved. The problematic status of s-selection has been discussed above already and will therefore not be reiterated here. With respect to categorial features Boeckx (2008a: 93) points out that these ‘are notoriously stipulative in character [...] and very quickly dissolve into semantic criteria’. Therefore, the same skepticism that is directed towards s-selection in other accounts seems to be

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<sup>18</sup> Gallego (2010: 27-28) points out that what Chomsky (2000, 2001) identifies as defective core functional categories (i.e.  $v$  in contrast to  $*v$  and  $T$ ) are potential candidates for feature-Matching without feature-Valuation (cf. also the discussion in chapter 5 for further elaboration).

<sup>19</sup> Cecchetto & Donati (2010: 245) are not clear about whether they make a principled distinction between c-selection and s-selection, but cf. Rauh (2010: 108-10) for a clear and concise distinction.

expedient here.<sup>20</sup>

This is also the reason why Hornstein's (2009) and Hornstein & Nunes' (2008) account on labeling in terms of Chomsky's (1955) 'is-a' relation is suspicious. However, nothing in these two approaches seems to stand in the way of recasting the 'is-a' relation that Hornstein (2009: 58-59) describes as a means of making the SO that results from Merge an atomic object available for further Merge operations<sup>21</sup> in terms of a feature based account as described above. So, when abstracting away from the problems related to casting labeling in terms of a 'is-a' relation or θ-marking (cf. *ibid*: 58), Hornstein (2009) and Hornstein & Nunes (2008) make an interesting proposal on labeling in the context of adjunction structure.

Following proposals originally made in Chametzky (2000) and Uriagereka (2008), Hornstein & Nunes (2008: 57) capitalize on the assumption that Merge is an operation that consists of concatenation and labeling and argue that in argument structures<sup>22</sup> both the concatenative and the labeling procedures apply, whereas in adjunction structures concatenation applies but labeling is not mandatory (cf. *ibid*: 66-67). In fact, adjunction structures then are ambiguous between those which are labeled and those which are merely

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<sup>20</sup> DiSciullo & Isac (2008a, b) advocate for an analysis in which Merge is inherently asymmetric. This asymmetry results from a proper inclusion relation that is operative on Merge. Hence, Merge can apply only to those LIs whose features are in a proper inclusion relation. However, a distinction is made between EM and IM operations (cf. DiSciullo & Isac 2008a: 270). For EM the label is determined on the basis of c-selectional features alone, while for IM the total set of features is taken into account. Yet, the total set of features explicitly excludes φ-features, which according to DiSciullo & Isac (2008: 269) 'are not computed in syntax, but in a different space'. Hence, the features looked at in IM cases are operator features, which occur only on Phase-heads. DiSciullo & Isac (2008a: 271-272) point out that this allows for predictions on when IM takes place: i.e. IM is a last resort operation that is available only in those cases in which EM is not an option simply because there is no LI left for EM in the subarray of the Numeration that is accessible in the current Phase. Di Sciullo & Isac (2008a: 270) further argue that this makes the assumption that IM is invariably to the edge (cf. Chomsky 2008) follow naturally. This clearly predicts that movement of the subject to Spec, TP (cf. Di Sciullo & Isax 2008a: 277) should be illicit contrary to fact and stands in stark contrast to several of the movement operations in Di Sciullo & Isac (2008b) where movement is not only not to the edge but also in clear violation of anti-locality (cf. Grohmann 2003; Abels 2003). Since IM is not in focus at this point, I will refrain from further comments here. The only thing to be added about Di Sciullo & Isac's (2008a,b) approach is that they argue that adjuncts are not subject to Merge and therefore exempt from the Proper Inclusion Condition. An assumption we will come back to presently.

<sup>21</sup> It should be pointed out that this is really the main motivation for Hornstein (2009: 123-125) to make use of the 'is-a' relation. Guaranteeing that concatenated SOs resulting from Merge are labeled is what ensures that the SOs are available for further concatenative processes induced by Merge. However, it should at least be mentioned that this has important repercussions for Move and for the question whether Merge takes precedence over Move (cf. *ibid*: 124; Chomsky 2008: 140). Hornstein (2009: 124) argues against a conception of Move as simply Copy and Remerge.

<sup>22</sup> I use the term argument structures here as an opposite to adjunction structures which includes complement structures and specifier structures and remain noncommittal to the syntactic status of argument structure at this point.

concatenated without labeling. This, as Hornstein (2009: 96) shows is what allows for making the distinction between adjuncts that are pied-piped - namely those that are labeled - and those that are stranded - namely those that are merely concatenated without labeling. Eventually, Hornstein (2009: 101-104) and Hornstein & Nunes (2008: 77-83) argue that the distinction between labeled adjuncts, which are available for further syntactic operations and merely concatenated adjuncts, which are inactive for further computations, allows for explaining why adjuncts differ from complements in some respects but pattern with specifiers in others (cf. also May 1985; Hale & Keyser 1993, 2002; Kayne 1994). In effect, the distinction between labeled and unlabeled adjuncts thus yields radically different interpretations at the C-I interface (cf. Hornstein & Nunes 2008: 83-84).

However, as Gallego (2010: 20) remarks, while it might be a reasonable assumption that adjuncts can be label-less, this does not say anything about how they are interpreted at the interfaces.<sup>23</sup> Also, it is not clear, what triggers the Merger of adjuncts in the first place. If label-determination as described in (5) is part and parcel of Merge, how then can Merge ever be triggered without labeling? The simplest answer conceivable is that all that is needed for Merge is EFs and thus merging adjuncts resonates the concatenative aspect of Merge, while labeling represents an additional step that applies only in argument structures.

Conceiving adjunct structures as unlabeled concatenates has two remarkable effects. For one it unburdens FL from the need for relational information formerly encoded in X-bar theoretic terms that allowed for a distinction between adjunction and complementation structures (cf. Hornstein 2009: 82). Additionally, it brings to light what has been ubiquitously remarked in the literature in recent years; namely that adjunct structures are much more simple than complementation structures, which quite naturally has been reflected in their semantic properties in the long-standing tradition of Neo-

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<sup>23</sup> This is what leads Gallego (*ibid*: 20-21) to argue for an analysis of adjuncts as PPs establishing a Figure-Ground relation (cf. also Talmi 2000 and Mateu 2002). Since the exact technicalities of how label-less adjuncts are interpreted at LF is not eminent for the point to be made here, I will refrain from further comment and simply assume that LF-interpretability is guaranteed.

Davidsonian approaches<sup>24</sup> (cf. among others Higginbotham 1986; Parsons 1990; Schein 1993; Larson & Segal 1995; Pietroski 2005; Hornstein & Nunes 2008; Boeckx 2008a; Pietroski & Hornstein 2009). In fact, if on the right track, this ultimately allows for completely discarding the distinction between Pair-Merge and Set-Merge.

To see how this is possible some more detailed reflections on the Set-Merge vs. Pair-Merge distinction are indispensable here. In a Bare Phrase Structure (BPS) analysis (Chomsky 1995b) traditionally Set-Merge, as described in (3), is the operation used in complementation structures (cf. Chomsky 2000: 113; 2004: 117). Pair-Merge in contrast is what is operative in adjunction structures (cf. *ibid*) and it crucially differs from Set-Merge in so far as the result of Pair-Merge is an ordered pair. Hence, Set-Merger of  $\alpha$  and  $\beta$  leads to (7a) and Pair-Merger of  $\alpha$  and  $\beta$  gives us (7b):

(7a) { $\alpha, \beta$ }

(7b) ⟨ $\alpha, \beta$ ⟩

So in (7a) in a second step - after the concatenative procedure of Merge - the label then is determined, presumably by a labeling algorithm roughly of the sort discussed above. In (7b) on the other hand, no extra step is necessary, because the result of Pair-Merger already is an ordered pair (cf. Chomsky 2004: 117-118). This ordered pair, however, is not properly formatted for the interfaces. As Boeckx (2008a: 99) points out, in order to guarantee interface legibility, the ordered pair in (7b) needs to be turned into a monadic predicate that is readable at LF. This is done by applying a Spell-Out operation, SIMPL, to the ordered pair that turns it into an ordered set of the format { $\alpha, \{\alpha, \beta\}$ }. Thus, ultimately, the product of Pair-Merge is sent to the interfaces in the same format as the product of Set-Merge. The only difference between the two operations is that Set-Merge is followed by labeling whereas Pair-Merge is followed by SIMPL.

It is immediately obvious that this conception of Merge is untenable. If FL is an optimal solution to interface requirements and if operations carried out in FL have an interface effect, then it is virtually impossible that FL entertains two operations for two

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<sup>24</sup> It is one of the hallmarks of Neo-Davidsonian event semantics that it expresses the distinction between adjuncts, which modify an event directly, and arguments, which are associated with an event by secondary predicates (cf. Dowty 1998: 83. Hence, the sentence in (i) has the representation in (ii)

(i) Jack bought an ice-cream in West Dennis  
(ii)  $\exists e [buy(e) \& AGENT(Jack, e) \& THEME(an\ ice-cream, e) \& in-West-Dennis(e)]$

conceptually very distinct phenomena and hands them to the interfaces in the same format.

Boeckx (2008a: 100-101) provides an alternative and ultimately argues for a reversal of the two operations so that Set-Merge is what yields adjunction and Pair-Merge is what results in complementation. Boeckx's reasoning is twofold. First, he points out that adjunction structures are much more flexible than complementation structures and ties this to the lack of labeling argued for in Hornstein & Nunes (2008) and Hornstein (2009). Second, this absence of labeling coincides with the absence of a Probe-Goal relation that is fundamental for any kind of featural transaction:

Adjuncts merge with their hosts under *Match* (like any instance of *Merge*), but the matching relation here is distinct from the matching giving rise to valuation [...] The absence of checking would account for the optional character of adjunction.

(Boeckx 2008a: 101)

Merge so defined may be more fit to account for the complement vs. adjunct distinction, but it raises some questions. If Set-Merge, as the operation for adjunction, is an instance of feature-Matching without Valuation, in how far is this different from Merger of T or  $v_{def}$  (cf. Gallego 2010: 27 and footnote 15)? And how is the product of Set-Merge different from the product of Pair-Merge at the interfaces? Or put differently that is, why is it that Set-Merge as the operation for adjunction that is not labeled can be processed at the interfaces at all?

Boeckx (2008a) does not explicitly consider the first question but provides an answer to the second one that explains the difference between the Merger of defective core functional categories (cf. Chomsky 2000, 2001) and the Merger of adjuncts. Under his analysis adjunct structures *per se* pose a ‘mapping problem’ to the interfaces that can be dissolved only when adjunction is understood in terms of Later-Merge (cf. Boeckx 2008a: 102-103). This is reminiscent of ideas already floated as early as Lebeaux (1988) and Chomsky (1995a). Hence:

[U]nlike complementation, where both Merge members are introduced at the same time (symmetry/order independence of Merge), adjunction attaches an element to an already present element. [...] T[his] temporal asymmetry [...] is what allows Set-Merge representation to be mapped onto SEM/PHON.

(Boeckx 2008a: 102-103)

So adjunction boils down to instances of Set-Merge where an already existing SO is concatenated with another LI or SO at a later stage of the derivation. Following Boeckx (*ibid*) adjunction then can be represented as follows:

$$(8) \quad \{\{\alpha\}_t, \{\beta\}_{t+1}\}$$

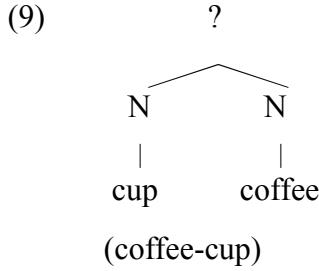
This conception of Set-Merge for adjunction structures paired with the conception of Pair-Merge for complementation structures that has been discussed above should lead to unambiguous Merge that returns an asymmetric output in all cases. However, the idea to define Set-Merge as an instance of Later-Merge as in Lebeaux (1988) has certain consequences. It suggests that adjunction always applies at a late(r) stage of the derivation. All instances of First-Merge then must be instances of complementation.

So far so good, as long as there are no counterexamples to First-Merge being Pair-Merge, this is an assumption that can be maintained. What is not clear though is when exactly Later-Merge applies. Does Later-Merge mean that the derivation must have built a SO that is sent to the interfaces before an adjunct that does not produce a new label can be added? If so, how are these adjuncts integrated? Are they constructed in FL and kept in a separate plane (cf. Uriagereka 1998, 2008; Chomsky 2004) so that they can be attached to the SO created by FL in a post-syntactic but pre-Spell-Out component? If so where is this component located and how is it accessed and regulated? If not, how do the interfaces keep track of the temporal component of Later-Merge? And how can the interfaces process a structure that is label-less?

### 1.3 Outlook

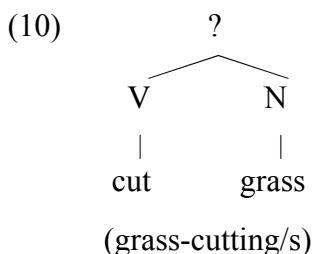
Finding an answer to these questions that is in line with the SMT and basic assumptions of minimalist theorizing is the aim of this paper. Three types of structures in which Merge produces a SO that is not labeled are looked at: nominal root compounds, incorporated nominal gerunds (which are compared against their non-incorporated counterparts) and small clauses. In the derivation of each of these structures a point of symmetry (PoS) arises that is not broken spontaneously (cf. Boeckx 2008a: 88) in the course of the derivation. In the nominal root compounds this PoS arises after the first application of Merge, which

combines two nominal heads of which neither one immediately projects:



Nominal root compounds are typically analyzed as adjunction structures (cf. e.g. Roeper, Snyder & Hiramatsu 2002; Roeper & Snyder 2005) and in so far seem to fit with the description of label-less concatenates provided here. The eminent question however is, how the (First-!)Merger of two nominal heads can lead to a labeled SO that is available for further computation. Chapter 2 discusses several approaches to the derivation of these structures and argues that none provide an answer compatible with the conceptions of Merge and the requirements imposed by the SMT. An alternative analysis that is not only in line with the SMT, but also allows for a principled distinction between productive compositional recursive compounds and their unproductive, non-compositional and non-recursive counterparts, is presented. The distinction between compositional compounds and their non-compositional counterparts, it turns out, is not based on inter-language variation of the type advocated for e.g. in Delfitto, Fábregas & Meloni (2008) but rather on inter-language variation that is fine-tuned by cyclic derivation and does not need to make use of additional stipulative assumptions or unmotivated features.

Another instance where First-Merge creates a point of symmetry that needs to be dissolved is in incorporated nominal gerunds. Just as in (9) Merge here combines two heads, however, these heads rather than being adjuncts presumably stand in a complement relation where the verbal head selects the nominal head:

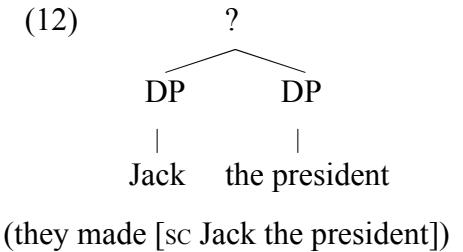


What is not clear though is how this can be accounted for under the  $\phi$ -feature driven account to Merge and labeling discussed above, nor why incorporation is forced in these structures and why simple feature-Matching and Valuation is not enough. In particular the lack of an effect on interpretation between the incorporated (11b) and the non-incorporated structure (11a) and the clear effect on interpretation between pluralized (11c/d) and non-pluralized versions of nominal gerunds (11a/b) is puzzling in this context:

- (11a) the cutting of the grass
- (11b) the grass-cutting
- (11c) the grass-cuttings
- (11d) the cuttings of the grass

In chapter 3 these structures are analyzed in minute detail and it is shown that current approaches to gerunds and their incorporated versions (cf. e.g. Barrie 2006; Iordăchioia & Soare 2008; Alexidaou; Iordăchioia & Soare 2010) can neither accurately capture the observed phenomena above nor do they comply with the account on Merge developed here. Again, an alternative analysis that does not rely on additional mechanisms but strictly adheres to the SMT, which guides a cyclic approach to derivation that is motivated by independent principles, is presented.

Chapter 4 looks at one more instance of Merge that produces a symmetric outcome: small clauses (SCs). Following the analysis in Moro (2000, 2007) the asymmetry here does not result from the Merger of two heads but two phrases instead:



In principle, this structure is reminiscent of the adjunction structures resulting from the Merger of two phrases as discussed above. However, as den Dikken (2006) argues, SCs

are predication structures rather than modification structures. This, of course, begs the question how this is accommodated under the SMT based approach described here. The analysis provided in chapter 4, which is in part based on the approach outlined in Roeper & Bauke (*forthcoming*), does not only provide an answer to the question of how the label of the SC can be determined but it also shows in which way a Phase-based approach to the derivation of SCs allows for precise predictions on relevant Phase-boundaries that indicate designated positions that the SC constituents can be moved to.

So, the investigation of the structures in chapters 2-4 illustrates that the adjunction structures in (9), the complementation structures in (10) - (11) and the predication structures in (12) uniformly can be accounted for under a Phase-based approach to the SMT that does not rely on the stipulation of additional *ad hoc* features or mechanisms. In fact, only independently motivated assumptions that follow naturally from interface requirements can not only provide the basis for an analysis of the structures discussed here, but also have interesting implications for the assessment and development of minimalist theory. These implications are discussed in chapter 5 and include the following points.

First, the question whether Phase-based computations impose restrictions on lexicon-syntax interaction (cf. e.g. Boeckx 2008a) or on syntax-interface interactions emerges (cf. also Gallego 2008: 41). The analysis in this dissertation certainly points into the latter direction, but without negating the relevance of the former and the answer to the question includes the discussion on what constitutes a Phase. While it is pretty clear what constitutes a Phase in the clausal domain (cf. e.g. Chomsky 2000; 2001; 2004; 2006; 2008), i.e.  $\varphi$ -feature checking, how this follows from SMT considerations and what counts as relevant Phase-head in the clausal domain, i.e.  $*v$  and C, it is far less obvious what closes off a Phase (cf. e.g. Chomsky 2000 vs 2001; Richards 2007; Grewendorf & Kremers 2009; Gallego 2010). Additionally, neither the status of Phases at the subphrasal level (i.e. word-level) (cf. Marantz 2001; 2007) and in the nominal domain (cf. among many others Svenonius 2004; Bošković 2005; Hiraiwa 2005; Matushansky 2005; Müller & Heck 2008; Ott 2008; Samuels 2008, Richards 2012) is unanimously agreed upon in the literature, nor is clear what the status of Non-Phase-heads is (cf. in particular Chomsky 2008 vs. previous accounts) and whether Phases can be slided or extended (den Dikken 2007a, b; Gallego & Uriagereka 2007; Gallego 2010).

On the basis of the analysis in chapters 2-4, it is argued that Phases play a crucial role at word-level syntax and in the nominal domain and indeed are guided by the same principles as in the phrasal domain. With respect to the question of Phase-sliding/Phase-extension, which necessarily requires head-movement, it is also discussed, whether head-movement is a purely phonological operation as Chomsky (2000) argues or whether alternative accounts of head-movement either as remnant movement (cf. e.g. Koopmann & Szabolcsi 2000; Nilsen 2003) or (even) as a syntactic operation (Harley 2004, 2009; Donati 2006; Matushansky 2006; Cechetto & Donati 2010; Gallego 2010; Roberts 2010) are possible and how the problems of tucking-in and conflation fare under these accounts. Again, the analysis of the structures in the preceding chapters guides the discussion here.

## 2 Nominal Root Compounds<sup>1</sup>

### 2.1 Nominal Root Compounds: A (Crosslinguistic) Overview

This chapter provides a new analysis of nominal root compounding. In stark contrast to previous accounts on nominal root compounding that are based on macro-parametric variation the current account illustrates that an intra-language distinction between different types of compounding is needed. Based on data from German and many other languages, it is shown that seemingly unprincipled language internal variation between different types of nominal root compounding can be recast in clear cut terms without making recourse to a macro-parameter. Rather a distinction between two types of nominal root compounding, which are both exhibited in German, is introduced. This distinction rests on very specific syntactic properties. In particular the presence vs. absence of a Phase-head that has the capacity of introducing  $\varphi$ -features - and in particular number features - into the derivation is what allows for a distinction between the two types of nominal root compounds. Based on the independently motivated assumption that Merge is driven by E(dge) F(eature)s (cf. Chomsky 2008) and on an incorporation analysis along the lines of Roberts' (2010) two types of nominal root compounds with clearly discernible and radically different semantic and syntactic properties are identified.

In nominal root compounding a crosslinguistic distinction is frequently made between compounding in Romance languages on the one hand and in Germanic languages on the other (cf. e.g. DiSciullo & Williams 1987; Snyder & Chen 1997; Snyder 2001; Roeper, Snyder & Hiramatsu 2002; Mukai 2004; Grela, Snyder & Hiramatsu 2005; Roeper & Snyder 2005; Delfitto, Fábregas & Melloni 2008), where Germanic is analyzed as the pattern in which root compounding is far more productive than in Romance. Not only is Germanic more productive, additionally compounding in these languages is recursive and compositional. Romance, on the other hand, does not allow recursive compounds and existing nominal root compounds tend to have a fixed lexicalized interpretation. The following examples illustrate the phenomenon of productive compositional novel

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<sup>1</sup>The term '(nominal) root compound' will occur frequently in this chapter. Right from the start two qualifications are in order, to avoid future misunderstandings. The first is that this chapter is only and exclusively concerned with root compounds. Hence, the analysis suggested here is not meant for synthetic compounds (but cf. chapter 3 for a possible extension). Second, until further qualification in the last section of this chapter, I use the term *root* rather loosely, not necessarily distinguishing it from the term *stem*.

compound formation for German and English<sup>2</sup>:

- (1) English: lion senator, governor frenzy, filibuster candidate, debacle speech, exile hypocrisy, crisis pundit, ...

German: Weltenfahrt, Präsidentenexperte, Ämterberatung, Gesichterparade, Väterzentrum, Ämtergang, ...

In Romance, on the other hand, novel compounds are hardly ever formed productively and in the occasional instances this happens, these compounds are the product of a deliberate act of coinage rather than of a process of productive word-formation. Thus, when speakers of a Romance language form a novel endocentric nominal root compound the result requires an explanation of the meaning of this compound, and the process resembles the invention of a new morpheme (cf. Roeper & Snyder 2005: 159). So, existing compounds in these languages tend to have a fixed interpretation that can quite often be alternatively expressed by non-compound nouns. In English (and other Germanic languages) examples with a lexicalized interpretation exist, but this lexicalization is hardly ever total, as can be seen from the examples below :

- (2) French:      *homme grenouille*<sup>3</sup>      plongeur

<sup>2</sup> All of the examples are taken from 2008 and 2009 editions of either the *New York Times*, *Time Magazine*, the *Frankfurter Allgemeine Zeitung*, *die Zeit* or from news broadcasts during the same time span in *Nightly News* or the *Tagesschau*, respectively. None of these compounds were listed in the *Merriam Webster Dictionary*, the *Concise Oxford Dictionary* or the *Duden* at that time.

<sup>3</sup> One further difference between the compounds in Romance languages and the Germanic compounds in (1) and (2) that is pointed out frequently (cf. e.g. Licears et al. 2002) is that the Germanic compounds comply to the right-hand head rule (RHR) of Williams (1981) or the IS-A relation first expressed in Marchand (1969: 11) and formally stated in Allen (1978: 105). However, as has been outlined in chapter 1.2, it is not at all clear how a semantic subset analysis (cf. Scalise 1986: 92–93) can contribute to the identification of a compound head. In fact, it seems rather that the LF-interpretational facts captured in the IS-A relation are the effects of a syntactic process than the other way round.

The RHR in turn, although it does not deny the role of meaning identity already argued for by Marchand (1969), is not entirely semantically based. But still, it is not clear what this rule expresses. First of all, it should be noted that this rule is postulated for English only and that the discussion in Williams (1981) remains silent about why Romance shows the reverse pattern. This factor is already sufficient to cast serious doubt on the overall validity of this rule. More importantly, given the order-independence of Merge argued for in chapter 1.2, in narrow syntax it should not make any difference whether the head of the word is merged to the left or to the right. If the RHR is merely a generalization on the results of PF-linearization (cf. e.g. Kayne 1994), it does not express anything about the syntactic process of head-determination and thus is nothing but a descriptive device for characterizing the result of narrow syntax and post-syntactic PF computations.

Spanish:	hombre rana	buceador(a)
Italian:	uomo rana	sommozzatore
English:	frogman, i.e. combat diver, man who sells frogs, man resembling a frog, man who knows an awful lot about frogs, ...	

The examples in (3) illustrate the recursive character of nominal root compounds in Germanic. In Romance there exist hardly any (nominal) compounds that contain more than two elements; Roeper & Snyder (2005: 160) mention *gateau forêt-noir* as a notable exception, which clearly is a lexicalized form:

- (3) English: restaurant coffee cup, christmas tree cookie, peanut butter sandwich, baby doll napkin, student film committee, kumbaya moment strategy, bogeyman approach analysis, ...
- German: Mäusefallentrück, Puppenhäuserproblem, Sonnentrahlen-schutz, Straßenverkehrsordnung, Studentenhäuserbüro, Sagenheldenmoment, Pferdesättel-verkäufer, Kinder-tassenmotiv, ...

This, of course, does not mean that Romance languages lack the ability of recursive compound formation. However, recursive and productive nominal root compounds in these languages are stylistically marked and very restricted (cf. Bisetto 2010: 27-29) unless they are formed by a prepositional pattern (cf. Delfitto, Fábregas & Melloni 2008: 25; Ralli 2008: 25-26).

One possible way of accounting for these differences is to draw a distinction between lexical and syntactic processes of word-formation. The Romance pattern then is one of lexical word-formation, while Germanic languages are characterized by syntactic word-formation processes (cf. e.g. Roeper, Snyder & Hiramatsu 2002; Roeper & Snyder 2005: 159-160). This is in line with the distinction traditionally made in generative

grammar between regular and irregular grammatical processes (cf. Chomsky 1970) where in particular derivational morphology - in stark contrast to inflectional morphology and syntax - belongs to the idiosyncratic and irregular processes.<sup>4</sup> Following Borer (1984), it is then only natural to assign all irregularities to the lexicon. So what emerges here is a macro-parameter in the sense of Baker (2008) and Baker & Collins (2006) that distinguishes between the compounding strategies of the two language families. Roeper, Snyder & Hiramatsu (2002: 4) and Roeper & Snyder (2005: 160) formalize this in terms of a root compounding parameter. However, at the same time, there is a trend in recent work in minimalism to even go so far as to eliminate the last of the remaining macro-parameters (cf. Boeckx 2006: 81) or at least to reanalyze what has been cast in macro-parametric terms in terms of (syntactic or lexical) micro-parameters (cf. e.g. Biberauer et al. 2009 Starke 2010; Sheehan & Hinzen 2011; Roberts 2011b; and many many others). This line of research is flanked by attempts to reanalyze many of the idiosyncrasies initially assigned to the lexicon as regular syntactic or post-syntactic phenomena (cf. to varying degrees Hale & Keyser 1993; 2002; Halle & Marantz 1993, 1994; Harley 1995, 1998, 2002, 2005, 2008; Marantz 1997, 2001, 2007; Harley & Noyer 1998a,b; Borer 1999, 2005a,b, 2009).

This, however, does not account for a considerable amount of variation across Germanic languages. Swedish, for instance allows productive recursive root compounding, just like German and English with the caveat that left-branching compounds (4b) require a linking element (LE), while right-branching compounds (4a) can do without this element (cf. Mukai 2004: 12; Roeper & Snyder 2005: 157-8):

(4a)	barn	bok	klub	Swedish
	child	book	club	
‘book club for children’				

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<sup>4</sup> Incidentally, Giegerich (1999) argues that this distinction is also the place for drawing the dividing line between lexicalist and non-lexicalist approaches. In more recent work, however, Giegerich (2009) argues against drawing a clear dividing line between lexicon and syntax and shows evidence for some overlap not only between these two components but also within the lexicon, where a strict stratification of the lexicon into stratum one that takes care of irregularities and stratum two that is the locus for all regular processes cannot be maintained either. As Giegerich (1999, 2004, to 2009) points out, nominal compounding is one of the processes that straddle the line between stratum two in the lexicon and syntax on the one hand and stratum one and stratum two within the lexicon on the other. At this point I remain relatively uncommitted with respect to the question of a lexicalist vs. a non-lexicalist approach in so far as the analysis presented in this chapter (cf. below) is clearly influenced by accounts that argue in favor of a distributed lexicon, however, nothing in principle should prevent alternative conceptions of the lexicon to be equally compatible with the analysis defended here.

(4b)	barn	boks	klub	foot	balls	domare	Swedish
	child	book-LE	club	foot	ball-LE	referee	
	'children's book club'			'soccer referee'			

LEs also occur in other Germanic languages such as Dutch and German and, for instance, in Greek, Russian and Turkish (cf. e.g. Ralli 1992, Booij 1992, Scalise 1992 di Sciullo 2005 for relevant examples), while they are missing from English or Chinese (cf. Zhang 2007) and crucially also from Spanish, Italian and French - unless, of course a prepositional construction with a semantically empty preposition is also identified as an instantiation of a LE (cf. Ralli 2008: 20-25). Hence, with respect to the presence or absence of LEs the sharp distinction between Romance and Germanic compounding patterns does not hold up and Germanic languages display a large amount of interlanguage variation.

This chapter discusses the interlanguage variation found in German nominal root compounding. In a first step data from German are presented that illustrate the considerable amount of variation exhibited by nominal root compounds in this language. The analysis of the relevant data shows that two types of compounding need to be distinguished in German. On the one hand, German displays a substantial amount of nominal root compounds that follow the expected Germanic pattern, which derives productive, recursive and compositional compounds. On the other hand, a second group of nominal root compounds in German is characterized by the non-compositional, non-productive and non-recursive properties of its members and thus patterns much more closely with the type of compounding described for Romance. It is shown that the distinction between these two patterns falls in line with the presence or absence of inflectional material on the first element<sup>5</sup> involved in the nominal root compound. LEs, it turns out, are not a relevant factor here (contra Ralli 2008), as those compounds that display them pattern with nominal root compounds that lack inflectional marking and thus have a drifted lexical interpretation in contrast to a truly compositional reading (that is

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<sup>5</sup> For the moment I use the neutral term *element*, because I want to remain non-committed to the question whether German exhibits root-compounding or word-compounding at this point. The analysis in the following chapters will provide a clear answer, so I ask the reader to be patient.

characteristic of compounds with inflectional markers). Hence a distinction needs to be made between nominal root compounds with inflectional marking on the one hand and those that lack the relevant inflection but (may) feature an LE instead.

Existing analyses try to capture this distinction in terms of an abstract clitic position (ACP) that is present on the former type of compounds but not on the latter (cf. e.g. Roeper Snyder & Hiramatsu 2002; Roeper & Snyder 2005), in terms of unsaturated theta-features and the word vs. root compounding distinction (cf. Mukai 2004 and to some extent Ralli 2008), or in terms of parameterized Phases and the role of symmetry dissolution (cf. Delfitto, Fábregas & Melloni 2008). It is shown that each of these analyses faces serious problems in a minimalist framework and that none of these can *prima facie* account for the variation found in German.

Finally, drawing on the insights of these previous approaches, an alternative analysis that accounts for the distinction between the two compounding patterns without running into the same problems is presented. It is argued that all nominal root compounds are adjunction structures that are the product of a Merge operation of two heads. Hence, both types of compounds are syntactically derived and both types of compounds involve a point of symmetry that results from the Merger of two heads. The difference between the two patterns rests on how this point of symmetry is dissolved in the course of the derivation. One possible scenario is the Merger of the inflectional marker on the first element. Following the analysis in Marantz (2001, 2007) it is argued that the inflectional marker is a categorizing little *x*-head that has the properties of a Phase-head. Several consequences follow from this. First, the presence of inflectional material coincides with a Phase that triggers cyclic Spell-Out. This then means that the element to which the inflectional marker is attached undergoes independent interpretation at LF and thus ultimately allows for a compositional interpretation. The alternative scenario for the other type of compound is that the two roots are merged without undergoing categorization by a little *x*-head. In this case, independent interpretation is not expected, which explains the non-compositional and non-productive character of this type of compound. As long as there are no conflicts in the featural make-up of the two Merger candidates, a point of symmetry dissolution is not anticipated either, which explains the lack of recursion. This leads to a picture in which a point of symmetry is tolerated in the derivation as long as it is dissolved by the time of Spell-Out and in which both types of nominal root compounds are

derived syntactically. Interpretational differences between the two types of compounds that coincide with productivity and recursivity follow from a Phase-based account that is independently motivated.

## 2.2 Nominal Root Compounds in German - The Data

As is expected for a language that belongs to the Germanic language family, German exhibits recursive, productive and compositional root compounding in the nominal domain. The examples provided in (1) and (3) in the preceding section point into the same direction. However, when taking a broader look at German nominal root compounds a more fine grained picture emerges:

(5a)	Landstraße	German
	country + road	
	‘country road’	
(5b)	Landsmann	German
	country.gen + man	
	‘compatriot’	
(5c)	Landeskirche	German
	country.gen + church	
	‘national church’	
(5d)	Länderspiel	German
	country.pl + match	
	‘match between two national teams’	

The form in (5a) consists of the combination of the two roots *Land* and *Straße*. No other lexical material intervenes between these two roots. In the other forms (5b) - (5d) instead

the first<sup>6</sup> element of the compound always contains inflectional material. The forms in (5b) and (5c) are marked genitive and the form in (5d) contains a plural marker. From the perspective of compounding this is somewhat unexpected, because inflectional material is usually confined to the edges of the compound rather than to compound internal positions (cf. e.g. Allen 1978: 112; Scalise 1986: 122).<sup>7</sup> However, this is by no means universal, neither across languages nor for Germanic (cf. Selkirk 1982: 52-53 for an early rebuttal) and it is to be noted that in the German cases under discussion here a very clear interpretational effect emerges. This effect is illustrated in (6):

- (6a) Landstraße ‘country road’
- (6b) Landsmann ‘compatriot’
  - or ‘man who loves the countryside’
  - or ‘man who advocates for the conservation of the countryside’, etc.
- (6c) Landeskirche ‘national church’
  - or ‘church that is associated with the country’
  - or ‘church that shows the country’s typical architecture’ etc.
- (6d) Länderspiel ‘match between two national teams’
  - or ‘game that involves knowledge about certain countries’
  - or ‘game that is typically played in certain countries’
  - or ‘game that is characterized by customs of a certain country’ etc.

The compound in (6a) which does not involve any compound internal inflectional material has just one fixed and (somewhat) lexicalized interpretation. The compounds in (6b) -

<sup>6</sup> First here means the element that linearly precedes the other compound element. It does not reflect any ordering with respect to Merger order. How this linear order is derived from the syntactic structure is discussed in detail in subsequent chapters.

<sup>7</sup> This does not include LEs, of course, which occur compound internally all over the place. Yet, even truly inflectional markers may occur inside compounds as is well known from notorious examples like *parks commissioner*, *teeth-marks* etc. Thus, the assumption that the markers we find in the German compounds in (5b) - (5d) are actually inflectional markers is not totally out of the way and the implications that follow from such an assumption are discussed at great length throughout this chapter.

(6d), which contain inflectional markers on the first root, differ from the one in (6a) in that they allow alternative interpretations next to the preferred interpretation. Hence, a *Landstraße* is a very specific type of road and it is not any kind of road that runs through the countryside. In particular the rural stretch of an interstate highway is not a *Landstraße*. This is radically different for the forms in (6b) - (6d). Although all of these forms have a preferred interpretation that is reflected in the dictionary entry for each word, a number of alternative interpretations exist alongside. So the preferred interpretation for *Landsman* in (6b) is that of ‘compatriot’ and in (6c) the perhaps even more lexicalized interpretation for *Landeskirche* is that of ‘national church’. This, however, does by no means exclude the alternative interpretations provided on (6b) and (6c). Incidentally, when *Landeskirche* is interpreted as referring to ‘a church that is built in the architecture that is typical of a certain country’, this does by no means indicate that this church is one in which the state’s religion is practiced, which is the only reasonable interpretation for *Landeskirche* as ‘national church’. Somewhat along the same lines, if *Länderspiel* in (6d) is not interpreted as ‘match between two national teams’ say, e.g. Canada and the US in olympic ice-hockey, but as ‘a game that involves knowledge about certain countries’ this latter game could for instance be a children’s board game that has nothing to do with sportive competition between two nations.

It is true, though, that the preferred interpretations listed as the first translation in (6b) - (6d) have a rather strong tendency for lexicalization. In that respect they resemble the root + root compounds which (6a) is an example of. However, none of this comes as a surprise. If the compounds in (6b) - (6d) are words derived by a syntactic process of word-formation, it should only be natural that the result of this process is stored in the lexicon, where it is immediately open for drift. Also, that just one of the interpretations in (6b) - (6d) goes down as the preferred interpretation is a perfectly natural consequence for a syntactic process the result of which is entered in the lexicon. What is important to note though is that alternative interpretations will always be available for those compounds that include internal inflectional markers, even in those cases where the preferred interpretation has a comparatively strong tendency for lexical drift and a fixed interpretation:

(7a)	Bettlaken	German
	bed + sheet	

‘bedsheet’

(7b)	Bettenburg	German
	bed.pl + castle	
	‘big ugly hotel with lots of rooms’	

The form in (7a) follows the pattern of the form in (6a). The combination of two roots, without any intervening inflectional markers, leads to a compound that has only one fixed interpretation. A *Bettlaken* is a ‘bedsheet’ and no alternative readings are available. Not even a sheet that has beds printed on it would be a *Bettlaken* but rather a *Bettenlaken*, i.e. a form that features a plural marker on the first element. The interpretation of the compound in (7b) seems to be even more drifted. Interpreting a word that combines the lexical items for ‘bed’, i.e. *Bett* and ‘castle’, i.e. *Burg* as some kind of ‘hotel’ is precisely what is expected from lexical items with a non-compositional reading. So, this is definitely the preferred interpretation that most people would identify when prompted and it is the interpretation that is listed in the *Duden*-dictionary (cf. Duden 2007)

However, alternative interpretations are clearly available. One is to refer to ‘a castle that is built in the shape of a bed’ as a *Bettenburg* and an alternative that is just as viable is that of referring to ‘an arrangement of several beds that resembles a castle’ (as maybe being built by children in a youth hostel) as a *Bettenburg*. Hence, despite the truly drifted and fixed but preferred interpretation provided in (7b) alternatives are easily imaginable.

So the presence of an inflectional marker inside the compound does not force a compositional interpretation: in fact, lexicalized interpretations are available and can even be the ‘standard’ interpretation that is most easily identified. Yet, the presence of an inflectional marker inside the compound makes a compositional interpretation recoverable.

The same can be observed in English. The word *outgoing*, for instance, can refer to the characterization of a person, however, the person so described, need not necessarily go out. Hence, in this respect, the word is used in a non-compositional way similar to the *Bettenburg* interpretation in (7b). On the other hand, the compositional interpretation that an outgoing person goes out is clearly available as can be seen from the example below:

- (8) The outgoing president was not very outgoing.

In contrast, the pair in (9a) and (9b) illustrates that the compositional interpretation gets lost as soon as the inflectional marker is lost:

- (9a) incoming mail
  - (9b) income mail

In the example in (9a) *incoming* features the aspectual *-ing* marker that also determines the compositional interpretation in (8). This marker is lost in (9b). As a consequence, *income mail* can only refer to mail that has something to do with money, e.g. mail that contains the income or income statement, etc. Thus, despite the fact that English compounds do not typically<sup>8</sup> show compound-internal inflectional marking, the pattern that emerges for compounds that contain inflectional markers inside the word in German, can also be found in English. As long as an inflectional marker is available, a compositional reading can still be retrieved; once the inflectional marker is lost, the interpretation of the compound is fixed and does not allow for productive alternatives.

As has been pointed out above, a lexicalized interpretation - like the one that is preferred for *Bettenburg* and possibly also *outgoing* above - is completely expected under the assumption that the products of a syntactic process of word-formation are stored in the lexicon, where they are immediately available for drift. Further assuming that the process of compounding is fed by lexical items listed in the lexicon, it should also be expected that lexical items with a drifted meaning can be employed in compounding. This is indeed the case, as is illustrated in (10):

- (10a) Wortwitz German  
word + wit  
'verbal wit/pun'

<sup>8</sup> This does not mean that compound internal inflectional markers are completely out in English (cf. e.g. Selkirk 1982; Scalise 1986 and others for several examples). In fact, some English compounds show inflectional markers on the first element just like the German examples discussed here and similar to the German examples, these compounds show a clear interpretational effect. This is discussed further below.

(10b) Wörterbuch		German
word.pl + book		
‘dictionary’		

(10a) is the compound without inflectional material and, as expected, the interpretation for this compound is clearly drifted and without alternatives. The compound in (10b) on the other hand contains a plural marker on the first element and alongside the preferred interpretation of ‘dictionary’ alternative readings exist, e.g. ‘book that has words printed on its cover’. So far, the two compounds behave completely as expected. What is particularly noteworthy in this context though is the plural form. The word *Wort* in German has two different plural forms, listed in (11):

(11a) Wörter	(11b) Worte	German
word.pl	word.pl	
‘words’	‘words’	

In (11a) the plural is formed by umlauting and the inflectional suffix *-er*, while in (11b) the weak inflectional marker *-e* is attached to the root; this time without umlauting. As indicated by the English translations, both forms mark the plural for ‘word’. However, there is a slight but straightforward interpretational difference between the two plural forms. *Wörter* in (11a) refers to any loose assemblage of more than one word, *Worte* in contrast has the very specific meaning of words in a coherent piece of speech, i.e. it describes a meaningful utterance that consists of more than one word, e.g. a short statement. The following sentences further illustrate this contrast:

- (12a) An der Tafel stehen viele verschiedene Wörter  
‘There are many different words on the blackboard’
- (12b) An der Tafel stehen viele verschiedene Worte  
‘There are many different words on the blackboard’
  
- (13a) Seine Worte erregten viel Aufmerksamkeit  
‘His words caught a lot of attention’

(13b) Seine Wörter erregten viel Aufmerksamkeit

'His words caught a lot of attention'

When comparing (12) and (13) it is obvious that both plural forms of *Wort* can be used in both sentence pairs. The interpretations in the respective (a) and (b) sentences differ however. Let's start by looking at the example in (13) first. (13a) describes a situation in which the speaker's words caught attention, because what the speaker said was remarkable, e.g. the president's State of the Union address may have caught a lot of attention due to the fact that he openly criticized the Supreme Court ruling on campaign finance. In (13b), instead, the speaker's words caught attention not due to the meaningful utterance that they produced, but rather due to the nature and quality of the words themselves, e.g. due to the fact that the president used the words *Massachusetts* and *Norwotock* and showed some trouble in pronouncing them correctly.

The same distinction can be made for the sentences in (12a) and (12b). In (12a) the words on the blackboard need not stand in any meaningful relation to one another. Rather they are words that are listed, maybe just because they illustrate an interesting linguistic phenomenon. The words on the blackboard in (12b) instead need to convey a meaningful message and can refer to quotations from e.g. Emily Dickinson or Nathaniel Hawthorne. In any case, what the examples clearly demonstrate is that, as expected, in the compound *Wörterbuch* it is the plural meaning of 'words', illustrated in (11a), (12a) and (13b), that is used, instead of the plural meaning conveyed by the plural form in (11b), (12b) and (13a).<sup>9</sup> So, despite the fact that some plural forms may have a drifted and lexicalized meaning, this does not mean that they cannot be used for productive compounding in German.

Another interesting contrast between the two types of compounds discussed here is displayed by the examples in (14):

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<sup>9</sup> It might be of interest that in a small scale test among colleagues and friends who were prompted for a word for a book that contains words in the *Worte* sense of the word (no pun intended) the word *Wörterbuch* was volunteered in 12 out of 15 cases, which is somewhat unexpected due to the reasoning that the one *Worte* allegedly is deleted in compound formation, but is totally in line with what is expected from novel compound formation. Furthermore, schwa-deletion is not as robust as one might think. There are a number of cases, where schwa is present in nominal root compounds: *Gästezimmer*, *Hundeschule*, *Tagegeld*, *Läusemittel* *Früchtebrot* etc. For all of these compounds a preferred interpretation as well as alternative interpretations are available. Then again, there is a compound in which the schwa also is not deleted, but where no alternative interpretation seems to arise: *Mausefalle*. This is not surprising though, because here the schwa alone does not suffice for plural marking. This form also requires umlauting. This, however, is missing here, thus alternative interpretations are not expected to emerge.

(14a)	Glasdach	German
	glass + roof	
	‘glassroof’	
(14b)	Gläsertuch	German
	glass.pl + cloth	
	‘dishtowel’ <sup>10</sup>	

As is by now expected, the form in (14a) which lacks compound-internal inflectional markers is the one that does not allow for any alternative readings. The form in (14b), in turn, contains a plural marker on *Glas*, but has an interpretation that, *prima facie*, seems to be far more fixed and drifted than the interpretation in (14a). In this respect, the pattern here resembles the one in (7a) and (7b). And despite the apparent drift, just like in (7b), in (14b) several alternative readings are available. These alternatives need to be distinguished carefully though. For one, *Gläsertuch* can refer to a ‘cloth for wiping reading-glasses’. This interpretation is completely expected, given the facts in (15):

(15a)	Glas	(15b)	Gläser	German
	glass		glass.pl	
	‘glass’		‘(drinking/reading) glasses’	

The plural form of the German word *Glas* itself has a number of different interpretations, since it can refer to ‘reading glasses’ and ‘drinking glasses’ respectively and it should therefore not come as a surprise that both interpretations can also be used for productive and compositional compounding in (14b). Additionally, *Gläsertuch* can be interpreted as ‘a towel with a glass-imprint’, ‘a towel to wipe windows’, ‘a towel to wipe mirrors’ etc. So again, next to the preferred interpretation given in (14b), a large number of alternative readings is available. Interestingly, pluralization of the mass term *Glas* here does not only have an individuating effect (cf. Borer 2005a: 101-132; Alexiadou, Haegeman & Stavrou 2007: 229-235), instead also a variety interpretation for *Glas* emerges (cf. Chierechia

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<sup>10</sup> In fact, the meaning of the German word is more narrowly restricted than the English translation suggests. A *Gläsertuch* is a dishtowel for wiping glasses, a dishtowel for wiping dishes is a *Geschirrtuch* (*Geschirr* = dish) in German and for the extremely picayunish and philistine there is also a *Bestecktuch* (*Besteck* = cutlery) for wiping cutlery.

1998a, 1998b).<sup>11</sup> Under this variety reading the multiple interpretations for *Gläser* in the compound *Gläsertuch* can be accounted for.

A similar situation can be observed for English nominal root compounds. Roeper & Snyder (2005) and Roeper, Snyder & Hiramatsu (2002) argue that all nominal root compounds in English are compositional irrespective of the presence or absence of inflectional markers.<sup>12</sup> However, as already pointed out in Selkirk (1982), the presence of an inflectional marker may have an interpretational effect. The examples in (16) and (17) illustrate that, indeed, in English effects similar to those observed in German result:

- |                     |                      |
|---------------------|----------------------|
| (16a) arms race     | (16b) arm race       |
| arms cabinet        | arm cabinet          |
|                     |                      |
| (17a) chair factory | (17b) chairs factory |
| shoe sale           | shoes sale           |

The forms in (16a) contain an inflectional plural marker, just like the German forms discussed above. Similar to the plural forms of *Wort* in German, the plurals in (16a) have a lexicalized interpretation, which can be seen from the fact that in the preferred interpretation *arms* is interpreted as *weapons* in the examples. Hence, an *arms race* is ‘a competition between two nations in producing and displaying all sorts of weapons’, however, just as in the German cases, alternative readings are easily available, in which the word is interpreted as ‘a race in which the winner gets a weapon as a price’, ‘a race organized by supporters for or opponents to the Second Amendment’, etc. The same, of course, holds for *arms cabinet*, which can be interpreted as:

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<sup>11</sup> I will refrain from discussing the origin of these interpretational effects, i.e. whether they result from a separate functional projection as argued for by Ritter (1991), Borer (2005a) and Alexiadou (et al.) (2007) or from type coercion as supported in Chierechia (1998a, 1998b). The discussion on the derivation of the structures for the compounds presented here will shed some light on this and the reader is referred to the relevant subsections of chapter 2.3.5 for further analysis.

<sup>12</sup> Whether this really holds for all nominal root compound is open for debate and will be qualified to some extent in the discussion below. However, it is unquestionably true that compositional readings exist for compounds without inflectional markers. In fact, Tom Roeper (p.c.) points out that *home run* is a compound that does not have a compositional interpretation, as it does not relate to a run that is directed homewards but to a particular event in baseball instead. Although it might be somewhat unclear whether *home run* actually is a nominal root compound, another example, i.e. *catbird seat* is one (again thanks to Tom Roeper for pointing this one out to me) that clearly illustrates the point.

- (18a) a piece of furniture in which weapons are securely stored
- (18b) a piece of furniture that has weapons painted on it
- (18c) a cabinet that deals with questions on weapons
- (18d) etc....

What the readings in (18) illustrate is that, on the one hand, the fixed interpretation for *arms* as *weapons* is maintained in all of the examples, while at the same time, *cabinet* can be interpreted either as ‘a piece of furniture’ or as ‘an institutional body in government’, hence displaying flexibility similar to the two interpretations for *Gläser* in German as ‘drinking glasses’ and ‘reading glasses’.

The compounds in (16b), in contrast, cannot be interpreted as ‘having to do with weapons’. Whatever the interpretations for these novel compounds might be, they can only have the ‘arm as limb’ interpretation. So, in essence, just like in German lexicalized plural forms can be used for productive and compositional compound formation.

Furthermore, the examples in (17a) and (17b) suggest that English also allows for a variety interpretation of plural forms - comparable to the German cases in (14b).<sup>13</sup> The compounds *chair factory* and *shoe sale* are compositional and productive despite the fact that they do not contain any inflectional markers. In this respect they correspond to the analysis in Roeper Snyder & Hiramatsu 2002 and Roeper & Snyder 2005, according to which English compounds are compositional regardless of the presence or absence of inflectional material. The compounds in (17b) are plural marked, similar to the ones in (16a). The plural marker here though does not lead to a fixed and drifted interpretation, instead, a variety reading akin to the one in *Gläsertuch* arises. So, a *chairs factory* does not only produce one type of chair but a whole variety of different chairs (but possibly just one of a kind). The same holds for *shoes sale*. A very cursory google search reveals that *shoes sale* is found in many contexts in which certain very specific types of shoes are on sale, e.g. *kid's shoes sale*, *women's shoes sale*, *running shoes sale*, *Nike shoes sale*, etc. This underlines that the plural marker on *shoes* indeed has the effect of a variety interpretation in English compounds that corresponds to the one observed for the German compounds

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<sup>13</sup> And this seems to be a fairly regular pattern: claims procedure, games code, stakes regulation, books fair, shirts imprint, shells collection, cars dealer, nails studio, implants trade, ....

above.

So far, the discussion mainly centered around the productivity and compositionality aspects of nominal root compounds in German and English. For the remainder of this chapter, I will now turn to the third characteristic identified for Germanic compounds (in contrast to Romance compounds) that is carefully reexamined here: recursivity. German is notoriously described as a language that allows for monstrous recursive compounds. One of these is<sup>14</sup>:

- |                                          |        |
|------------------------------------------|--------|
| (19)    Donaudampfschiffahrtgesellschaft | German |
| Danube-steam-ship-trip-company           |        |
| ‘danube steamship company’               |        |

However, the apparent recursivity in this compound needs to be dialed back a little. Hollebrandse, Hobbs, de Villiers & Roeper (2008: 269-270) and Roeper & Hollebrandse (*forthcoming*), argue for a distinction between true recursion, which results only from second order embedding and other forms of apparently recursive operations. In particular they point out that first order embedding need not be the result of recursion but can be achieved by other means in the grammar. Thus, a distinction needs to be made between true recursion which is indirect and iteration which is direct repetition of a category. In this light the example in (19) turns out to be a case of iteration rather than recursion, since it does not include any second order embedding but a N-N-N-... structure<sup>15</sup> instead.

Closer inspection of the compound in (19) (and the one in (i) in footnote 14 for that

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<sup>14</sup> It is hereby acknowledged that longer versions of this game can be played, such as the one in (i):

- (i)    Donaudampfschiffahrtgesellschaftskapitänsuniformknopfloch  
      danube-steam-ship-trip-company.LE-captain.gen-uniform-button-whole  
      ‘button hole of the uniform of the captain of the danube steamship company’

I will refrain from discussing this structure, because for the point to be made the example in (19) is absolutely sufficient. Apart from the genitive marker on *Kapitän* none of the compound elements is inflected, and the interpretation for this compound is fixed. Note also, that the linking element on *Gesellschaft* does not contribute alternative readings in the way inflectional markers contribute to the compositionality of the compounds discussed above.

<sup>15</sup> Whether this is really a N + N structure is still to be discussed. What is without question though is that there is no second order embedding and that the compound in (19) is a case of direct embedding and strict iteration that can be achieved by means other than recursion. In effect, then, the -e in *Mausefalle* is a pure LE, while in the other cases it is a plural marker. Notice further, that the LE -e occurs in other places as well. Specifically, it surfaces in VN compounds of the type *Ratespiel*, *Landebahn*, *Bergepanzer* etc.

matter) also reveals that this compound is not productive and compositional in the sense discussed above. Hence, here no alternative interpretations are available, which is completely unexpected, given that the combination of just two elements already provides for a large number of alternative readings, as has been illustrated in great detail in the discussion above. The same applies to the compound in (20), which at first sight might also be regarded as an instance of recursive compounding:

(20)	Kindbettfieber	German
	child + bed + fever	
	‘childbedfever’	

In this compound three elements are combined and again it seems only reasonable to expect various interpretational possibilities here, however, none of the elements in the compound is inflected. This is what leads to a lack of alternative interpretations and at the same time also to a lack of recursivity. This lack of recursivity can immediately be explained by the form in (21)

(21)	Kindbett	German
	child + bed	
	‘childbed’	

The noun *childbed* or its German equivalent *Kindbett* is a compound that consists of two elements that are combined without any intervening material. So, according to the discussion above, it is expected that this compound has just one interpretation that is somewhat drifted. This is borne out here. No alternatives are available and the meaning of the word is definitely fixed. As such, the word is stored in the lexicon from where it can be retrieved for further compounding as in (20). The lexicalized meaning of the compound in (21) is, however, retained then and the new compound is again formed by a process of first order embedding.

The forms in (22) illustrate the derivation, in which the presence of inflectional plural markers provides for alternative readings:

- (22a) Kinderbett German  
 child.pl + bed  
 ‘crib’ or  
 ‘bed that children sleep in’ or  
 ‘bed with a kid’s motif’ etc., but:  
 \*“childbed”
- (22b) Kindergarten German  
 child.pl + garden  
 ‘kindergarten’ or  
 ‘garden for children’ or  
 ‘small garden’ or  
 ‘garden maintained by children’ etc.

Here a number of different interpretations are available alongside the preferred interpretation, which is listed as the first translational equivalent in (22a) and (22b). Significantly, the presence of inflectional material once again makes alternatives retrievable, but to the exclusion of the drifted interpretation of the compound in (21), which differs from (22a) only with respect to the lack of a plural marker on *Kind*.

The question that now emerges is whether the compounds in (22) are recursive. Given the definition of recursivity in Hollebrandse, Hobbs, de Villiers & Roeper (2008) and Roeper & Hollebrandse (*forthcoming*) the answer is: maybe. Since first order embedding need not necessarily be the result of recursion but can derive from other processes, it is not so clear, whether these examples fall under this rubric or not. To illustrate this further, consider the compound in (23):

- (23) Kindergartenstuhl German  
 child.pl + garden + chair  
 ‘chair in a kindergarten’ or  
 ‘gardenchair for children’ or  
 ‘small gardenchair’ or  
 ‘gardenchair frequented by children’ etc.

This compound shows the interpretational flexibility discussed so far for compositional and productive compounds. However, this apparent flexibility is severely restricted and centers around two readings. The first one is the one listed in (23) as ‘chair in a kindergarten’, where *Kindergarten* is interpreted in the same way as in English. This is, as indicated in (22b), the preferred but clearly lexicalized interpretation for this compound. As such, the lexicalized interpretation is stored in the lexicon and it is thereby accessible for further combinations of the N + N type. Hence, for this first translation the lexicalized element *Kindergarten* and the lexical item *Stuhl* are taken from the lexicon and are combined without the addition of any further material.

The other interpretations listed for *Kindergartenstuhl* in (23) differ from the one discussed above in so far as here the lexicalized interpretation of *Kindergarten* is not available. Nor is any of the other alternatives listed in (22b) accessible. This can be explained straightforwardly by the fact that this compound is not recursive. Instead, the lexicalized compound *Gartenstuhl* ‘garden chair’ that does not contain any inflectional markers is combined with the plural marked form *Kinder*. Interestingly, in this context many of the alternative interpretations that have been identified for *Kindergarten* in the ‘garden of/for kids’ reading’ here emerge with a ‘garden chair of/for kids’ interpretation, as can easily be seen when comparing the interpretations listed for (22b) to those listed for (23). So, the productivity and compositionality generated by the plural marker on *Kind* generates interpretational variants in both cases. However, neither interpretation of *Kindergartenstuhl* is recursive; and compositional interpretations, which are available for *Kindergarten* alone, cannot be generated in this compound, simply due to the fact that this would leave the lexical item *Stuhl* were it combined with the uninflected form of *Garten* hanging in the air, unless it is interpreted with the fixed meaning of ‘garden chair’.<sup>16</sup>

In sum, the compound in (23) is compositional and productive in exactly those places where this is expected, i.e. where the inflectional marker occurs. It is not recursive in the sense of Hollebrandse, Hobbs, de Villiers & Roeper (2008) and Roeper &

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<sup>16</sup> Some speakers report intonational variation depending on whether the first or the second interpretation is intended. So, for the ‘chair in a kindergarten’ interpretation the main stress is on *Kinder* while for the alternative interpretation it is on *Garten*. Unfortunately, not all speakers confirm to this judgement. To the extent that this is a robust pattern, it provides further evidence for the availability of alternative interpretations exactly along the lines predicted here. Main stress falls on the first item in fixed compounds, while productive compounds with inflectional markers are characterized by level stress on both items. Hence, it is only natural that *Garten* in *Gartenstuhl* attracts main stress, while *Kinder* in *Kindergarten* receives the main stress in the other interpretation.

Hollebrandse (*forthcoming*) though, because there is no second order embedding. Hence, despite what looks like recursive compounding in German, there are actually a number of cases that do not fall under this heading. Some further cases are illustrated in (24):

- |                               |        |
|-------------------------------|--------|
| (24a) Haustürschlüssel        | German |
| house + door + key            |        |
| ‘latch key’                   |        |
| (24b) Salzbergwerk            | German |
| salt + mountain + manufacture |        |
| ‘salt mine’                   |        |
| (24c) Plastikspielzeugauto    | German |
| plastic + toy + car           |        |
| ‘plastic toycar’              |        |
| (24d) Fensterbankpolster      | German |
| window + bench + upholstery   |        |
| ‘upholstery for window sill’  |        |

All of these compounds consist of three lexical items. But due to the lack of inflectional markers these compounds all have a fixed interpretation and none of them is recursive in the sense of Hollebrandse, Hobbs, de Villiers & Roeper (2008) and Roeper & Hollebrandse (*forthcoming*). In fact, for all compounds smaller compounds consisting of just two lexical items can be identified. In those cases where mild variation in interpretation is possible, e.g. in (24c) which can be interpreted either as ‘a plastic toy which is a car’ or as ‘toy car which is made of plastic’, this results from the fact that both compounds exist in the lexicon, as can be seen from the examples in (24’):

- |                        |        |
|------------------------|--------|
| (24a’) Haustür         | German |
| house + door           |        |
| ‘frontdoor’            |        |
| (24b’) Bergwerk        | German |
| mountain + manufacture |        |
| ‘mine/pit’             |        |

(24c')	Plastikspielzeug	Spielzeugauto	German
	plastic + toy	toy + car	
	‘plastic toy’	‘toycar’	
(24d')	Fensterbank	Bankpolster	German
	window + bench	‘bench + upholstery’	
	‘windowsill’	‘upholstery for bench’	

So it is not the case that the compound in (24c) is compositional and allows for a number of alternative interpretations despite the fact that it does not contain an inflectional marker. This compound does not provide counterevidence to the pattern discussed here. In fact, it is completely in line with this pattern in that interpretational variation is strictly limited to those two variants that result from the two different inputs illustrated in (24c'). And due to the fact that there is no second order embedding, these compounds are not recursive either. In the derivation of all of these compounds exactly two lexical items are combined from the lexicon without any intervening material.

The compounds in (25), instead, are productive, recursive and compositional:

(25a)	Kindertassenmotiv	German
	child.pl + cup.pl + motif	
	‘motif on a cup designed for children’ or	
	‘photography of kid’s cups’ or	
	‘kid’s photography on a cup’ or	
	‘cup motif designed by children’ etc.	
(25b)	Sonnenbrillentuch	German
	sun.pl + (reading) glasses.pl + cloth	
	‘cloth for wiping sunglasses’ or	
	‘cloth for wiping glasses with a sun-imprint’ or	
	‘cloth with a sun and glasses imprint’ or	
	‘cloth with a sunglasses imprint’ or	
	‘cloth with a glasses imprint where the glasses are shaped like suns’ etc.	
(25c)	Straßenschilderwand	
	street.pl + sign.pl + wall	

- ‘wall constructed of streetsigns’ or
- ‘wall constructed of signs with pictures of streets’ or
- ‘wall constructed of pictures of streets and of signs’ or
- ‘wall constructed of various types of streetsigns’ etc.

All of the compounds in (25) have a preferred interpretation, but they allow for a substantial number of alternative interpretations. Since they all have inflectional markers on the compound internal lexical items, this is completely in line with the observations discussed so far. Just like the compounds in (24), those listed in (25) also consist of compounds listed in the lexicon with a preferred interpretation. Hence, the compound *Sonnenbrille* is probably listed with the interpretation of ‘sunglasses’. The alternative interpretation of ‘reading glasses where the lenses are mounted in sun-shaped frames’ is probably not lexicalized and not listed in the lexicon, but as can be seen in (25) it is still available in the compound *Sonnenbrillentuch*. Notably, this was not the case in (23), where the interpretation of *Kindergarten* as e.g. ‘garden for children’ is not accessible, due to the lack of an inflectional marker on *Garten*.<sup>17</sup> Hence, only in those cases where all compound internal lexical items are inflected, compositional and productive readings are available and since the interpretation of *Sonnenbrille* as described above is not listed in the lexicon, it can be concluded safely that the compounds in (25) are also recursive, because they involve clear cases of second order embedding.

Let me close this section by pointing out one more thing: most of the inflectional markers on the compounds discussed in this section have been analyzed and glossed as plural markers. Only on some of the German compounds in (3) and on the forms in (5b) and (5c) as well as on the form (i) in footnote fourteen, the inflectional marker identified is not a plural but a genitive form. Although genitives seem to be somewhat less frequent than plurals, the function of the genitives seems to be the same. As long as the inflectional marker is present a compositional reading is recoverable and remains available under second order embedding. Some further examples for compounds with genitive markers

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<sup>17</sup> To make this even more clear: the moment the lexical item *Garten* is inflected as in (i), the interpretation of ‘a chair to be found in a garden for kids’ is available, among other interpretations going in the same direction.

(i)      Kindergartenstuhl  
child.pl + garden.pl + chair

that can be interpreted compositionally and that allow for a whole range of alternative readings are provided in (26):

- |                                                  |        |
|--------------------------------------------------|--------|
| (26a) Manneskraft                                | German |
| man.gen + power                                  |        |
| ‘potency’ or ‘manpower’, etc.                    |        |
| (26b) Mannsbild                                  | German |
| man.gen + picture                                |        |
| ‘hunk’ or ‘picture of a man’, etc.               |        |
| (26c) Sportsfreund                               | German |
| sport.gen + friend                               |        |
| ‘old sport’ or ‘friend/supporter of sports’ etc. |        |
| (26d) Bauersfrau                                 | German |
| farmer.gen + woman                               |        |
| ‘farmer’s wife’ or ‘female farmer’ or            |        |
| ‘female who behaves like a farmer’ etc.          |        |
| (26e) Meeresspiegel                              | German |
| ocean.gen + mirror                               |        |
| ‘sea level’ or ‘surface of the ocean’ etc.       |        |

As the examples illustrate, genitive markers on the lexical items inside the compound have roughly the same effect that can also be observed for plural markers. Not even the particular form of the genitive matters, as was illustrated for the two forms in (5b) and (5c) already and is reiterated here for the forms in (26a) and (26b). We will therefore refrain from further distinction between plural and genitive markers and also among possible forms of genitive markers, at least for the time being. Both markers have the same interpretational effects and at times they even seem to coexist without any detectable difference in meaning:

- |                         |                         |        |
|-------------------------|-------------------------|--------|
| (27a) Amtsgang          | (27b) Ämtergang         | German |
| office.gen + walk       | office.pl + walk        |        |
| ‘official procedure’ or | ‘official procedure’ or |        |

'hallway in an institution' etc.      'hallway in an institution' etc.

‘hallway in an institution’ etc.

My informants report that both versions work equally well for most of them - with both interpretations. Some even get additional readings for both or just one of the forms in (27). In any case there does not seem to be any reliably noticeable difference between the use of a genitive or a plural marker. It is quite striking though that no other inflectional markers can occur. For instance, no other case markers occur. Albeit, it should at least be mentioned that in German all nominative and genitive plural forms are syncretic.<sup>18, 19</sup> Hence, there is at least the possibility that the plural marked forms are also marked for genitive at the same time.<sup>20</sup> And in fact, it is interesting to note that the prepositions found in prepositional compound constructions in Romance are but a marker of genitive case as well.

- (28a) étoile de mer (French)  
star of.gen sea  
'starfish'

(28b) estrella de mar (Spanish)  
star of.gen sea  
'starfish'

(28c) stella di mare (Italian)

<sup>18</sup> Cases that are somewhat reminiscent of what is described here can be found in other places of the grammar as well. In adverbials like *morgens*, *abends*, *mittags* ('in the morning, in the evening, at noon') etc. an *-s* morpheme occurs and despite its seemingly genitive character that is immediately apparent in slightly archaic forms like *des Morgens* (the.gen morning.gen 'in the morning'), *des Abends* (the.gen evening.gen 'in the evening') etc. there is some indication that the morpheme is (re)interpreted more and more frequently as a plural marker. One indication for this is the repetitive semantics of the adverbials, further indication is that the determiner cannot occur in forms like *von morgens bis abends* ('from morning to night') as is evident from the ungrammaticality of *\*von des morgens bis des abends* ('from the.gen morning.gen to the.gen evening.gen').

Similarly dialectal forms like *Müllers Thomas* (referring to the person of the *Müller* family whose first name is *Thomas*) are forms in which it is not clear whether the *-s* on *Müllers* indicates genitive case or plural (or both).

<sup>19</sup> Further evidence arguably comes from Romance. Longobardi (1996; 2001b) argues that certain N - N constructions in present-day Italian, French and Ibero-Romance languages can be traced back to constructions in Old Italian, Old French etc. that are related to the present day Semitic construct-state constructions and that now contain a non-overt genitive pronoun (which he identified as *Pro* - distinct from both PRO and pro). Thus, here as well, seemingly Nominative marked constituents actually bear genitive Case.

<sup>20</sup> This is merely an observational statement at this point, but we will return to it in the following sections of this chapter where arguments in favor of identifying just these two inflectional markers will be provided.

star of.gen sea

‘starfish’

If anything, this can be taken as an indication that the German plural forms are genitive marked forms too.<sup>21</sup>

The other possibility that is frequently pursued in the literature is to say that what is identified as an inflectional marker here is merely a linking element that is inserted for phonological reasons (cf. e.g. Bauer 2004: 57; Mukai 2004; Delfitto, Fábregas & Melloni 2008; and others). This seems unreasonable for a number of reasons. First, it begs the question why two or three forms are available as linkers (as e.g. in (5a) - (5d), (26a) and (26b) and the forms in (27)) and what determines the choice of the linker. Nor does it explain why those compounds that contain a would-be-linker display exactly the interpretational variability that those that lack the linker do not display and why at the same time those compounds that contain true linkers such as those in (29), where the marker on the first lexical item cannot be identified as a genitive or a plural, do not display any interpretational variability either:

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<sup>21</sup> There are, of course, a number of other prepositions that are used in nominal compounding across Romance languages, however, even if they are not markers of genitive case, they may still be compatible with the analysis here, as long as they do not mark structural case (cf. discussion in chapter 2.3.5). Notice also, that the correlation between compositional readings of prepositional compounds and non-compositional readings of root compounds in Romance is far from perfect, however, again reminiscent of the German and English forms discussed before, as long as the (non-structural) case marking preposition is present, it is possible to recover a compositional interpretation:

(i)	cul-de-sac bottom of.gen bag ‘cul de sac’ or ‘bottom of a bag’	(French)
(ii)	dent de lion tooth of.gen lion ‘dandelion’ or ‘tooth of a lion’	(French)
(iii)	eau de vie water of.gen life ‘spirits’ or ‘water of life’	(French)
(iv)	esprit de bois spirit of.gen wood ‘methanol’ or ‘spirit of the wood’	(French)
(v)	langue de chat tounge of.gen cat ‘ladybiscuit’ or ‘tongue of a cat’	(French)
(vi)	mont de piété mountain of.gen piety ‘pawnshop’ or ‘mountain of piety’	(French)
(vii)	pot de vin pot of.gen wine ‘bribe’ or ‘pot of wine’	(French)

(29a)	Liebesbrief	(29b)	Ansichtssache	German
	love + LE + letter		view + LE + thing	
	'love letter'		'matter of opinion'	
(29c)	Schönheitsideal	(29d)	Gesellschaftsvertrag	German
	beauty + LE + ideal		company + LE + agreement	
	'beauty ideal'		'bylaws'	

The *-s* in the forms in (29) is neither a plural marker nor a genitive marker. The table in (30) shows that nominative and genitive forms are syncretic for the lexical items in (29) and that the plural is not formed with an *-s* inflection. Hence, - since the *-s* does not correspond to any other inflectional marker either - it is thus identified as a true linker.<sup>22</sup>

(30)	Nominative	Genitive	Plural
	Liebe	Liebe	---/Lieben <sup>23</sup>
	Ansicht	Ansicht	Ansichten
	Schönheit	Schönheit	Schönheiten
	Gesellschaft	Gesellschaft	Gesellschaften

So, in summary, it can be said that German patterns with English in that it allows for productive, compositional and recursive nominal root compounding. However, a distinction needs to be made between two different patterns of compounding in German. In one pattern two bare lexical items are combined without any additional inflectional material. These compounds are non-recursive, since they do not involve any second order embedding, non-compositional and non-productive. In fact, creatively using or forming these compounds comes much closer to a deliberate act of coinage, just like in Romance, than to productive word-formation so typical of Germanic languages.

The other pattern is one in which inflectional material occurs in compound internal

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<sup>22</sup> Notice that this makes the *-s* the sole linker. All other so called linking elements can be reanalyzed as genitive or plural forms. The purpose of this linking *-s* then is to keep the two roots that participate in the compounding process separate. Thus, the *-s* marks a word boundary that prevents e.g. resyllabification or the application of other phonological rules that operate word internally. Many thanks to Cecilia Poletto for pointing this out to me.

<sup>23</sup> *Liebe* is, of course, a mass term. When it is individuated, however, the plural marker is not the *-s* neither.

positions. The two inflectional markers identified are plural and genitive markers. Wherever these markers occur, the resulting compound is compositional and productive and allows for a whole range of different interpretations typically identified for Germanic languages. Additionally, in those cases where more than just two lexical items occur inside the compound and each of them bears an inflectional marker, the resulting compound is also recursive and the variability in potentially available interpretations does not get lost under second order embedding. However, this does not mean that a compositional interpretation is forced. It only means that such an interpretation is recoverable, which is not the case in those compounds in which no inflection occurs.

Further, English, although in general not dependent on the presence or absence of inflectional markers inside the compound, shows similar patterns. Compositional readings may get lost when inflectional markers are lost in certain forms and in compounds the presence of a plural marker leads to a variety interpretation similar to the one observed in German compounds with plural markers.

The question that emerges from these observations is how the two patterns of compounding are derived and what in the derivation of these two types of compounds accounts for the observed differences. These matters are addressed in the next sections of this chapter. It is argued that both types of compounds are syntactically derived, however, only one of these two types of compounds involves a Phase, which leads to the interpretational effects observed here. On the basis of this, an account, that is in line with the SMT and that, without any further stipulations, derives the differences outlined here is discussed and defended.

### **2.3 Analyzing Nominal Root Compounds**

The data presented in the preceding chapter give reasonable rise to doubt that nominal root compounding is parameterized across languages (or language families to be more precise) in the way frequently described in the literature. In fact, it seems much more plausible to assume that a concise analysis should allow for capturing the inter-language variation observed for the German data and for the intra-language variation described elsewhere. Such an analysis is presented here drawing on previous analyses suggested in the literature and reconciling important observations made there with current minimalist theorizing.

### 2.3.1 The Root Compounding Parameter and the Abstract Clitic Hypothesis

In order to derive the difference between the Romance pattern of nominal root compounding and the Germanic pattern, Roeper, Snyder & Hiramatsu (2002: 3) and Roeper & Snyder (2005: 160) argue for a morphological parameter. Depending on the settings for this parameter a language either allows or disallows Merge to create SOs with the status of complex words. Exactly in those languages that allow for productive and compositional root compounding Merge can create such a SO. Hence, Roeper, Snyder & Hiramatsu (2002:3) postulate the following marked morphological parameter for languages of the Germanic type:<sup>24</sup>,<sup>25</sup>

- (31) Root compounding parameter (RCP)  
[M]erger can combine non-maximal projections

Languages of the Romance type are specified by having a negative (or default) setting for this parameter. In consequence, Merge here cannot create a SO resulting from the Merger of two heads. Roeper, Snyder & Hiramatsu (2002: 3-4) further observe that French and English not only pattern distinctively with respect to root compounding. Building on research from language acquisition in (among others) Snyder (1995); Snyder & Stromswold (1997); Miyoshi (1999); Slabakova (1999); Sugisaki & Isobe (2000) they conclude that what is observed for the RCP is in fact the manifestation of a more abstract parameter. Since languages that allow for nominal root compounding also allow for verb-NP-particle constructions, causative constructions, resultative constructions, double object constructions, locative constructions, middle constructions, null-P constructions, bare N/V idioms and perceptual constructions Roeper, Snyder & Hiramatsu (2002:4) and Roeper & Snyder 2005: 161) argue that this can be accounted for by the same parameter setting that

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<sup>24</sup> Roeper, Snyder & Hiramatsu (2002) refine their assumptions more narrowly to Set-Merge and contrast this with Pair-Merge. However, as the discussion in chapter 1.2 has shown, the distinction between Set-Merge and Pair-Merge needs to be rethought. Additionally, they assume that FLN can reliably make a distinction between maximal projections and non-maximal projections which are heads. This begs the question of whether this distinction is made in rigid or relational terms (cf. e.g. Hornstein, Nunes & Grohman 2006 for discussion). So, neither of these assumptions is entirely unproblematic and both will be discussed extensively in the analysis later on in this chapter, which is why I will refrain from a more detailed discussion of the implications of Roeper (et al.)'s assumptions here.

<sup>25</sup> For an early version of this parameter cf. Snyder (1995: 27).

makes root compounding possible:<sup>26</sup>

- (32) Jack brought the vote out (verb-NP-particle construction)
- (33) Jack made Ted give a speech (causative construction)
- (34) Jack hammered the metal flat (resultative construction)
- (35) Jack gave Vicki the flowers (double object construction)
- (36) Jack put the flowers in the vase (locative construction)
- (37) this candidate resonates well (middle construction)
- (38) Jack jumped (over) the fence (null-P construction)
- (39) Jack payed attention (bare N/V idiom)
- (40) Jack saw Ted dodge (perceptual construction)

If true, and the RCP is a parameter that accounts for the availability or non-availability of all of the above mentioned constructions in a particular language, then this is a very strong macro-parameter.<sup>27</sup> What is striking about the constructions in (32) - (40) though is that (maybe to the exception of middles) all of these are rightward building, while nominal root compounds arguably are leftward building (cf. Roeper, Snyder & Hiramatsu 2002: 4).

In order to uniformly account for the leftward and rightward building structures Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005) relate the RCP to the Abstract Clitic Hypothesis (ACH) discussed in Keyser & Roeper (1992). In the original analysis Keyser & Roeper argue that the ACH refers to a position immediately adjacent to the verb that is universally available for all verbs in English. In this position particles and other very specific markers can be merged:<sup>28</sup>

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<sup>26</sup> The examples are constructed in analogy to those provided in the literature indicated above.

<sup>27</sup> In fact, the directionality of the parameter is not so clear. In Synder (1995: 25; 1995: 29) the parameter is presented as a bi-directional parameter, according to which the presence vs. absence of nominal root compounding and the constructions listed in (32) to (40) goes hand in hand. In Roeper, Snyder Hiramatsu (2002: 4) on the other hand, the availability of the constructions in (32) to (40) is described as being sufficient for the availability of nominal root compounding. In Roeper & Snyder (2005) in turn the availability of the constructions in (32) to (40) seems to be a necessary condition for the availability of nominal root compounding.

<sup>28</sup> For a very careful and detailed exposition of what these other very specific markers may be, the reader is referred to the original paper. Covering the details of this analysis is orthogonal to the discussion here and will therefore be ignored.

(41) Abstract Clitic Hypothesis (ACH)

All verbs in English have an invisible Clitic position that may be occupied by particles (or other designated markers)

[adapted from Keyser & Roeper 1992: 91]

It is this position that allows Keyser & Roeper (1992) to account for structures of the following type:

- (42a) John wrote the paper up
- (42b) John wrote up the paper
- (42c) John rewrote the paper
- (42d) \*John rewrote up the paper

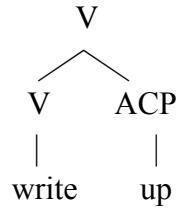
According to the ACH all English verbs have an invisible clitic position. Thus, *write* by virtue of being a verb of English also has an abstract clitic position (ACP). This position is immediately adjacent to the verb and can be filled, i.e. made visible, by non-maximal projections only (cf. Keyser & Roeper 1992: 91ff.). Hence, the particle *up* in (42a) and (42b) is merged in this position.<sup>29</sup> In the same vein, in (42c) the prefix *re-* is merged in the ACP and then moved to the left by a rule of compounding that is not specified any further (cf. ibid: 100-104).<sup>30</sup> This explains the ungrammaticality of (42d), because here the ACP is filled by *re-* as in (42c), with subsequent leftward movement. As a consequence insertion of the particle *up* is blocked. The structure that Keyser & Roeper (1992) suggest is the following:

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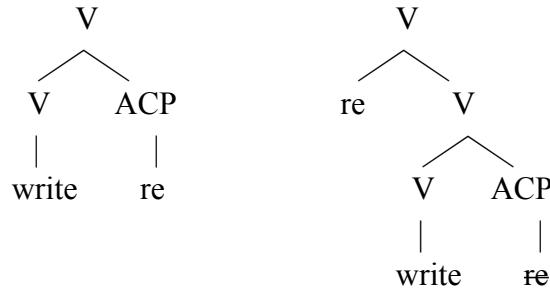
<sup>29</sup> The difference between (42a) and (42b) results from verb movement. In (42a) only the verb moves to a higher V head, while in (42b) the verb-particle complex, i.e. verb + particle in ACP move. For the details of this analysis cf. Roeper & Keyser (1992: 110-111). For an alternative analysis cf. chapter 4.

<sup>30</sup> Roeper, Snyder & Hiramatsu (2002: 5) only remark that this type of movement is in line with standard assumptions on movement, since it is an instance of leftward movement that preserves the Spec-Head-Comp structure in so far as movement from the ACP to the left resembles Comp-to-Spec movement.

(43)



(44)



Crucially, Keyser & Roeper (1992: 103) remark that LIs inserted in the ACP do not have the status of arguments. Hence, following the assumptions in Lasnik & Saito (1984) that non-argument traces are deletable, it is possible to reuse the ACP when inserting material of the same type<sup>31</sup>. This derives the form in (45) simply by merging another instance of *re-* in the same position:

(45) rerewrite

What is not possible though are multiple insertions of LIs into the ACP that are specified for different categories, which again explains the unavailability of the form in (42d). Since the prefix *re-* and the particle *up* are specified for different categories, they cannot both be inserted into the ACP, despite the fact that multiple insertion is possible in principle and despite the fact that in principle all sorts of categories can be inserted into the ACP (cf.

<sup>31</sup> Roeper & Snyder (2005: 156) use this as a crucial criterion for distinguishing nominal root compounds from synthetic compounds. In the synthetic compound *pen-holder* in which *pen* is generated in a position that is immediately adjacent to *hold* and thus in a position quite similar to the ACP, but also reminiscent of the First Sister Position of Roeper & Siegel movement of *pen* to the left of *hold* leaves behind a non-deletable trace, because *pen* is an argument of *hold*. The nominalizer *-er* is generated on top of the verbal complex, which in turn incorporates onto the nominalizer. So the structure is the following:

(i) [v pen [v hold] [<sub>N</sub> ~~pen~~]]] → [<sub>N</sub> pen hold [<sub>N</sub> er [v ~~pen~~ hold]]]

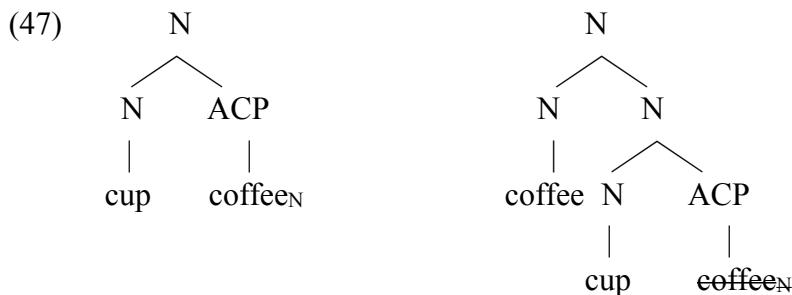
Harley (2004, 2009) arrives at basically the same structures but on the basis of somewhat different assumptions.

Roeper, Snyder & Hiramatsu 2002: 5):<sup>32</sup>

- (46a) stand firm V-A
- (46b) stand trial V-N
- (46c) stand out V-P

In sum, the ACP is characterized as a position immediately adjacent to the verb that is not an argument position and that can host heads only. In principle, the ACP can host heads of all sorts of categories, but once specified for one given category, it is not possible to insert LIs of distinct categories although it is possible to multiply insert LIs of the same category - provided that they move out of the ACP.

Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005) extend the availability of an ACP from verbs to nouns (and potentially all lexical categories) and argue that this is the position where the RCP is manifest. Hence, in nominal root compounding the ACP of nouns is filled by other nouns and the structure for the compound noun *coffee cup* is as follows (cf. Roeper & Snyder 2005: 154) :



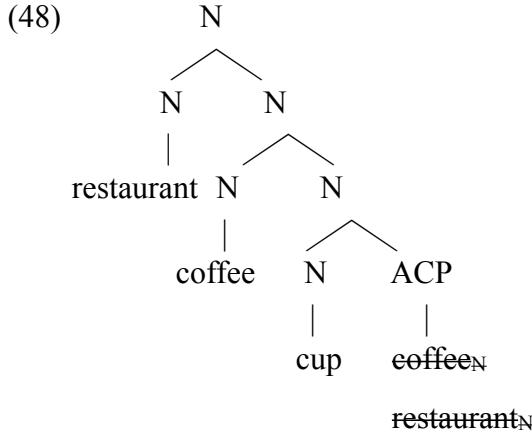
The noun *coffee* fulfills all requirements of the ACP. It is a head that is not an argument of *cup*, and - similar to the operation that triggers movement of *re-* in (42c) and (44) - movement of *coffee* is triggered here. Since the noun in the ACP does not have argument status, it is also expected that it is possible to insert further LIs of the same category into the ACP, as long as they are also moved leftwards. This is indeed the case and it is what

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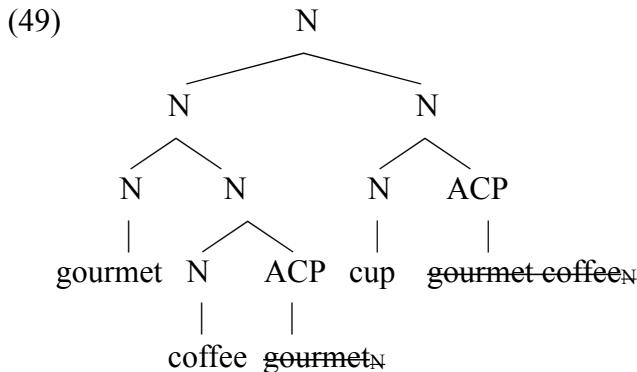
<sup>32</sup> Roeper, Snyder & Hiramatsu (2002: 5) additionally point out that all of these categories can be moved to the left, as is in general expected of elements inserted in this position:

- (i) out-standing
- (ii) firm-standing
- (iii) trial-standing

derives the recursivity property of English nominal root compounds (cf. Roeper, Snyder & Hiramatsu 2002: 7):



Alternatively, the ACP can host complex heads, which allows Roeper & Snyder (2005) to derive the following structure for the compound *[[gourmet coffee] cup]* (cf. ibid: 155):



In this case first the compound *gourmet coffee* is derived by inserting *gourmet* into the ACP of *coffee* and subsequently moving it leftwards. This compound, which is a complex head is then inserted into the ACP of *cup* from where it is once again moved leftwards, thus generating the structure shown in (49).

Thus, relating the RCP to the ACH allows for an explanation why in English nominal root compounds are compositional, productive and recursive. Since Romance languages have a different parameter setting for the RCP, compounding via an ACP is not an option in these languages. Indeed, Roeper & Snyder (2005: 159) argue that compounding in Romance is a lexical rather than a syntactic process.

Roeper & Snyder (2005: 160) further argue that since the parameter is specified as a default in Romance (and many other languages of the world) what leads to a deviance from the default parameter setting is evidence in the input of the learner. The decisive input here are recursive nominal root compounds. Simple N + N compounding can also be found in Romance (cf. examples in (2) repeated here), and thus is not evidence enough for a different parameter setting:<sup>33</sup>

- |     |          |                  |
|-----|----------|------------------|
| (2) | French:  | homme grenouille |
|     | Spanish: | hombre rana      |
|     | Italian: | uomo rana        |

Roeper & Snyder (2002: 2-3) extend this reasoning to the question why learners of English do not acquire serial verb patterns despite apparent counter-evidence and argue that here it is also recursion that provides the key clue. English does not have recursive serial verb constructions and thus does not provide sufficient evidence for a change in the parameter settings.

Roeper & Snyder (2005: 157-158) derive further evidence for a parameter associated with the ACP from the fact that Swedish, like other Germanic languages, allows recursive and productive nominal root compounding, but only for non-branching heads. Hence, in Swedish only root compounds of the type illustrated in (48) for English can be formed. Inserting complex heads into the ACP, as illustrated in (49) for English, is not an option in this language. This is why the root compounds in (4b) in contrast to those in (4a), repeated here for convenience, require a compound internal LE:

- |      |                          |      |      |         |       |        |         |
|------|--------------------------|------|------|---------|-------|--------|---------|
| (4a) | barn                     | bok  | klub | Swedish |       |        |         |
|      | child                    | book | club |         |       |        |         |
|      | 'book club for children' |      |      |         |       |        |         |
| (4b) | barn                     | boks | klub | foot    | balls | domare | Swedish |

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<sup>33</sup> Notice that this reasoning indeed strongly suggests that the directionality of the parameter is along the lines of '*if* a language exhibits nominal root compounding *then* this language also exhibits verb-particle constructions, middles, etc.'. Only the input of recursive composition will unveil the positive setting of the RCP and with it the availability of the constructions in (32) to (40).

child book-LE club  
 ‘children’s book club’

foot ball-LE referee  
 ‘soccer referee’

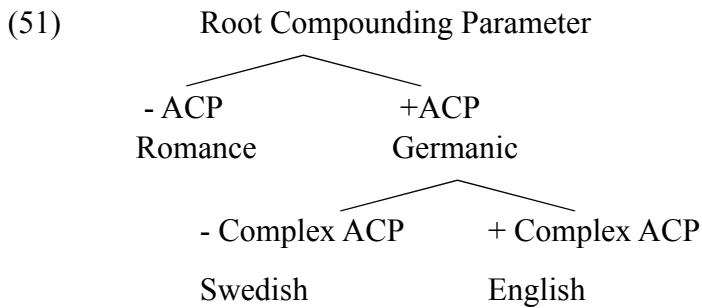
This suggests that at least for languages of the Germanic language family the RCP in (31) should be reformulated along the lines of (50) (cf. also Roeper & Snyder 2002: 8):

(50) Root compounding parameter (Germanic reformulated)

The language {does/does not} permit branching non-maximal constituents to occupy the ACP

The parameter-setting for Swedish then is the negative or default setting, whereas for English the parameter is set positively. Unfortunately Roeper & Snyder (2005) do not comment on the trigger for the parameter switch, but it is clear from the discussion of the Swedish examples above as well as from the way that the parameter is phrased in (50) that the crucial evidence cannot be recursive embedding alone. The child must furthermore listen for recursive embedding of complex yet non-maximal structures.<sup>34</sup>

This parameter-setting is summarized in (51) below:



The question that now emerges is how the German compounds described in section 2.2 fit into this analysis. This question is addressed in the next section.

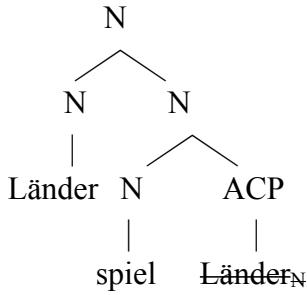
### 2.3.2 Towards an Analysis of the German Data

Bauke (2009) argues that given the analysis presented in Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005) it is expected that German nominal root compounds,

<sup>34</sup> This alone is a complicated task and it leaves open the question how the other constructions that presumably fall under this parameter fit into the picture.

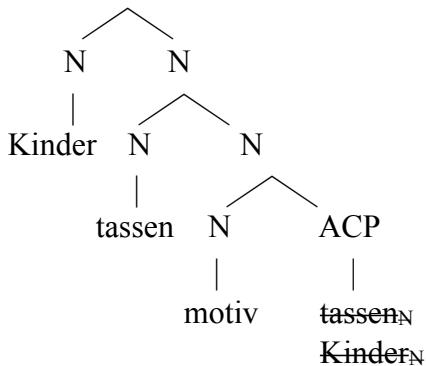
by virtue of belonging to Germanic languages, also feature an ACP - just like their English counterparts. In fact a compound like e.g. *Länderspiel* in (5d) can be derived along the following lines:

(52)

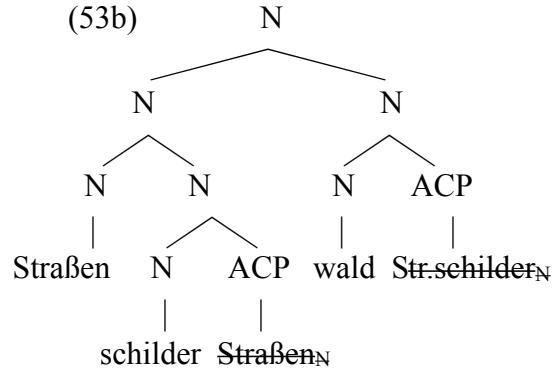


Recursion is also unproblematic. Just like in English, *Länder* in German is not an argument of the noun *Spiel*. This implies that the trace is deletable and the ACP is open for LIs with the same category specification, i.e. other nouns. Recursive compounds, like the ones listed in (25), are then derived in the same fashion as the English recursive compounds in (48) and (49). Indeed, both options are available in German as is shown in the structures below:

(53a)



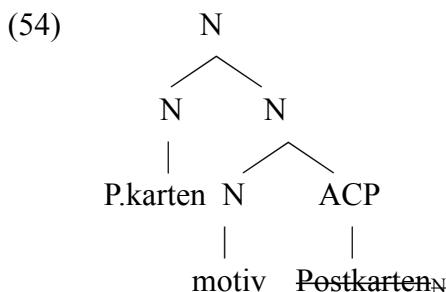
(53b)



So, in principle, nominal root compounds in German can be derived along the same line as their English counterparts, which is a desirable result. This, however, brings up the question, how the distinction between those German compounds that have a compositional and recursive reading and those that lack this interpretational possibility can be explained. Bauke (2009) argues that those compounds that lack compound-internal inflectional

markers do not involve an ACP. Instead, they are derived in the lexicon, just like their French counterparts (cf. Roeper & Snyder 2005: 159), by the combination of two roots.

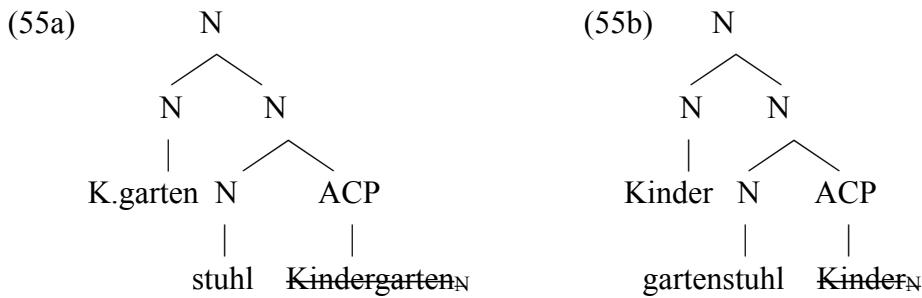
Based on the distinction between lexical and syntactic processes already laid out in Chomsky (1970) and most recently discussed e.g. in Lieber (2005) and Scalise & Guevara (2005), according to which the lexicon is the place for idiosyncrasies, while syntax is completely regular, it seems only natural to assign the formation of those compounds that have a drifted and lexicalized meaning to the lexicon, while maintaining a syntactic account for the compositional and productive compounds. Assuming further that the lexicon feeds syntax, it should also be possible, to insert LIs that are the result of a process of lexical word-formation into the ACP in order to derive a compositional compound. This is what applies to the compound in (54):



Here the noun *Postkarte*, which does not contain any compound internal inflectional material and is thus derived in the lexicon by combining the two roots *Post* and *Karte*, is inserted into the ACP of the noun *Motiv* followed by the usual step of subsequent leftward movement. Hence, the processes of word-formation in the lexicon and word-formation in syntax can be combined, with lexical word-formation feeding syntactic word-formation.

Under the assumption that the product of syntactic word-formation is stored in the lexicon as well (in contrast to syntactic operations that derive structures larger than words), it should also be expected to find cases where a syntactically derived word can participate in lexical word-formation. The example *Kindergartenstuhl* in (23) is a case in point. By virtue of the inflectional marker on *Kinder*, the compound *Kindergarten* can be derived via the ACP and the alternative readings listed in (22b) further underline that this is the correct assumption. As has been pointed out in chapter 2.2, however, in the compound *Kindergartenstuhl*, the *per se* compositional and productive compound *Kindergarten* can

only be interpreted as ‘kindergarten’. This follows naturally from the analysis discussed here: if the lexicalized meaning of *Kindergarten* is what is stored in the lexicon, then only this meaning should be readily accessible for lexical word-formation. Alternatively, of course the noun *Gartenstuhl* can be derived by a process of lexical word-formation, i.e. by combining the roots *Garten* and *Stuhl*. The noun *Kinder* can then be inserted in the ACP of this lexically derived word and thus lead to the alternative interpretations listed in (23). The two alternatives are illustrated in (55a) and (55b):



So, the compound in (55a) contains a compositional compound derived in syntax. The result of this process of word-formation is stored in the lexicon and as such the product of syntactic word-formation can feed lexical word-formation. In (55b) instead lexical word-formation, which is the result of combining two roots, precedes syntactic word-formation.

Taking the properties of the ACP pointed out in Keyser & Roeper (1992), and in Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005) for nouns seriously, corroborates a division along the lines described here. According to the analysis provided by Roeper & Snyder (2005) the ACP can arguably be filled by all sorts of categorized LIs. Crucially, however, once an already categorized LI has been inserted into the ACP and has been moved to the left without leaving a trace, the ACP can only host LIs with the same category specification. This, in turn, presupposes that it is exactly those LIs that are specified for a category that are inserted into the ACP. Hence, roots, which lack this category specification cannot be inserted into the ACP. Consider in this context the pattern illustrated in (56) - (60):

(56a) Nashorn	(56b) Nasenrücken	German
nose.root + horn	nose.pl + back	
‘rhinoceros’	‘bridge of the nose’	

		or ‘nose on the back of e.g. a genetically manipulated mouse’, etc
(57a)	Augapfel eye.root + apple ‘eyeball’	(57b) Augenlicht eye.pl + light ‘eyesight’ or ‘light the doctor uses for eye-exams’, etc.
(58a)	Münztelefon coin.root + telephone ‘payphone’	(58b) Münzenschrank coin.pl + cabinet ‘coin cabinet’ or ‘cabinet with coin ornaments’, etc.
(59a)	Kirchturm church.root + tower ‘spire’	(59b) Kirchenkreis church.pl + circle ‘church district’ or ‘churches standing in a circle’, etc.
(60a)	Sprachdefizit language.root + deficit ‘language deficit’	(60b) Sprachenschule language.pl + school ‘language school’ or ‘school that focuses on languages (in contrast to e.g. natural sciences)’, etc.

As expected, all the examples in (56a) - (60a), which are clearly the result of combining two roots have just one fixed and lexicalized interpretation. The examples in (56b) - (60b), however, which contain a fully inflected and categorized LI, which is thus eligible for ACP insertion, all have a preferred interpretation which may or may not be lexicalized and fixed. What is unquestionable though is that they additionally allow for alternative interpretations, which puts them in stark contrast with the (a) examples.

One additional piece of data that fits well into the current picture is the one below:

(61) Werwolf	German
Wer.root + Wolf	
‘werewolf’	

Just like in the (a)- examples above the compound consists of a root that is combined with another root. There is no compound internal inflectional material. Thus, it is not expected that this LI has any alternative interpretations. Additionally, the meaning of the compound is not compositional. In fact, the root *wer* is rather an empty morpheme that is combined with a second morpheme here and the result of this combination is a compound with a fixed, lexicalized and highly idiosyncratic meaning. Just as is expected from this type of compound. Thus, the analysis presented here has the potential of providing a meaningful analysis of so-called *cranberry* morphemes (cf. Spencer 1991: 40).

In sum, assuming that in German two processes of word-formation are at work, one syntactic and one lexical, which may interact with one another<sup>35</sup> and further assuming that the syntactic word-formation process is subject to a positive setting of the RCP, which in turn makes the ACP available, allows us to capture the distinctions observed in chapter 2.2 quite accurately. However, a number of questions remains:

1. Why is it that involvement of the ACP leads to the observed interpretational effects?
2. Why do the elements ‘inserted’ into the ACP move leftwards?
3. How can ‘insertion into the ACP’ be accounted for under are BPS account in line with the SMT and the assumptions on Merge discussed in chapter 1?
- 4a. How is the interaction between syntactic and lexical word-formation processes accounted for and what distinguishes these two processes language internally?
- 4b. What are the properties of the parameter (if any)?

All of these questions will be addressed in the next sections.

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<sup>35</sup> Cf. Giegerich (1999, 2004, 2009) for some non-committal thoughts on the role of syntax-lexicon interaction in compounding that go into the same direction.

### 2.3.3 Syntactic and Lexical Word-formation?

The discussion of the structures for the two types of nominal root compounds above suggests that two processes of word-formation need to be distinguished. One is lexical and one is syntactic. What is not clear though is how these two processes interact or whether there is parametric variation at work here at all. Additionally, the technicalities of the syntactic approach are far from settled. The first set of questions to be addressed here is the one listed last in the preceding section, i.e. how the interaction between syntactic and lexical word-formation processes can be accounted for and whether there is any motivation for a parameter along the lines described in Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005). So let us start with the question in 4b first.

The German data discussed here strongly suggest that a RCP along the lines suggested in Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005) is too broad. Some nominal root compounds in German behave more like their Romance counterparts while others show the characteristics typically ascribed to compounds in Germanic languages: recursivity, compositionality and productiveness.<sup>36</sup> Similarly, a language internal distinction for Swedish is necessary. However, the distinction in Swedish seems to be guided by principles other than those that apply in German.

And things do not stop here either. When examining the correlation expressed in the root compounding parameter in Synder (1995) and Roeper & Snyder (2005) it should be expected that Romance languages do not display any of the constructions in (32) - (40). Otherwise, the RCP predicts that these languages also show productive, recursive and compositional patterns of nominal root compounding. However, counterevidence is not hard to come by. In a recent paper Mateu & Rigau (2010: 243) argue that verb-particle constructions exist in Italian.

- |                             |         |
|-----------------------------|---------|
| (62a) Gianni è corso via    | Italian |
| Gianni is run away          |         |
| ‘Gianni ran away’           |         |
| (62b) *Gianni è danzato via | Italian |

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<sup>36</sup> Arguably, Romance languages also exhibit a very productive, compositional and recursive pattern of compounding that is manifest in phrasal compounds: *tasse à café* (French), *taza de café* (Spanish); *tazza da caffè* (Italian).

Gianni is danced away  
'Gianni danced away'

[Mateu & Rigau 2010: 243]

The form in (62a) is an example of a verb-particle construction in Italian. Mateu & Rigau (2010: ibid) point out that this construction is perfectly licit in Italian when the verb already involves directionality, which is only further specified by the participle. Thus, the path-encoding verb *correre* ('to run') is available for a verb-particle construction. The verb *danzare* (to dance) in (62b), however, encodes manner rather than a path. Hence, the particle does not only specify directionality further, rather it introduces directionality. This, however, is not licit in Italian as the ungrammaticality of the example illustrates. It is far from clear, how this can be integrated into the parameter.

Note further that verb-particle constructions are by no means limited to unaccusative constructions like the ones in (62). Transitive constructions like the one in (63) are likewise fine:

- |       |                                    |         |
|-------|------------------------------------|---------|
| (63a) | Gianni ha buttato via il libro     | Italian |
|       | Gianni has thrown away the book    |         |
|       | 'Gianni has thrown the book away'  |         |
| (63b) | Gianni ha caciatto via due ragazzi | Italian |
|       | Gianni has sent away two boys      |         |
|       | 'Gianni has sent away two boys'    |         |
| (63c) | Gianni ha condotto via due ragazze | Italian |
|       | Gianni has led away two girls      |         |
|       | 'Gianni has led two girls away'    |         |

This clearly shows that Italian verb-particle constructions are perfectly licit (cf. also Iacobini & Masini 2007 for a similar conclusion). Thus, the pattern that emerges for this type of construction in Italian is similar to the pattern found in nominal root compounding in German. Grammatical verb-particle constructions exist alongside ungrammatical forms. This further undermines the assumption that there exists a single parameter that accounts for all of these constructions and that can be cut along the distinction between Romance

vs. Germanic language families.

Similarly, Cuervo (2007: 587-8) shows that in Spanish a distinction should be made between prepositional constructions on the one hand and clitic doubling constructions on the other. Examples of both are provided in (64):

- |                                                                                                                               |         |
|-------------------------------------------------------------------------------------------------------------------------------|---------|
| (64a) Emilio entregó el informe a Andreína<br>Emilio handed the report to Andreína<br>'Emilio gave the report to Andreína'    | Spanish |
| (64b) Emilio le entrego el informe a Andreína<br>Emilio CL handed the report to Andreína<br>'Emilio gave Andreína the report' | Spanish |

[Cuervo 2007; 587-8]

Cuervo argues that despite their surface similarity a distinction between the prepositional construction in (64a) and the clitic doubling construction in (64b) is necessary and analyzes the *a* in (64a) a real preposition, whereas the *a* in (64b) is analyzed as a dative marker. Thus, the structure in (64b) is identified as a dative alternation construction in Spanish, in which the clitic-doubled dative variant corresponds to double object constructions of the RECIPIENT - THEME type that can be found e.g. in English. Cuervo provides the data in (65) to show that *a* in (64b) is really just a case marker, whereas *a* in (60/64a) is a preposition:

- |                                                                                                                       |         |
|-----------------------------------------------------------------------------------------------------------------------|---------|
| (65a) Emilio puso azúcar en el café<br>Emilio put sugar in the coffee<br>'Emilio put sugar in the coffee'             | Spanish |
| (65b) Emilio le puso azúcar al café<br>Emilio CL pot sugar in.the coffee<br>'Emilio put sugar in the coffee'          | Spanish |
| (65c) *Emilio le puso azúcar en/para/de café<br>Emilio CL pot sugar in.the coffee<br>'Emilio put sugar in the coffee' | Spanish |

Whereas the preposition in (64a) can easily be replaced by another preposition in (65a), this is not the case in (64b). Here only the dative marker is licit (cf. 65b) and all other prepositions result in ungrammaticality (cf. 65c).

So again, the pattern that emerges here is one in which a Romance language - which under the set-up of the RCP in Snyder (1995) and Roeper & Snyder (2005) should not exhibit double object constructions at all - displays two patterns for double object constructions that cannot be easily integrated into the analysis. This strongly suggests that a reformulation of the RCP that is compatible with the attested data is warranted. Before tackling the specifics of such a reformulation, ultimately in micro-parametric terms, let us proceed with to the questions listed under 4a in the preceding paragraph.

As has been pointed out before, Chomsky (1970) (cf. also Chomsky 1995a: 235 & 241 for basically the same argument) argues that the lexicon is the place for idiosyncrasies, while all regular operations are part of syntax proper. Hence, it seems only natural to accommodate the distinction between compositional and productive vs. non-compositional and non-productive compounds along these very same lines. Borer (1984) further argues that all parametric variation can be relegated to the lexicon. This assumption, however, is at odds with the route taken in Roeper & Snyder (2005) and Roeper, Snyder & Hiramatsu (and many others before them), where it is a deviance from the default parameter setting that opens up the possibilities for syntactic compounding.

A further complication comes from the fact that in German apparently syntactic word-formation and lexical word-formation can feed one another.<sup>37</sup> Why then is this not an option in Romance? Or to be more precise, why is it impossible in Romance languages for a lexicalized compound to be the input for a further step of lexical compounding just like German *Kindbettfieber* or the other examples listed in (24)? And why is it that Swedish is sensitive to the complexity of the material taking part in syntactic compounding, i.e. why does the ACP in this language host simple heads only? All these questions shed some doubt on the overall validity of the assumption that syntactic and lexical word-formation can be separated along the lines suggested in section 2.3.2.

An alternative is to assume that both types of compounds are derived in syntax and

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<sup>37</sup> This possibility seems counterintuitive to many and is probably biased by ideas of level-ordered morphology (cf. e.g. Scalise 1986: 85-90), but is not completely unprecedented in more recent analyses (cf. e.g. Starke's (2010) account on nano-syntax). In fact, even in some strictly lexicalist approaches such an interaction can be found (cf. e.g. Levin & Rappaport's (1986) analysis of adjectival passives).

basically under the same operations. The observed differences then result from differences in the ‘material’ involved in the derivation. Let me clarify: Chomsky (1995a: 235-236) admits that minimalist theory as outlined in the Minimalist Program “ha[s] little to say about the lexicon”, but assumes that LIs listed in the lexicon are minimally and maximally specified for lexical category.<sup>38</sup> So, for the LI *book*, which Chomsky chooses as an example, he assumes that the category specification N is all that the LI is specified for in the lexicon. Hence, LIs are listed in the lexicon without any specification for Case or φ-features. These are added either in the Numeration or in the course of the derivation.<sup>39</sup>

Almost simultaneously, based on investigations into the nature of thematic relations and their role in syntax Hale & Keyser (1993, 2002) suggest that theta-roles are likewise not encoded in the lexicon. Instead, they can be read off the syntactic structure, which brings about another considerable simplification of the lexicon, similar in spirit to the ideas initiated in Chomsky (1995a). Following this line of reasoning, a number of researchers, most notably Marantz (2001, 2007) and Borer (2003, 2005a, 2005b) but also Harley (2004, 2009) and many others<sup>40</sup>, argue that categorial specification is not contained in the specification of an LI either. Instead, LIs enter the derivation as uncategorized roots and category membership is determined on the basis of the functional structure under which these roots are embedded.

So, what is standardly identified as V in most contexts is in fact not a V in and of itself. It is a root that is categorized as V by virtue of being embedded under *v*, which is the

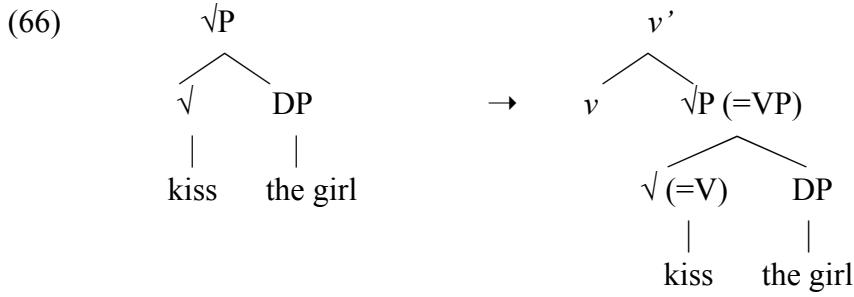
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<sup>38</sup> Just to be totally explicit here. Chomsky in this context is talking about lexical items, of course. This will be of uttermost importance for the distinction between functional and lexical or substantive lexemes, which is discussed below. Functional lexemes will turn out to be the categorizing elements here, which thus also contain a category specification themselves. Substantive lexemes instead are listed simply as roots, i.e. without any additional categorial specification.

<sup>39</sup> In fact, Chomsky limits these assumptions to optional features but later concedes that the “intrinsic-optional distinction plays virtually no role” (1995a: 277) and is of rather “informal descriptive usage” (*ibid*). Thus, we can afford to ignore it here, especially since it plays virtually no role in Chomsky’s later papers.

<sup>40</sup> I take this list to indicate that assumptions of this kind are not owned by proponents of Distributed Morphology. What I would like to endorse with the assumptions outlined here is what is referred to as the ‘single-engine hypothesis’, (cf. Marantz 2001: 8; Hauser, Chomsky & Fitch 2002 Barrie 2010:4 as well as Boeckx 2010a: 19) according to which there is no pre-syntactic level of grammar that roughly corresponds to morphology. So, I subscribe to the ‘syntax all the way down’ view of Distributed Morphology, though not necessarily to the assumption of a distributed lexicon. In fact, I remain agnostic to this latter question throughout the analysis presented here.

categorizing head:<sup>41</sup>



Marantz (2001) (among others) extends this analysis to all LIs, thus arguing that roots are categorized as nominal, when embedded under a nominalizing *n*-head and as adjectival, when categorized under the appropriate *a* head etc. In Marantz (2007: 5-6) these assumptions are further clarified, highlighting the fact that Merger of the categorizing little *x*-head is a syntactic operation.

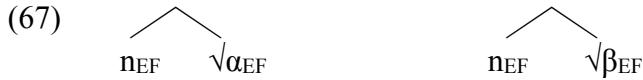
When applying these assumptions to the structures analyzed here, the following picture emerges: Those nominal root compounds that contain inflectional markers inside the compound are the product of the Merger of a categorized LI with another categorized LI - (of which one categorized LI possibly may be merged in the ACP of the other). Those compounds that do not feature any compound internal inflectional material are the product of the Merger of two uncategorized roots. So, in the first case the two roots are taken from the lexicon or Numeration and are merged with categorizing little *n*-heads first. And it is only then that a second Merge operation combines these two categorized LIs. In the second case, in contrast, the two uncategorized roots are taken from the lexicon or Numeration and are combined by Merge and it is the product of this Merger that is thereafter merged to a categorizing little *n*-head. Now the question that emerges is, how these two Merge operations can be motivated. The answer to this question I would like to suggest, and which is also (at least in part) an answer to the third question posed at the end of the preceding chapter, is as follows.

Let's start with the scenario in which the two roots are independently merged with a categorizing head first. The discussion on Merge in chapter 1 has illustrated that the only

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<sup>41</sup> I gloss over a number of details here. One, admittedly quite crucial one is, why the √P can take a DP as a complement. Since the answer to this question is not related to the issues addressed here, I will, however ignore it. Cf. e.g. Marantz (1997, 2001, 2007); Harley & Noyer (1999); Harley (2004, 2009); Embick & Marantz (2008) for answers to this and other questions as well as the discussion in Chapters 3 and 4.

prerequisite for Merge is that the LIs that partake in the operation are equipped with EFs (cf. also Chomsky 2008; Narita 2011 and others). This is the most simple and minimal conception of Merge conceivable. When applying this reasoning to the situation at hand, the following picture emerges: some root  $\alpha$  is merged with a categorizing  $n$ -head and some root  $\beta$  is also merged with another categorizing  $n$ -head:



By assumption  $\alpha$  and  $\beta$  do not have any  $\varphi$ -features (cf. e.g. Chomsky 1995a, Boeckx 2008a: 75). These are brought into the derivation by the categorizing head (cf. also Zhang 2007). For Merge to be possible the root LIs and the categorizing functional items both just need to be specified for EFs (as in Chomsky 2008: 139).<sup>42</sup> It is safe to assume that this is indeed the case, because otherwise it would be completely unclear how Merge could operate at all.

To see why this is the case, recall from the discussion in chapter 1 that EFs are a prerequisite for Merge regardless of any other featural specifications. Hence, even those LIs that lack additional features still need to be specified for EFs, since this is the key that allows LIs to be combined with other LIs or already created SOs (SOs, by assumption, not having EFs). The question that could be asked here is, whether it does not suffice, if just one of the two Merge partners are specified for EFs, though, since they are both heads coming from the lexicon, hence either of them being an LI.

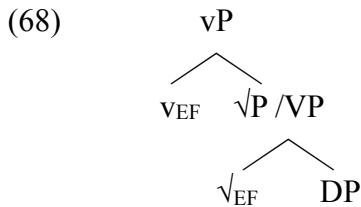
Well, first of all, it then not clear, under which conditions the root or the  $n$ -head can then enter the derivation at all (cf. Chomsky 2008), but one possible objection might be that the root does not need to have an EF, because it might enter the derivation from a storage different from the one for the categorizing head, as is standardly assumed in theories of distributed morphology (cf. e.g. Harley & Noyer 1999; Embick & Noyer 2007 for detailed exposition). However, under this line of reasoning a problem arises in standard derivations for all transitive verb structures. Given that V is nothing but a root, it is not

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<sup>42</sup> As we will see in chapter 4, for Merger to take place it would actually suffice if just one of the two elements were equipped with an EF (cf. in particular the discussion of the H- $\alpha$  schema in chapter 4 and in Narita 2011). However, independent reasons discussed immediately below lead us to the conclusion that in the case at hand both LIs, i.e. the root and the categorizing little  $x$ -head are specified for EFs.

clear how this root can then Merge with a DP object, which is an SO lacking an EF.<sup>43</sup> This should be reason enough to assume that the roots have EFs (cf. Boeckx 2008a: 78 for a similar conclusion).

Could it then be, that the categorizing heads do not have EFs? The answer here is clearly a no. Again, a simple look at the most standard derivations in the verbal domain suffice to prove the point. Little  $v$  is one of the categorizing little  $x$ -heads that Marantz (2001) assumes. If this head did not have an EF it is again unclear how it could be merged to the rootP/VP derived so far:



There is simply no way in which the  $v$ -head could be merged to the SO which is the  $\sqrt{P}$  (or VP), which does not have any EFs itself (cf. Narita 2009; 2011) for illuminating discussion of the role of EFs in  $vP$ ).

So, both Merge items are specified for EFs and thus fulfill the minimal and most economic requirements for Merge. Notice though, that this clearly makes the option of merging two roots available. If roots have EFs (and arguably no other features), it is perfectly natural that two of them can be combined by Merge:



This is the second scenario described above, i.e. the structure for the compounds without inflectional markers. If roots do not have any other feature specifications, it is completely expected that inflectional material does not occur.

Zhang (2007) provides an interesting analysis of Chinese compounds in this context. Chinese has a productive pattern of compounding that derives exocentric

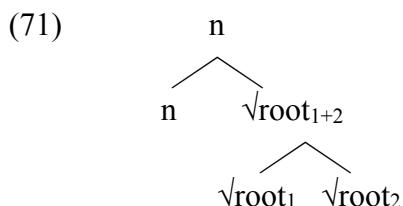
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<sup>43</sup> Again, I ignore the selectional restrictions that allow for the Merger of the DP object here, because these are not immediately relevant to the discussion. Note though, that a Self-Merge or Empty-Set-Merge analysis, as discussed and discarded in chapter 1 does not solve the problem either.

compounds of the following type (cf. Huang 1998; Zhang 2007: 172):

- |       |                                        |         |
|-------|----------------------------------------|---------|
| (70a) | yi      ben      xiao-shu              | Chinese |
|       | one     CL     small-say               |         |
|       | ‘a novel’                              |         |
| (70b) | yi      ge      kai-guan               | Chinese |
|       | one     CL     open-close              |         |
|       | ‘a switch’                             |         |
| (70c) | zhe     zhang    zhouzi de      da-xia | Chinese |
|       | this    CL    table   MOD   big-small  |         |
|       | ‘the size of this table’               |         |

In the examples in (70) a compound noun is derived by what looks like the merger of an adjective and a verb in (70a), of two verbs in (70b) and two adjectives in (70c). Zhang (2007) argues convincingly *pace* previous analyses that this is not an instance of an exocentric compound.<sup>44</sup> Instead, Chinese compounds of the type illustrated above are analyzed as the product of the Merger of two uncategorized roots, which are subsequently merged with a categorizing functional head (cf. *ibid*: 177-178). Since roots do not bear neither categorial nor syntactic features of any sort, none of the two roots projects, it is not possible to move any of the two roots and none of the two roots can be assigned neither case nor a thematic role. So the structure that Zhang (2007: 177) assumes for these compounds is as follows:



The similarities to the structure in (69) are immediately apparent.

Zhang further argues that Chinese breakable compounds are an instance of two different types of Merge. Breakable compounds are expressions that have an identical

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<sup>44</sup> Cf. Zhang (2007: 173-177) for more on the diagnostics of these compounds.

phonological form but can be interpreted either as a word or as a phrase depending on context (cf. 2007: 179). The following sequence is an example for that:

(72)	dan      xin	Chinese
	carry    heart	
	‘worry’	

This compound follows the pattern of exocentric compounds described above. What looks like a transitive verb is merged with a noun to derive another compound verb. Zhang (2007: 180) shows that this verb can still take a DP argument. Hence, *xin* does not act as an argument of *dan*.

(73)	Ta      hen      dan      xin      zhe      jian      shi	Chinese
	he      very      carry    heart    this     CL      matter	
	‘He is very worried about this matter’	

Furthermore, *xin* cannot be extracted (cf. ibid):

(74)	*Xin, wo      yi-dian dou      bu      dan      zhe      jian      shi	Chinese
	heart, I      one-bit all      not      carry    this     CL      matter	
	‘I don’t worry about this matter’	

So this compound shows all the characteristics of those compounds that are the product of the Merger of two roots.

Alternatively, however, the sequence *dan xin* can also be interpreted as a phrase with basically the same meaning (and intonation):

(75)	Ta      dan      xin	Chinese
	he      carry    heart	
	‘He was worried’	

Here, however, *xin* can be analyzed as an argument of *dan* and as such can also be

extracted (cf. Zhang 2007: 180-181):

(76)	Xin,	wo	yi-dian dou	bu	dan	Chinese
	heart,	I	one-bit all	not	carry	
'I am not worried at all'						

Zhang (2007: 181-182) argues that the LIs *dan* and *xin* are not merged as roots but as categorized elements, following the usual patterns of phrase structure. So, the Chinese breakable compounds seem to exhibit a pattern similar to the one discussed here for the two types of German compounds. One is the product of Merger of two uncategorized roots and the other is the product of Merger of already categorized elements. In essence, what Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005) describe as insertion into the ACP can then be reformulated as Merger of a categorized root with another categorized root.

### 2.3.4 Phases and the SMT: Towards Explaining Interface Effects

Up to now, three of the questions addressed at the end of chapter 2.3.2 have been answered. What is still not entirely clear though is, how the interpretational differences between the two types of German compounds described in 2.2 can be explained, i.e. the answer to question 1. To recap, the difference between the two types of compounds is related to a difference in what the syntactic operation Merge operates on. In one case it is roots which do not have any features other than EFs, in the other it is categorized LIs, which also have EFs, at least a categorial feature and possibly also  $\varphi$ -features.

So what we have here is strongly reminiscent of what we expect to find given the SMT: Language is an optimal solution to interface legibility conditions and Merge here operates on elements that are minimally distinct, but, still, a clear interpretational effect emerges. To see this more clearly, let me explain:

Marantz<sup>45</sup> (2007: 4-5) argues that all categorizing little *x*-heads are Phase-heads and proposes a distinction between two types of word-formation, which - following a distinction made in Dubinsky and Simango (1996) - he describes as inner and outer

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<sup>45</sup> Marantz' proposal is similar in spirit to the one suggested in Hale & Keyser (2002) and further executed in Ramchand (2008).

morphology. Inner morphology here is morphology attached to a root prior to the Merger of this particular root with a categorizing little *x*-head, which, as Marantz notes, goes along with special form and special meaning (2007: 5). Outer morphology, in contrast, is all morphology that attaches above a categorizing little *x*-head. This type of morphology is characterized by predictable form and predictable meaning (cf. *ibid*). In essence, Marantz here captures what is traditionally identified as the syntax-lexicon distinction, described in Chomsky (1970) and Wassow (1977), as a purely syntax-internal distinction, which eliminates the need to make recourse to lexical word-formation in a separate pre-syntactic component.

Marantz further argues that roots, since they never constitute a Phase, are never interpreted independently. Thus, a categorizing head, which constitutes a Phase, is therefore the first possible point for interpretation. So, in essence a categorizing head can be merged to a root (which may or may not contain inner morphology)<sup>46</sup> or it can be merged to an already categorized lexical item. In the former case there will be just one word-internal Phase, in the latter there will be two (cf. Marantz 2007: 5-6).

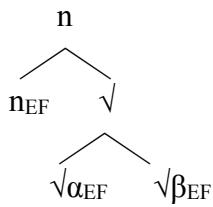
This is exactly the situation we find for the German nominal root compounds under the analysis presented in chapter 2.3.3. When two roots are merged, which is possible by virtue of their EFs, the resulting piece of structure will not be sent to the interfaces, because no Phase-head has been merged. Instead, the structure will remain in the derivation awaiting further Merge operations. Only when a categorizing little *n*-head is merged on top of this structure, which contains the two roots, will the Phase-head trigger Spell-Out - similar to the situation observed for the Chinese compounds in Zhang (2007). At this point, an independent meaning realization of the two previously merged roots is not possible, due to the absence of categorial features or  $\varphi$ -features on either one of them. The

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<sup>46</sup> I will ignore this possibility in the remainder of the discussion, since German nominal root compounds, to which this analysis will be applied immediately below, do not feature inner morphology (cf. Dubinski & Simango 1996 and Marantz 2007 for examples with inner morphology). It is worth noticing though, that under the analysis that Marantz suggests, inner morphology is always limited to the layer that is merged immediately on top of the root and below the first categorizing node - regardless of the total number of categorizing nodes.

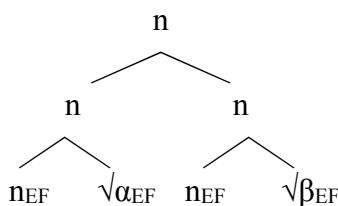
result is a compound with a fixed ‘lexicalized’<sup>47, 48</sup> interpretation that does not show any compound internal inflectional marking precisely because there is no compound internal categorizing head to which inflectional markers can attach. Quite simply put, there is no nominal inflectional morphology inside these compounds, simply because there is no noun in these compounds to which this morphology could be attached. (Remember that the (a)-forms in (56) - (60) were just roots). So the structure is the following:

(77)



In the alternative derivation root  $\alpha$  is first merged with a categorizing  $n$ -head. This head is a Phase-head so the structure resulting from this Merger operation is sent to Spell-Out and is interpreted at the interfaces. The Phase-head has a categorial feature and corresponding  $\varphi$ -features, which are interpreted at the interfaces.<sup>49</sup> Root  $\beta$  is also merged with a categorizing  $n$ -head first. Again, the structural complex is sent to the interfaces and is interpreted at LF and PF. So now there are two categorized (and interpreted) heads in the derivation, which both have EFs (cf. the analysis in the preceding section). These two LIs are merged, ultimately creating a compound with the structure in (78):

(78)



<sup>47</sup> I will refrain from characterizing the lexicalization process in detail. It should, however, be clear that lexicalization and drift is always a possibility. The discussion of the German data in the preceding chapters has shown that this drift can affect the LIs entering into the composition process as well as the output. In both cases lexicalization operates on LIs that are roots. This means that lexicalization does not operate on syntactic features, simply because there are not any available, as they are introduced into the derivation only at later stages. However, lexical semantic or conceptual features are likely candidates for the operation (cf. also Borer 2005a; b for a conception of the lexicon that is very similar to the picture sketched here).

<sup>48</sup> A similar situation might occur in idioms, where the internal structure of the idiom is also non-composition in pretty much the same sense that the internal structure of a root + root compound is. However, I will leave the vast field of idioms aside for future research at this point.

<sup>49</sup> For more on what these features are and how they are interpreted cf. below.

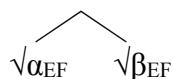
Due to the fact that both LIs forming the compound are categorized and contain  $\varphi$ -features which are interpreted upon Spell-Out, the compound internal LI can bear nominal inflectional morphology of the kind illustrated in 2.2 and is interpreted independently. This independent interpretation is what leads to the large variety of alternative interpretations observed in German nominal root compounds with compound internal inflectional markers.

Three things still remain unclear given the analysis above:

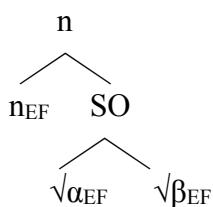
- A: It is not clear which of the elements projects in (77) and (78), i.e. is it the left or the right root or  $n$ -node that is projected, or is the root or  $n$ -node an exocentric node?
- B: It is not clear, which  $\varphi$ -features play a role in (78), i.e. are they valued or unvalued and which of the set of features that nominals exhibit are they and what is the role of case?
- C: How can the two SOs in (78) be merged at all? *Prima facie* none of them seems to have an EF, thus violating the condition for Merger (cf. Chomsky 2008; Narita 2011; and others)

All of these issues are addressed in the remainder of this chapter. Let me start with the question in C first. The answer to this is the shortest and most straightforward answer. To see how Merger of the two SOs headed by  $n$  is possible let me present the two derivations discussed above in a step by step fashion. The derivation in (77) proceeds in the following steps:

- (79) Step 1: Merger of root  $\alpha$  and root  $\beta$  via the EFs on  $\alpha$  and  $\beta$ .



Step 2: Merger of  $n$  to the SO via the EF on  $n$ :



This is the unproblematic case. The more interesting case is the one in (72/80), which is the derivation for (78):

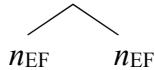
- (80) Step 1: Merger of root  $\alpha$  with  $n$  via the EFs on  $\alpha$  and Phase-head  $n$  and  
Merger of root  $\beta$  via the EFs on  $\beta$  and Phase-head  $n$ .



Step 2: Spell-Out of the complement domains of the respective Phase-heads :

$n_{\text{EF}}$        $n_{\text{EF}}$

Step 3: Merger of the two  $n$ -heads via their EFs:



Step 3 is the crucial step here. Assuming that both Phase-heads have spelled-out their complement domains, all that is left are the two  $n$ s. Each of these two LIs still has EFs (plus additional  $\varphi$ -features) and these are accessible again. Thus, it is still possible to Merge the two  $n$ s simply by making use of the EFs they are specified for. So, the structure in (78) is just a summary of the derivational steps on (80) and there is no sense in which the two SOs that are derived in Step 1 of (80) actually merge, hence there is also no violation of the requirement on Merge laid out in Chomsky (2008), Narita (2011) and others that Merge must proceed via (at least one LI with) an EF.<sup>50</sup> So let us now turn to the two remaining questions listed above.

Notice, that the answer to the issue addressed in A) is related to the answer to the second question at the end of chapter 2.3.2 of what triggers leftward movement in compounds with an ACP.

Roeper, Snyder & Hiramatsu (2002: 5) simply assume that all movement universally is leftward. Further, they distinguish between leftward head-movement, which is incorporation and movement of a maximal projection, which is a form of topicalization

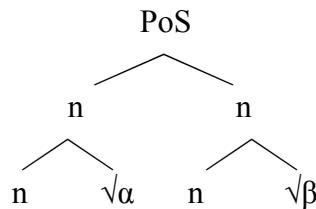
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<sup>50</sup> For a more thorough discussion of this cf. chapter 1 and the discussion of Narita (2011) in chapter 4.

(cf. *ibid*: 8).<sup>51</sup> Given that the ACP can be filled with heads only (cf. Roeper, Snyder & Hiramatsu 2002; Roeper & Snyder 2005)<sup>52</sup>, the leftward movement in the nominal root compounds in German should result in incorporation. However, these assumptions are stipulated and of very little explanatory value, nor do they provide a satisfactory answer to all of the issues addressed in A) above.

In their account on nominal root compounds in Germanic and Romance, Delfitto, Fábregas & Melloni (2008) provide an analysis in which the question of projection is related to the question of  $\varphi$ -features. Delfitto, Fábregas & Melloni (2008: 13-15) derive a structure similar to the one in (78) for Germanic compounds and argue that the Merger of the two nominal LIs creates a point of symmetry (PoS):

(81)



This PoS results from the Merger of “two elements sharing the same level of structural complexity” (cf. *ibid*: 8), which Delfitto, Fábregas & Melloni (2008: 8) identify as an

<sup>51</sup> Roeper, Snyder & Hiramatsu (2002: 8) provide the following examples to illustrate the point:

- |      |                   |    |                        |
|------|-------------------|----|------------------------|
| (i)  | the house I love  | vs | *house I love          |
| (ii) | I am house-loving | vs | *I am the house loving |

The DP *the house* can only be moved leftwards via topicalization. Incorporating onto the subject results in ungrammaticality. The bare N *house* in (ii) instead can only be moved leftwards via incorporation onto the verb. This is an option not available for DPs, as the ungrammaticality of the example in (ii) illustrates.

<sup>52</sup> Roeper, Snyder & Hiramatsu (2002: 8) provide the tests in (i) and (ii) below, illustrating that that maximal projections cannot be inserted into the ACP. The assumption that the ACP cannot host maximal projections in nominal root compounds is a significant deviation from the original analysis of the ACP in Keyser & Roeper (1992), where the ACP could also host maximal projections.

- (i) inavailability of overt functional heads:  
\*elephant [the hide] wallet; \*elephant hide [the wallet]
- (ii) inavailability of compound internal modifiers:  
\*restaurant [good coffee] cup

However, under a BPS account, with a relational definition of maximal categories these diagnostics are obsolete. In fact, the tests render the argumentation for leftward movement circular and vacuous. When heads are distinguished from maximal projections on the basis of the analysis in Chomsky (1995b), i.e. on the basis of whether an LI projects further or not, this begs the question whether and if so which LI in (77) (and in (78) for that matter) projects. I will seek an answer to exactly that question in the remainder of the present chapter.

instance of Parallel Merge, and it constitutes a violation of the Linear Correspondence Axiom (LCA) of *Kayne* (1994).

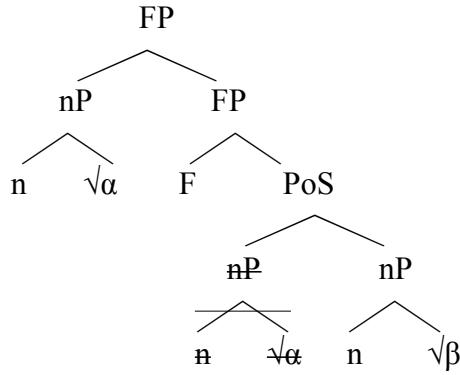
The LCA basically maps asymmetric c-command relations of terminal nodes onto linear precedence (cf. *Kayne* 1994, *Moro* 2000, *Nunes* 2004 for detailed exposition)<sup>53</sup> thereby establishing a relation between hierarchical structure and linear order. Hence, due to the mutual c-command relations in (77) and (78), both of these structures constitute an LCA-violation. For *Delfitto, Fábregas & Melloni* (2008) who disallow Merger of two roots (cf. *ibid*: 14), the structure in (78) is the one that they derive for nominal root compounds in Germanic and in Romance. Hence, under their analysis, a PoS arises in both types of compounds. This PoS standardly blocks the derivation from proceeding. *Delfitto, Fábregas & Melloni* (2008: 9-10) argue that - in order to prevent the derivation from stalling or crashing - the PoS is dissolved by a movement operation in which one of the Merge partners that participate in the Parallel Merge operation is moved out of the symmetric structural configuration. The difference between the Romance and the Germanic pattern for them then boils down to a difference in the point at which the PoS is dissolved in the two languages families.

So, PoS resolution is a repair strategy that rescues the derivation and allows it to proceed despite a temporary PoS. *Moro* (2000) develops a similar idea in his *Dynamic Antisymmetry* framework. Under *Moro*'s analysis, however, the PoS-dissolving movement operation does not differ from other movement operations. In fact, under his account all movement is driven by antisymmetry and none is feature driven. *Delfitto, Fábregas & Melloni* (2008: 10) model their analysis on *Moro*'s ideas, but assume that a functional head F is merged on top of the symmetric structure. This functional head acts as a Probe that targets an “interpretable but unvalued” (*ibid*: 15) feature on one of the two LIs, which participate in the PoS creating Parallel Merger, and triggers movement. As a result the PoS is dissolved:

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<sup>53</sup> In the original account *Kayne* (1994) argues for the LCA to hold at all levels of representation. This, as *Kayne* argues, allows for deriving otherwise stipulated properties of X'-Theory from the LCA. In BPS syntax, which leaves no room for X'-theoretic assumptions and projections, the LCA is standardly regarded as a PF-requirement only, in line with *Chomsky* (1995a: 335-337).

(82)



[adopted from Delfitto, Fábregas & Melloni 2008: 15]

Delfitto, Fábregas & Melloni (2008: 11) refer to this repair strategy as a compound Phase which is subject to an earliness principle that requires the compound Phase to apply as early in the derivation as possible, while still ensuring PF-convergence.<sup>54</sup> Ultimately, this is the place then where they localize the variation between Romance and Germanic compounding.

In Germanic, according to the account in Delfitto, Fábregas & Melloni (2008: 12-14), the F head attracts a gender feature on the *n*-head. This gender feature is argued to be derivable from the declension class a noun belongs to, due to a systematic relation between the two in this language family. So the *n*-head is specified for a declension class feature that is reinterpreted as a gender feature in Germanic (cf. ibid: 14) and can therefore be probed by the functional head F. This functional head then is realized as a LE, in essence making F the syntactic head of the compound.<sup>55</sup> However, F is special in so far as

<sup>54</sup> What is puzzling in this context is that Delfitto, Fábregas & Melloni (2008: 10) argue that, on the one hand, the compound Phase is the repair strategy, while, on the other hand, the movement operation that resolves the PoS is clearly ordered prior to interface Transfer. It is not clear to me what this is supposed to mean. Either Delfitto, Fábregas & Melloni dissociate Phases from Spell-Out and Transfer very much in the spirit of Chomsky (2008) and the discussion in Grewendorf & Kremers (2009) - which they make no mention of - or the compound Phase is significantly different from other Phases in a way not made precise in their analysis.

<sup>55</sup> This is a bit of an unusual situation and begs the question of whether the F-head targets the gender feature, and if so, also at which point this gender feature is introduced into the derivation, or whether the F-head targets the declension class feature, and if so again at which point in the derivation this feature is introduced. Assuming that gender is one of the φ-features that is introduced by a categorizing *x*-head (*n* in this case) the F-head would target the *n*-head, which arguably carries the whole set of φ-features. This then makes the declension-class feature obsolete, because there is simply no reason to also have a declension class feature that encodes virtually the same information. If, on the other hand, the declension class feature were introduced into the derivation at a lower level already, say at the root level, the question of how the relation between the declension class and the gender feature is established remains unanswered. Additionally, introducing a declension class feature at the root-level amounts to establishing the nominal character of the LI already at this level, which is irreconcilable with the assumption that at this level of the derivation LIs are merely roots without any categorial or syntactic information.

it “does not activate the lexical semantics of any of the two NPs” (*ibid*: 15) it is merged to. This has on the one hand the effect that the compound has the wide range of interpretive possibilities typically ascribed to Germanic compounding and on the other hand leaves room for determining the semantic head of the compound on purely phrase-structural grounds (cf. *ibid* 15-16) under which the attracted *nP* in (82) that is adjoined to *FP* is interpreted as the non-head, while the *in-situ nP* is the head.

All in all, this analysis predicts an unambiguous relation between gender, declension class and LE<sup>56</sup> in Germanic, which Delfitto, Fábregas & Melloni (2008) take to hold in most cases - although they acknowledge some deviations for German (cf. *ibid*: 16).

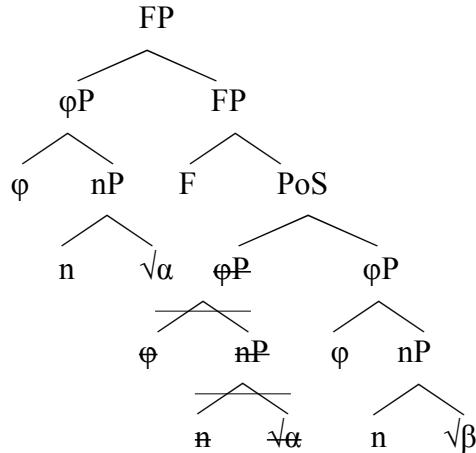
In Romance, where declension class and gender are not related, this analysis is not viable. Delfitto, Fábregas & Melloni (2008: 19-22) argue that, due to the absence of a direct and systematic relation between the declension class a noun belongs to and the gender feature a noun bears, *nP*, which then is specified for a declension class feature only, cannot be attracted by an *F* head of the kind found in Germanic. Hence, they conclude that the repair strategy for PoS dissolution cannot be applied at the *nP* level. Instead, it is full  $\varphi$ -phrases that are projected and which are combined by Parallel Merge creating a PoS. These  $\varphi$ -phrases are fully specified for gender and number (cf. *ibid*: 19).<sup>57</sup>

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<sup>56</sup> Delfitto, Fábregas & Melloni (2008: 18) argue that the phonological form of the LE is ultimately determined by a choice function operating at PF.

<sup>57</sup> In contrast to the nominal root compounds of Germanic, gender here is an interpretable feature though, and thus cannot trigger the movement operation. Number is interpretable as well, but does not play any further role in the analysis that Delfitto, Fábregas & Melloni present. They remark that plural marking on the non-head (cf. below for identification of the non-head in Romance compounds) is only apparent in Italian nominal root compounds and virtually non-existent in all other Romance languages (cf. 2008: 24-31), unless the compound is realized as a prepositional compound, instead of a nominal root compound. Prepositional compounds, however are not characterized by a PoS. This is why they are derived along the standard lines of phrasal syntax and show a range of properties that are significantly different from those of root compounds - among these: recursion (cf. Delfitto, Fábregas & Melloni 2008: 23-24). Number on the head, in turn, is said to be assigned after completion of the compound Phase, which is possible here, because number is higher than gender on the functional hierarchy (cf. *ibid*).

(83)



[adopted from Delfitto, Fábregas &amp; Melloni 2008: 21]

Delfitto, Fábregas & Melloni (2008: 20) further argue that nominal root compounds in Romance specify a predicate-relation akin to the Formal Quale of Pustejovsky (1995). And this is what the functional head F attracts in Romance: an unvalued qualia-oriented feature that is matched with the valued qualia-oriented feature on F (cf. *ibid*: 20). The fact that F activates the Formal Quale on the probed *nP* is reason enough for Delfitto, Fábregas & Melloni (2008: 21) to assume that this is what leads to the much more restricted compositional interpretation of nominal root compounds in Romance as compared to Germanic and at the same time it is what leads to the moved *nP* being the head of the root compound. The functional head here is characterized as an element that is not realized phonologically in Romance (cf. *ibid*: 22).

In sum, the difference between Romance and Germanic nominal root compounds then boils down to two closely related things. First, the PoS is dissolved at the level of *nP* in Germanic and at the level of *φP* in Romance. Second, the functional head F that resolves the PoS operates on an unvalued gender feature in Germanic and on an unvalued Formal Quale feature in Romance. Interpretational differences and the left- vs. right headedness of Germanic vs. Romance automatically follow.

So, Delfitto, Fábregas & Melloni (2008) in their paper present an analysis that provides answers to the issues raised in A) and in B) at the beginning of this chapter. The projecting element is the moved LI in Romance and the in-situ LI in Germanic. The movement inducing feature is an unvalued gender feature in Germanic and an unvalued Quale feature in Romance. Furthermore, similar to the analysis presented here, nominal

root compounding involves Phases under Delfitto, Fábregas & Melloni's account. However, some aspects of the approach in Delfitto, Fábregas & Melloni are problematic in so far as they sharply deviate from the underlying assumptions made here. Thus, in what follows these discrepancies are pointed out and an alternative analysis that overcomes them is presented.

The first concern is a methodological one that relates to the level at which the PoS is identified for Germanic and for Romance languages. Simply put it centers around the question of how the derivation ‘knows’ that it has to construct all the way up to  $\varphi P$  in Romance before Parallel Merge is even available, while it is enough to construct to  $nP$  in Germanic for Parallel Merge to apply. This seems to require a substantial amount of look-ahead paired with a constant checking of the derivation whether Parallel Merge can apply - given that Parallel Merge can only apply when it will produce a structure that features a PoS that can immediately be resolved in the next step of the derivation via probing of an appropriate functional head introduced into the derivation by EM.<sup>58</sup>

To be clear, the structures in (77) and (78) both contain a PoS too, however, the difference between these two structures does not arise from a requirement on Parallel Merge. Instead, it arises from Merger driven by EFs. This latter account on Merge is much more in line with the SMT than the Parallel Merge operation of Delfitto, Fábregas & Melloni and does not require any look-ahead mechanism.<sup>59</sup> Nor does an EF-driven take on Merge require the derivation to keep track of the structural make-up of the Merge partners. This, however, is essential for Parallel Merge, where identical structural complexity of the Merge partners is tantamount to (the application of) the operation. What is not clear, though, is where and how the derivation checks for the structural complexity involved in the Merger of two elements and against which criteria structural complexity is evaluated. One solution here would be a counting mechanism that simply counts the previous Merge steps - something that grammars are said to be incapable of (cf. e.g. Hornstein 2009:

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<sup>58</sup> Additionally, *prima facie*, Parallel Merge seems to be the ideal context for conjunction and it is not clear, how it can systematically be distinguished from conjunction. Many thanks to Thilo Tappe for bringing this to my attention.

<sup>59</sup> Notice further, that when the look-ahead character of Parallel Merge is reduced somewhat, i.e. when Parallel Merge is simply the Merger of two elements that share the same level of structural complexity this has the interesting consequence of making Merger of two roots available. Put differently, if Parallel Merge just does not care about the availability of a functional head in the next step of the derivation, then Merger of two roots, which presumably qualify for the criterion of identical structural complexity, should emerge as a natural consequence.

37-38). Another would be to count the number of features involved - also something that seems unreasonable, given the general unavailability of counting and the further complication that it is not at all clear which features are to be counted. Hence, even when abstracting away from the fact that it is not clear what triggers Parallel Merge in the first place, all conceivable measurements for evaluating identical structural complexity are rather dubious and mark a substantial deviation from the SMT. Eventually, this deviation may turn out to be necessary but it needs to be motivated - a complication that an EF-driven account on Merge that is in line with the SMT does not face.

A second concern arises from the postulation of the functional head that Delfitto, Fábregas & Melloni (2008) take to dissolve the PoS. Several things are unclear about this head. First of all, it seems to be a Phase-head that differs cross-linguistically in a peculiar way. While it may be possible that a morphological parameter is responsible for different behavior of Phase-heads across languages (cf. e.g. the detailed analysis in Gallego 2010), this is due to very specific properties of this particular head which is nevertheless base-generated in the same structural position in all languages. Secondly, such a head either operates on a certain feature or does not operate on this very feature (cf. e.g. Fox & Pesetsky's 2003, 2005 analysis of T as a Phase-head), but it is not the case that the head operates on a completely different feature, as is the case with the F-head assumed in Delfitto, Fábregas & Melloni, which operates on a gender feature or a Quale feature in Germanic or Romance respectively. In this context, as has been pointed out in chapter 1, the c-selectional properties of the F-head in Germanic are just as problematic as the s-selectional properties of the F-head in Romance. Neither c-selection nor s-selection should be the trigger for Merger of the F-head in any account.

Further problems related to the status of F are that it is not entirely clear, whether F is a Phase-head at all (cf. also the comments in footnote 54). Here the analysis in Delfitto, Fábregas & Melloni remains somewhat vague and is further blurred by the distinction between F as, on the one hand, the syntactic head of the compound in Germanic and in Romance, and, on the other hand, the in-situ *n* as the semantic head in Germanic and the moved *n* as the semantic head in Romance.<sup>60</sup> What speaks in favor of F being the head is that it attracts phrases (*nPs* in Germanic and *φPs* in Romance) to its edge. Two things are

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<sup>60</sup> In fact, in Delfitto, Fábregas and Melloni it is NP that is identified as the semantic head of the compound.

confusing here though. First, what is identified as an edge position in Delfitto, Fábregas & Melloni (2008: 15) is in fact an adjoined position (cf. *ibid*: 10 & 16-18). Moreover it is puzzling that F bears a valued feature that attracts an unvalued feature from inside the symmetric structure. This, again, is at odds with the conception of Phase-heads as the loci for unvalued features (cf. Gallego 2010: 57; Chomsky 2008: 142). And it is puzzling why F - as the PoS-dissolving element that enters the stage only after the application of Parallel Merge - is capable of distinguishing between the *n*-head that bears an unvalued gender feature in Germanic and the *n*-head that does not bear this feature and thus is not probed by F<sup>61</sup>, while Parallel Merge is not able to detect this significant difference.

The third concern is an empirical one that is related to the gender feature in German(ic).<sup>62</sup> First, it should not be forgotten that F does not target the gender feature directly, instead, it targets a declension class feature on *n* that is reinterpreted (or associated) with a gender feature.<sup>63</sup> This reinterpretation of the declension class feature is an essential aspect for Delfitto, Fábregas & Melloni's analysis. Only when the derivation includes an unvalued gender feature that is systematically related to the declension class a noun belongs to, can Parallel Merge apply. Crucially, in Romance, where no such relation holds between declension class and gender, the gender feature cannot be probed by F. Instead, it is realized as an interpretable feature on the probing F-head (which probes for a Qualia feature instead) in these languages.

As has been pointed out above, Delfitto, Fábregas & Melloni (2008) take the relation between gender feature, declension class and LE, which is but a realization of the gender feature, to be bi-unique. In light of the German data discussed in chapter 2.2 this raises a number of questions. First, it is not clear why it is possible then that one and the same LI, which presumably is specified for just one gender feature, allows for the realization of different LEs:

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<sup>61</sup> Or, for that matter, how F is capable of making a distinction between the φP that bears an unvalued Quale feature and the one that does not, while Parallel Merge is again unable to make something of this difference. Especially under a “semantically driven” (Delfitto, Fábregas & Melloni 2008: 20) approach to compounding, which nominal root compounds in Romance allegedly are an instantiation of, it would be natural to assume that an unvalued feature in the Formal Quale is sufficient for preventing a PoS to arise.

<sup>62</sup> Delfitto, Fábregas & Melloni (2008) use German to illustrate their point and I will follow them in this respect and use the German examples discussed here to argue against the role of gender.

<sup>63</sup> Cf. also footnote 57 for problems associated with this conception.

(84a)	Länderspiel	German
	country.pl + match	
	‘match between two national teams’	
(84b)	Landeskirche	German
	country.gen + church	
	‘national church’	
(84c)	Landsmann	German
	country.gen + man	
	‘compatriot’	

So, why is it possible that the LI *Land* with the gender specification [neuter] can realize what looks like a plural marker as well as the two genitive forms as a LE when it is used in compounding? In their appendix Delfitto Fábregas & Melloni (2008: 34) distinguish between as much as ten (!) declension classes which are all reinterpreted as [masculine] gender, but with different phonological forms for this gender feature. For the association with [neuter] six declension classes are identified and for [feminine] five. If correct, then the association between gender and declension class, as exemplified in Delfitto, Fábregas & Melloni, strongly suggests that different LIs that are specified for the same gender may still realize this gender differently, i.e. by phonologically distinct LEs, but it does not imply that one and the same LI, which is specified for one gender and is associated with just one declension class, can realize its LE in different forms.

Delfitto, Fábregas & Melloni (2008: 34) further argue that the LE may also be realized as  $\emptyset$ . This would imply that, contrary to the analysis presented in 2.2, the form in (85) also contains a LE:

(85)	Landstraße	German
	country + $\emptyset$ + road	
	‘country road’	

Again, it might not be totally implausible that LEs are realized as  $\emptyset$ , but this already gives us four different realizations of an LE for one and the same LI, which is a member of just

one declension class.<sup>64</sup> This calls for an explanation that Delfitto, Fábregas Melloni do not provide in their analysis.

Additionally, the forms in (56a) - (60a), repeated below, pose a problem for the analysis in Delfitto, Fábregas & Melloni:

(56a)	Nashorn	German
	nose.root + horn	
	‘rhinoceros’	
(57a)	Augapfel	German
	eye.root + apple	
	‘eyeball’	
(58a)	Münztelefon	German
	coin.root + telephone	
	‘payphone’	
(59a)	Kirchturm	German
	church.root + tower	
	‘spire’	
(60a)	Sprachdefizit	German
	language.root + deficit	
	‘language deficit’	

In 2.3.2 it has been argued that these forms result from the Merger of two roots, i.e. the option that Delfitto, Fábregas & Melloni (2008) classify as universally unavailable in their analysis and therefore exclude. Notice though, that these forms simply cannot be LIs specified for gender, since they **are** just roots as can be seen from the forms below:<sup>65</sup>

(86)	die Nase	German
	the nose.root + -e	

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<sup>64</sup> Notice, that this, incidentally, poses a problem for all the forms discussed in this chapter, which then have at least two realizations of the LE: one in  $\emptyset$  and one in either plural or one of the two genitive forms - even though they may not all exhibit the full spectrum of four different LEs found on *Land*.

<sup>65</sup> Additionally, the *Werwolf* example in (61), of course falls under this heading too.

	‘the nose’	
(87)	das Auge	German
	the eye.root + -e	
	‘the eye’	
(88)	die Münze	German
	the coin.root + -e	
	‘the coin’	
(89)	die Kirche	German
	the church.root + -e	
	‘the church’	
(90)	die Sprache	German
	the language.root + -e	
	‘the language’	

The *-e* affix, which may be taken to indicate the [feminine] or [neuter] gender specification or the declension class of the forms in (86) - (90) (cf. Delfitto, Fábregas & Melloni 2008: 13), is not realized in the compound forms. The forms in (91) indicate that this cannot be due to phonological restrictions:

(91a)	Hansestadt	(91b)	Reisepass	German
	trade + city		travel + pass	
	‘Hanseatic city’		‘passport’	

Both *Hanse* and *Reise* are feminine in German and contain the same *-e* marker as the forms in (86) & (88) - (90). Here, however, this marker is realized overtly, hence it is not just the root but the full stem that is merged to the LIs *Stadt* and *Pass* respectively, in the examples above.

All these data strongly suggest that the relation between declension class, gender and the phonological realization in form of a LE is not as systematic and unambiguous as Delfitto, Fábregas & Melloni (2008) suggest. In fact for such a correlation to hold, one would probably expect a biunique relation to hold between the LE and the LI this LE is realized on. This, however, is far from correct for what we see in the German forms

discussed here and an analysis under which the genitive and plural markers are interpreted as instantiations of LEs, just as much as the  $\emptyset$ -element is, fails to provide an explanation for the interpretational differences that have been discussed in chapter 2.2.

Additionally, such an analysis begs the question of how this applies to those Germanic languages that do not mark the gender overtly. In a short remark Delfitto, Fábregas & Melloni (2008: 19) just suggest that e.g. English and Dutch differ from German in so far as these two Germanic languages do not use as rich a repertoire of LEs as German does. English, it is claimed, hardly ever realizes a LE and Dutch has just two forms: *-en* and *-s*. This, Delfitto, Fábregas & Melloni (*ibid*) argue can be attributed to lexicalization.

While it might not be totally unreasonable to assume that some process of lexicalization is at work in English or Dutch that leads to the impoverishment in the PF-realization of LEs, it is far from clear how the relation to gender can be accounted for. Here Delfitto, Fabrégas & Melloni (2008: 12-14) simply stipulate that nouns in English and Dutch are marked for declension class pretty much in the same way as their German counterparts, which then allows for making the same correlation between the declension class a noun belongs to and the gender it is specified for. This is, however, highly suspicious, because it is not clear why e.g. in English such a relation should be established in the first place. In fact, the (relative) absence of gender marking in English could just as well be interpreted as an indication that a correlation between gender and declension class just does not exist, which comes close to the argument that Delfitto, Fábregas & Melloni (2008: 12) want to push for Romance languages.

Interestingly, Alexiadou, Haegeman & Stavrou (2007: 238) provide clear evidence (*pace* Defitto, Fábregas & Melloni 2008) that a large number of nouns in Spanish and Italian show a clear and straightforward relation between declension class and gender.

Following the analysis in Harris (1991) Alexiadou, Haegeman & Stavrou (2007: 238) argue that three types of nouns must be distinguished in Spanish: inner core nouns, outer core nouns and a residual class. For the first two a clear relation between declension class and gender can be established. Inner core nouns are those that exhibit variable gender, e.g. in Spanish *hijo* ('son') vs. *hija* ('daughter') or Italian *ragazzo* ('boy') vs. *ragazza* ('girl'), here gender is variable and interpretable. Outer core nouns have a fixed but interpretable gender, e.g. *donna* ('woman') in Italian. The residual class is the only

class that patterns along the lines described by Delfitto, Fábregas and Melloni (2008) here the *-a* in Italian *sedia* ('chair') is not an indication for the gender of the noun - although it is also feminine. In this case gender is neither interpretable nor variable (cf. ibid: 241-242).

Alexiadou, Haegeman & Stavrou (2007: 242) point out further that the interpretability of gender in inner and outer core nouns in Spanish and Italian could be related to the animacy of the noun. This, then, is an exact parallel of the pattern found in English for forms like *actor/actress, duke/duchess, usher/usherette, horse/mare, fox/vixen* etc. These data can be taken as another indication that the relation between declension class and gender, if applicable at all, does not fall in line with the split between Romance and Germanic.<sup>66</sup>

One final aspect that is problematic for the analysis in Delfitto, Fábregas & Melloni (2008) is that it fails to provide a compelling explanation for the recursive character of Germanic compounds. When comparing the non-recursive nominal root compounds in Romance to their fully recursive prepositional counterparts of the *tasse à café* type (cf. ibid: 23-24), Delfitto, Fábregas & Melloni argue that recursion is constrained in compounds because the F-head that attracts the φP cannot select structures larger than φP; this, in their view, automatically excludes recursion, because the structural level at which the second compounding operation would apply, necessarily is larger than φP.

While this is a perfectly sound explanation for the difference between Romance prepositional compounds, which are highly recursive, and their non-recursive root counterparts, it says nothing about why recursion in Germanic is licit. In fact, this analysis would predict that, unless the F-head in Germanic can select structures larger than *nP*, the same constraint on recursion should apply here as well.

However, there is no evidence that the F-head in Germanic does select larger structures. Why should F be able to attract larger pieces of structure, notably FPs, when the feature that F probes is the uninterpretable gender feature on *nP*? Given the characterization of F this is particularly unlikely. Recall that Merger of F is a repair strategy that Delfitto, Fábregas & Melloni (2008) postulate for PoS resolution. The PoS arises from Parallel Merge, which in turn can only apply when a head F - that probes for

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<sup>66</sup> Cf. also Alexiadou, Haegeman & Stavrou (2007: 235-246) for a careful comparison of an analysis in which gender is related to number (rather than declension class) with an analysis in which gender is taken to be an idiosyncratic property assigned in the lexicon.

the relevant features on the LIs combined by Parallel Merge (gender in Germanic and Formal Quale in Romance) - is merged in the next step of the derivation. Hence, when movement to Spec, FP has taken place, the resulting FP should constitute a structure that is sufficiently asymmetric for no other PoS to arise. The same logic, of course, also applies to the Romance cases, the only difference being that FP does not attract *nP* but  $\phi P$  instead. In effect, this means that Germanic and Romance should pattern alike with respect to recursion - contrary to fact.

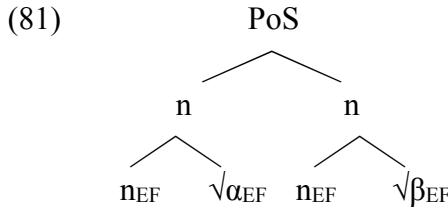
To sum up, an analysis in which gender is identified as the relevant feature for the differences between nominal root compounding in Germanic and Romance faces several problems. Methodologically it is not clear how such an analysis can be reconciled with minimalist assumptions and in particular how it can meet SMT requirements. Without embracing a number of stipulations, *ad-hoc* assumptions and massive look-ahead a number of insurmountable problems arise and it is not clear, how the analysis can be reconciled with standard assumptions on Phase-theory. Additionally, a number of empirical questions arise that cannot be explained. Nevertheless, the idea that compounding involves Phases, which are related to the  $\phi$ -features - of which gender is but one - of the LIs involved is worth pursuing and this is what is done in the next section and in this context also the remaining question (listed under C) above) is addressed.

### 2.3.5 Incorporation: $\phi$ -features and Phases

The discussion in the preceding section has shown that the association between gender and Phases is problematic in nominal root compounding. In fact, the idiosyncratic nature of gender rather suggests that it cannot play an active role in the compounding process. This however, does not mean that nominal root compounds do not involve Phases. Indeed, the discussion in 2.3.3 has warranted an analysis for nominal root compounds in which Phases play a crucial role for making a distinction between productive compositional and recursive compounding, on the one hand, and non-recursive and non-compositional compounding, on the other hand.

Both types of compounding involve a PoS, which for non-recursive and non-compositional compounds arises from the Merger of two uncategorized roots, while it originates from the Merger of two categorized *n*-nodes in the compositional and recursive cases. However, the PoS is resolved differently for the two compound types. To see how,

let us start with the latter type of compound. The structure for this compound is the one in (81), repeated below:



Following the assumptions in Marantz (2001, 2007) each of the two LIs involved in compound formation is interpreted separately upon Merger with the categorizing and Phase-inducing *n*-head. In section 2.3.3 it has been argued further that the *n*-head is not only a categorizing head, but that it is also associated with φ-features. This is well in line with the observations made in 2.2 that compositional compounds in German show compound internal inflectional markers. So provided that both *n*-heads carry φ-features, it is only natural that plural morphology occurs. The question is, how these φ-features are interpreted at the interface. The discussion of the data in 2.2 has shown that the plural morpheme is not generally interpreted as a genuine plural. Instead, plural marked nominal root compounds allow for a variety of different interpretations in contrast to restricting the meaning of the compound to one lexicalized and (possibly) drifted reading, as is the case with compounds resulting from the Merger of two uncategorized roots.

A number of explanations can be mounted for this observation. First, it could of course be argued that the plural marker is not really a plural marker but a LE instead. This, however, does not explain the difference between the forms in (92) and (93):

- |                                                                                              |        |
|----------------------------------------------------------------------------------------------|--------|
| (92) Sonnenbrille<br>sun.pl + glasses<br>‘sunglasses’ or ‘glasses with sun-shaped rims’ etc. | German |
| (93) Liebesbrief<br>love + LE + letter<br>‘love letter’                                      | German |

So why does the LE on *Liebe* not have the same effect as the alleged LE on *Sonne*? When

taking them both to be LEs no coherent analysis can be found.

Alternatively, it can be argued that the *nP Sonnen* does not receive a ‘genuine’ plural interpretation because number is not a simple feature. Borer (2005a: 88-135) argues that number is spread across two functional heads: a divisor and a counter (cf. also Alexiadou, Haegeman & Stavrou 2007 for a similar analysis). So, it could be argued that a plural interpretation emerges only in the presence of both of these heads.<sup>67</sup> While this is, in principle, a viable analysis, it raises a number of technical questions. For one, it is not clear whether Borer’s system is compatible with the conception of the Merge operation described in chapter 1.<sup>68</sup> Moreover, it is unclear how these functional heads fare in a Phase-based account. Provided that N is the Phase-head, how and when are the functional heads that are merged on top of it interpreted?<sup>69</sup> And it is also not clear why only some of the φ-features play a role here. So, why is the number feature spread across two heads while person features are completely irrelevant for Borer’s analysis? Also, it is not clear whether a spreading of number across two functional heads is not, in effect, akin to arguing that features require features. Finally, Borer’s system does not seem to allow the Merger of two categorized substantive formatives, nor is it immediately applicable to the root-root Merger of the non-productive and non-compositional compounds.

None of these issues seem to pose insurmountable problems, however, so they can safely be left for future research at this point, especially in light of the fact that a different

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<sup>67</sup> Actually, I am brushing over a number of intricate details here - for a more elaborate account the reader is referred to Borer’s works - but the gist of the analysis is that a definite count interpretation can only arise from the Merger of three functional heads: a divisor, a counter and a definer. Depending on the language, each of these heads can be realized differently. For English Borer argues that the divisor is realized by plural morphology, the counter by e.g. numerals or indefinite determiners and the definer by definite determiners. Quantifiers can in principle be merged in every head and raise through these head positions by successive cyclic movement, eventually ending in D. Different interpretations then emerge, depending on how much structure is realized (cf. Borer 2005a: 143). For the case of nominal root compounding this means that above the nominal head there should only be a divisor head, since neither indefinite determiners or numerals nor definite determiners are licensed. So, in essence, the nouns in nominal root compounds can at most have a *mass* interpretation. Hence, *pace* the assumptions in Delfitto, Fábregas & Melloni (2008: 17), it is not at all surprising that *Sonnen* in (82) is not interpreted as two or more fixed stars.

<sup>68</sup> Under Borer’s analysis substantive formatives (corresponding roughly to LIs) are stored in a place distinct from grammatical morphemes and it is not clear what drives the Merger of the various functional heads nor of the formatives and the categorizing head.

<sup>69</sup> Here a potential answer that seems to suggest itself is that these functional heads are all Phase-heads, since the functional heads are all specified for abstract head-features that are licensed under Spec-Head agreement (cf. Borer 2005a). Interestingly, this is strongly reminiscent of a recent proposal by Grewendorf & Kremers (2009) where the problem of parallel probing arising in Chomsky (2008) is circumvented by assuming that Agree is subject to local Spec-Head agreement. However, a number of uncertainties remain, it is, for instance not clear which status the abstract features on the functional heads have, what their Values are, etc. Nor is clear whether it is possible to merge two Phase-heads on top of one other (cf. e.g. Boeckx 2008b).

analysis presents itself. All that needs to be acknowledged is that the plural morphology that is observed in nominal root compounds is not necessarily interpreted as a ‘genuine’ plural.<sup>70</sup> So let us now turn to the alternative analysis.<sup>71</sup>

This analysis is based on Roberts’ (2010) account of incorporation. Recall that Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005) argue that nominal root compounds have an ACP from where the LI inserted into that position moves leftwards. What is lacking in their accounts, however, is a motivation for leftward movement. In fact, the movement operation as it is described in the above mentioned analyses is one from the sister position of a head to the specifier of the same head. Besides the lack of a feature that would trigger this kind of movement there is more reason to be skeptical. If, as Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005) claim, the ACP is a head position, then this is not only an instance of Merger of two heads, but it is also an instance in which the head that is merged in the ACP is moved to the Spec of the head it is merged with. This is not only head-movement, which, as Chomsky (2000) argues, does not exist in narrow syntax, it is also vacuous movement in violation of anti-locality (cf. Grohman 2003, Abels 2003).

The assumption that head-movement is a pure PF-phenomenon has been challenged a number of times (cf. e.g. Matushansky 2006; Vincente 2007; Narita 2009; 2011; Roberts 2010 for interesting alternatives as well as e.g. Poletto & Pollock 2004; Pollock 2006 for reanalyses of head-movement as remnant movement) and I will simply assume here that the literature provides a sufficient amount of counter-evidence (cf. also Chapter 5 for a more thorough discussion) to safely discard it. The existence of head-movement in narrow syntax, however, does not answer the question of how this type of movement is motivated and how the problem of vacuous movement is solved. Roberts

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<sup>70</sup> This is probably less surprising as it may *prima facie* seem, since it is far from clear what the exact interpretation of φ-features actually is. After all, cases in which [plural] is interpreted different from the ‘individuated set of more than one entity’ are abundant in the literature and an abstract *kind*-interpretation for plurals, which is actually pretty close to the interpretation found on the nominal root compounds discussed here, is not too far off.

<sup>71</sup> In fact there might also be a third alternative that I do not intend to consider further here. This is a feature bundling analysis along the lines roughly sketched in Gallego (2011) where the Merger of features in the lexicon leads to the composition of LIs like e.g. *n*, which then feed into syntax. Here manipulations of the feature bundles that enter into the Merger that produces an LI suggest themselves as a natural place to look for alternations that have the observed effect on interpretation. It is, however, way beyond the scope of this work to investigate the repercussions of such an analysis, which at this point is therefore left for future research.

(2010) argues for a purely syntactic account of head-movement in the context of cliticization in Romance languages. A detailed account of Roberts' extensive and careful analysis of head-movement and clitic incorporation in Romance certainly is not expedient here, but some of the essential characteristics of his analysis are worth pointing out, since they provide useful insight into the trigger for head-movement in nominal root compounding.

Roberts (2010) analyzes clitics in terms of head-movement that results in incorporation of the clitic onto its host. For this operation to apply, Roberts (2010: 62) identifies the following conditions: the clitic must be a minimal category, it must conform to a constraint on incorporation and the clitic must be a defective Goal.

Roberts (2010: 54) somewhat deviates from Chomsky (1995a) in defining a minimal category as follows:

- (94) The label L of a category  $\alpha$  is minimal iff  $\alpha$  dominates no category  $\beta$  whose label is distinct from  $\alpha$ 's.

Correspondingly, a maximal category is defined as (ibid):

- (95) The label L of category  $\beta$  is maximal iff there is no immediately dominating category  $\alpha$  whose label is nondistinct from  $\beta$ 's.

This derives clitics as candidates of a min/max category. However, in light of the comments on labeling in chapter 1, this analysis is problematic. Instead we will recur to the original characterization in Chomsky (1995a: 245) where a minimal category is one that is either a terminal element or “a category formed by adjunction to the head [...] which projects” (ibid). Similarly, Boeckx (2008a: 75) describes a minimal category as an LI selected from the lexicon/Numeration. In essence, this boils down to identifying a minimal category as an LI with EFs (cf. also Narita (2011) for a similar analysis).

Hence, for our purposes here, we can identify the root as well as the categorizing  $n$ -head in (71) repeated above as a minimal category. Let me therefore reformulate the minimal category requirement along the lines of Narita (2011), where the EF of Chomsky (2008) is taken to be the crucial characteristic that marks a SO as belonging to a minimal

category:<sup>72</sup>

- (96) Minimal category:

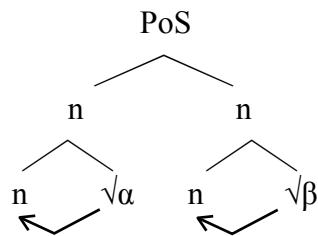
A minimal category is an LI that bears an EF.

The constraint on incorporation that Roberts identifies is the following (2010: 57):

- (97) Incorporation can take place only where the label of the incorporee is non-distinct from that of the incorporation host.

Roberts (*ibid*) himself acknowledges that this constraint is highly reminiscent of the conflation mechanism in Hale & Keyser (2002) or Harley (2004). So, since the roots  $\alpha$  and  $\beta$  do not carry any features other than EFs, it is safe to assume that they do not carry a label distinct from that of the  $n$ -head. This then means that both roots in (81) incorporate on the respective  $n$ -head in a first step:

- (98)



However, this incorporation operation does not help with dissolving the PoS and motivating the leftward movement operation of one of the  $n$ -heads that Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005) identify.

Here, the last of Roberts' (2010: 59-61) conditions comes into play. In Romance, in order for the clitic to incorporate onto the verb,  $v^*$  and the clitic must establish an Agree relation in which  $v^*$  probes the clitic, which in turn is a defective Goal. What is important to note here is that clitic Goals are defective only in relative terms, since they do not lack a specification of  $\varphi$ -features as can be seen from Roberts' definition of defectiveness (*ibid*:

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<sup>72</sup> Narita (2011) derives this requirement from the SMT. For a more detailed account on why this is strictly in line with the SMT cf. Narita 2011 and the discussion on the relation between minimal categories and EFs in chapter 4.

62):

- (99) A goal G is defective iff G's formal features are a proper subset of those of G's Probe P.

I will follow Roberts' line of reasoning here in assuming that defectiveness is a relative measure. To see how, let me compare Roberts' account on clitic incorporation with the situation in nominal root compounds. Roberts (2010: 57-60) argues that incorporation of the clitic onto  $v^*$  is triggered under the following circumstances:  $v^*$  is a Phase-head that bears unvalued  $\varphi$ -features. In order to value its  $\varphi$ -features,  $v^*$  probes the clitic. The clitic contains a full set of  $\varphi$ -features that are valued and this is what allows  $v^*$  and the clitic to establish an Agree relation.

- (100) Trigger for Agree

$v^*$ [Pers: unvalued, Num: unvalued]	clitic [Pers: $\alpha$ , Num: $\beta$ ]
After Agree	
$v^*$ [Pers: $\alpha$ , Num: $\beta$ ]	clitic [Pers: $\alpha$ , Num: $\beta$ ]
[adapted from Roberts 2010: 60]	

Since the clitic does not contain any Case Attributes and since the  $v^*$  Probe lacks a structural Case feature (cf. ibid 57), the  $\varphi$ -feature set of  $v^*$  and the clitic are identical so the condition in (88) applies and incorporation of the clitic onto  $v^*$  results. Summing up, incorporation here is triggered by an Agree relation between the Probe  $v^*$  and its defective clitic Goal, which is defective only in the sense of (99).<sup>73</sup>

Now, in the context of nominal root compounds, the situation is slightly different. The  $n$ -heads are Phase-heads too, however, they do not have any unvalued  $\varphi$ -features. Instead they are specified for interpretable and valued  $\varphi$ -features. So when the two  $n$ -heads

<sup>73</sup> In fact, the situation is slightly less straight forward than it appears to be. Roberts (2010) following work by Andreas Holmberg (2011) argues that the relative notion of defectiveness - expressed by the proper subset relation - is crucial for the incorporation operation to take place. However, the situation described in (100) is not one in which the clitic is a proper subset of  $v^*$ . Rather the two sets are identical. Roberts (2010) excludes a case feature on  $v^*$  as the relevant feature that would lead to a proper subset relation. This, however, leaves it completely unclear what the relevant feature(s) would be. Notice, that according to Roberts' own logic a situation in which both LIs are equipped with identical feature sets the result should be total conflation rather than incorporation.

merge, each of them bears a set of valued  $\varphi$ -features. Since the  $\varphi$ -features enter the derivation as valued features, they will not be deleted upon Spell-Out but will be handed over to the C-I interface, where they are interpreted. This is what guarantees that each of the two nouns in the compound is interpreted separately and can thus contribute to the compositional meaning of the compound. This, however, does not necessarily mean that the  $n$ -heads cannot be Probes.

Following Chomsky (2001: 5-6; 2004: 116) I contend that syntax does not operate on the specifics of the interpretable features on the LIs. All that syntax is sensitive to is whether a feature is valued or not (cf. also Gallego 2010: 25-27). So, the two  $n$ -heads, by virtue of being  $n$ -heads enter the derivation with a full specification of  $\varphi$ -features, i.e. they are specified for the two Attributes [person] and [number], which have a value each. Let us assume that it is sufficient for the LIs to be specified for a default value in order to guarantee that they are recognized as valued and interpretable. Under this view, it is not expected that an Agree relation between the two  $n$ -heads is established, because according to Chomsky (2000: 123) it is only unvalued features that render LIs active in the computation. LIs that bear valued features cannot act as Probes and do not actively participate in syntactic operations.

However, Narita (2009, 2011), following Chomsky, argues that EFs are also features that are unvalued. Thus, when two LIs merge - which, as pointed out in Chomsky (2008), they only can when they are specified for EFs - then the fact that they bear EFs should be enough for initiating an Agree relation. Now, to be clear, EFs never get valued and never delete (cf. Chomsky 2008, Narita 2009: 220), which is unproblematic, because they can pass Spell-Out without causing a crash. This does not mean though that they do not play an active part in the derivation. In particular when assuming that Agree is an operation that is parasitic on Match (cf. Chomsky 2001: 5-7; Gallego 2010: 26-28) it is perfectly natural to assume that the unvalued EFs on the  $n$ -heads in nominal root compounds probe the respective other  $n$ -head.<sup>74</sup> What the EF finds there is another EF which is also unvalued, which is okay for the derivation to proceed and which does not cause any problems at Spell-Out.

What happens at the same time, though, is that Match is operative. Match is an

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<sup>74</sup> Narita (2009) shows that it may be enough if this probing is not mutual, I will assume here that the EFs on both heads probe.

operation that does not care about the Values of the features, it only scans for the feature Attributes (cf. Gallego 2010: 27). So, Match will find that both *n*-heads carry interpretable φ-features. Notice that if Match found that one of the Merge partners carried unvalued features and if these features could not be valued before Spell-Out, **this would be the situation** that would lead the derivation to crash. However, this is not the case here, what Match finds is that each of the LIs is specified for exactly the same Attributes and that each of these Attributes carries a value that is interpretable at C-I. So the following holds:

(101) Trigger for Agree

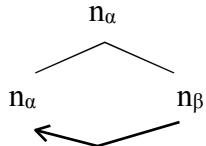
*n* [Pers: α, Num: β] [EF: unval.]      *n* [Pers: γ, Num: δ] [EF: unval.]

After Match

*n* [Pers: α, Num: β] [EF: unval.]      *n* [Pers: γ, Num: δ] [EF: unval.]

This is the situation that Roberts (2010) describes as the condition for clitic incorporation.<sup>75</sup> Notice that Match does not care about the specific Values for the two *n*-heads. All that matters is that they are valued (cf. Gallego 2010). So this should also be the situation in which incorporation applies in nominal root compounds:<sup>76</sup>

(102)



Roberts (2010: 60) also remarks that the defectiveness of the clitic Goal would lead to a situation in which the clitic should disappear at the end of the Phase and that the only reason that it does not disappear is that it incorporates onto the *v\** head. Put differently, Roberts (2010) establishes the defective Agree relation as the crucial factor for head-movement and characterizes Agree as a form of movement in which nothing is left behind because the feature content of the moved element is indistinguishable from the feature

<sup>75</sup> Again, as pointed out before in the context of Roberts' (2010) original analysis, the situation in (101) is not one in which the feature content of one LI is a proper subset of the other. Instead, at least as far as feature Attributes are concerned, the two LIs have identical sets. However, there is a crucial difference between the two LIs with respect to their feature Values (cf. also Gallego 2010 for more on the relevance of this distinction). The relevance of this will become immediately apparent in the discussion below.

<sup>76</sup> I use subscripts α and β to indicate that this is the *n*-head resulting from root-incorporation discussed in (98).

content of the incorporation host. However, this assumption is surprising. After all, the clitic is the LI that bears valued and interpretable features and  $v^*$  is the element that values its features against the Values specified on the clitic. So, the candidate for deletion should rather be  $v^*$ .

For the case of nominal root compounds, however, this is irrelevant, because none of the feature sets contains unvalued features (abstracting away from the unvalued EF which is special yet unproblematic in so far as it never gets valued). Hence, the valued features stay on the  $n$ -heads where they can be and indeed are interpreted by C-I. Nevertheless, incorporation takes place because it is initiated by the Matching operation of the  $\varphi$ -features on the two  $n$ -heads. This Matching operation differs from other cases of Matching involved in standard Agree relations only in so far as it is not followed by Valuation.<sup>77</sup>

The only remaining question then is which of the two  $ns$  participating in the Matching operation is the one that is incorporated, or put differently how exactly the PoS that still exists after Match is dissolved. Here is where the  $\varphi$ -feature specification is relevant. Recall, that we said that the  $n$ -heads are marked for interpretable features and that syntax does not really care about the exact specification of these features (cf. Chomsky 2001: 123). All that matters is that they are valued somehow. Hence, they could also be valued by a default, however, there seems to be a constraint here that is operative on the LI that is incorporated. Notice that this  $n$ -head lacks a specification for structural Case (akin to the lack of this specification on the clitic in Roberts' (2010) account). Additionally, the person value for this  $n$ -head, which is [3 person] for all instances, is a default - just as much as the [3 person] value on the  $n$ -head that is the incorporation host is a default.

This brings us to the specification of the number feature. Now, if that were also a default, we would face a situation in which one of the  $n$ -heads is valued as default in all of its interpretable  $\varphi$ -feature configurations. *Prima facie*, this does not seem to be possible and it would parallel the situation that Roberts' describes as the context in which the clitic would ‘disappear’ from the derivation. So, the situation we are facing is one in which one

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<sup>77</sup> Gallego (2010: 28) points out that other cases of Match which are not followed by Valuation exist. These are different from the cases discussed here, in so far as the Probe lacks one of the feature Attributes for Match. However, nothing seems to prevent the type of Match without Valuation that is discussed here either and ruling it out seems to be a costly stipulation in deviation from the SMT (cf. also chapter 5 for further discussion).

of the *n*-heads lacks an Attribute for structural Case, bears a default specification for one of its φ-features, i.e. [3 person] and a marked specification, namely [plural], for the other interpretable and valued φ-feature (gender - as has been argued in the preceding chapter - being valued but not interpretable (cf. also Chomsky 1995a and Gallego 2010: 25)):

- (103)  $n_\beta$  [Pers: default, Num: plural/marked] [EF: unval.]

The other *n*-head bears an unvalued feature for structural Case, probably also a default specification for person and a random specification for number (either default or marked):

- (104)  $n_\alpha$  [Pers: default, Num: random but valued] [EF: unval.] [Case: unvalued]

In this respect, the feature specification of the *n*-head in (103) is a proper subset of the feature specification of the *n*-head in (104), which is still sufficiently distinct to avoid total conflation and leads to incorporation.

Three things are worth noticing as consequences following from this conception. First, it is conceivable that in those cases in which the *n*-head in (103) bears a default value also on its number feature and the distinctiveness (in terms of Match) from the *n*-head in (93/104) is at stake, German nominal root compounds show a genitive marker (cf. discussion of data in chapter 2.2.). This genitive, like the plural is not associated with a rigid interpretation at C-I, however, which is familiar from the plural cases and, like plural, it is a feature that is interpretable on nouns at C-I (cf. Chomsky 1995a), i.e. it does not interact with unvalued structural Case. Thus, in the absence of a plural marker the genitive marker is the repair strategy that the derivation employs for making the two *n*-heads

sufficiently distinct to both survive in the derivation.<sup>78</sup>

Secondly, incorporating one of the *n*-heads into the respective other *n*-head, technically also has the effect that the incorporated *n*-head is embedded in the *n*-head of the incorporation host. This makes the absence of a fully accessible plural interpretation very plausible, since one of the Phase-heads is embedded in another Phase-head, which, for all intents and purposes, is the latest at which the lower Phase is inaccessible for further steps of the derivation, regardless of which version of the Phrase Impenetrability Condition (PIC) proves to be accurate (cf. e.g. Chomsky 2000; 2008 vs 2001; 2004; as well as Richards 2007: 568; Grewendorf & Kremers 2009: 389; Gallego 2010: 43 as well as chapter 5 for relevant and relativizing discussion). Also, it explains why, despite the [plural] value on number, we never see any licensing of e.g. numerals inside the root compounds.

Finally, it should be noted that the resulting structure for the nominal root compound is conceptually very similar to the structure discussed in Harley (2009), although motivated on (at least partially) diverging grounds, which I will shortly elaborate on, before providing a brief answer to the question how the PoS in the other type of nominal root compound found in German is dissolved.

Harley (2009) argues that nominal root compounds, which she refers to under the name of primary compounds (cf. ibid: 16), are the result of an incorporation operation. The

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<sup>78</sup> In fact, the slight but noticeable differences between the full productivity of plural marking and the somewhat less productive genitive marked forms discussed in chapter 2.2 (cf. examples in (27)) might suggest that this is possibly the older pattern that was historically productive, but has ceased to be so in present day processes of word-formation. This is supported by the fact that among novel compounds there is hardly any genitive marked form at all, while, at the same time, there are some double forms that contain either a genitive marker or no marker at all:

(i)	Rindsfleisch	vs.	Rindfleisch
	cow.Gen+meat	vs.	cow+meat
	'cowmeat'		'cowmeat'

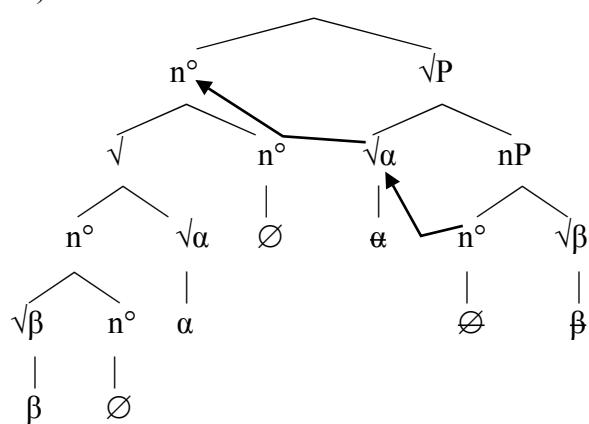
There is hardly any interpretational difference between the two forms and sometimes the distinction is argued to be of a dialectal nature. This can be taken as another indication that we are looking at a historically productive process here, which has lost its productivity in one dialect and is on the verge of loosing it in the other variant too. The loss of productivity in the *Rindsfleisch* form is predicted to be accompanied by a loss of the inflectional marker.

If on the right track, this opens up space for a number of interesting questions relating to language change. The coexistence of forms such as the one in (i) opens a window for the study of language change and allows us to make testable predictions on language change. Moreover, it allows for taking a closer look at which features are most likely to be affected by language change. So questions on whether the features of the head are affected in the same way that features on the non-head are and whether all features drift with the same ease become accessible. Notice, that it is to be hoped that answers to the latter question could also provide insight into whether the drift that is observed is in line with current assumptions on feature hierarchies. Many thanks to Erich Groat for drawing my attention to these matters.

crucial difference between Harley's account and the analysis pursued here is that in her paper incorporation does not apply to two fully categorized heads. Instead, she assumes that the modifying noun, i.e. the noun that is incorporated, is fully categorized but that it incorporates into a root and only in a second step the complex root is then categorized.<sup>79</sup>

Schematically, the incorporation operation is represented as follows:

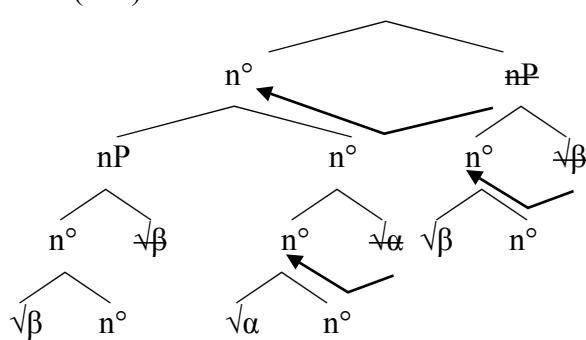
(105)



[adapted from Harley 2009: 17]

In contrast, in the approach pursued here incorporation takes place only after both roots have been categorized:<sup>80</sup>

(106)



<sup>79</sup> Harley (2009) also briefly discusses the possibility that the incorporated noun is selected by a null P-head before being incorporated, but discards it in the interest of structural parsimony. Roberts (2010) also dismisses this option and I do not consider it here either.

<sup>80</sup> Notice that although the incorporation operation in (106) *prima facie* looks like vacuous movement, it is not. First of all, it is movement of a Phase-head (cf. e.g. Chomsky 2008, Gallego 2010, Roberts 2010) and thus in line with standard assumptions on movement, while in (105) incorporation alternates between a Phase-head incorporating into a Non-Phase-head and *vice versa*. Secondly, due to the Agree relation that is established between the two *n*-heads by Match (cf. (103) & (104) above) the feature contents of the defective Goal is exhausted by Match. This has the effect of making the two operations of IM and Match/Agree indistinguishable without rendering IM vacuous (cf. Roberts 2010: 160 & 215 for a similar line of reasoning).

Harley (2009) remarks that the flexibility in the interpretation of nominal root compounds results from the fact that the incorporated noun and the head noun that is categorized only after incorporation do not stand in an argument relation, which means that the interpretive component, and ultimately pragmatics, must determine the meaning of the incorporated element (cf. *ibid* 16-18).

However, what remains largely unclear under the account in Harley (2009) is what triggers the incorporation. Apart from a brief reference to the requirement that the incorporee and the incorporation host are immediate sisters (cf. *ibid*: 15), which is reminiscent of Roeper & Siegel's (1978) First Sister Principle, nothing is said about what drives incorporation. At best, this provides the structural environment in which incorporation is possible, but it does not provide the reason for the incorporation operation itself. Harley (2004) mentions a Case-feature or a [ $\pm$  affix]-feature, as a possible trigger, however, both versions are rather stipulative and have an *ad hoc* character.

Moreover, Harley's (2004, 2009) analysis faces an additional problem for recursive compounds. Under the assumption that incorporation of the noun does not go into another noun, but into the root which is nominalized only in a later step, it would be impossible to derive compounds of the [<sub>N</sub> restaurant[<sub>N</sub> coffee[<sub>N</sub> cup]]] type. The only type of compound that is derivable is the [<sub>N</sub>[<sub>N</sub> gourmet coffee]][<sub>N</sub> cup]] type (cf. (48) & (49) for the relevant structures). This is immediately obvious from the structure in (105). The result of the incorporation is a categorized noun, which can, of course, be incorporated into another root that is then categorized. It is impossible, though, to have this complex *n* as an incorporation host, because if the host must be a root, the complex and already categorized LI is automatically out. The noun can only participate in further compounding by being incorporated into an uncategorized root.<sup>81</sup>

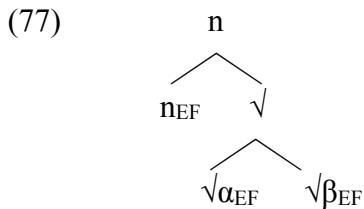
These problems are avoided in (106). When both roots are categorized prior to them being merged and one incorporating into the other, it should by default be possible to incorporate either the complex *n* into another simple *n* or to incorporate a simple *n* into the complex *n* and the data in 2.2 illustrates that this is indeed the case. Since the discussion here has shown that the flexibility in interpretation follows naturally from the fact that the

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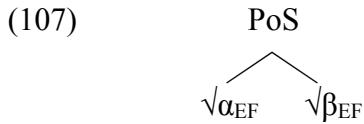
<sup>81</sup> Not only, does this *a priori* exclude the type of compounds mentioned above, it also raises the question of how this is accounted for under Harley's approach. Given that a [+ affix]-feature on  $\beta$  in (105) triggers  $\beta$ 's incorporation into the [- affix]  $\alpha$ , it is not at all clear, how the complex  $\alpha$  can be incorporated into another root, for which it would require a [+ affix] specification.

incorporated element and the incorporation host are categorized *n*-heads and since there is no obvious reason in Harley's (2009) approach that dictates that the incorporation host be an uncategorized root, I therefore assume that the structure in (106), though only marginally distinct from the one in (105) is preferable, because it avoids the complications that have been identified in (105) for recursive compounds.

Finally, let us take a brief look at the other type of nominal root compound identified for German, which contains a PoS as well and see how this PoS is dissolved. The structure for this compound is shown in (77), repeated below for convenience:



Here the PoS arises from the Merger of the two roots and the question that arises is, how this PoS is dissolved:



Recall, that Merger of  $\alpha$  and  $\beta$  is driven by EFs on these LIs. Both LIs do not contain any other features. Thus, the unvalued EF on  $\alpha$  probes  $\beta$  and the unvalued EF on  $\beta$  probes  $\alpha$ , none of these features will get valued, which is permissive, because EFs need not be valued in the course of the derivation and can go to Spell-Out undeleted. However, this does not dissolve the PoS nor does it help with the determination of the label for the SO that is derived by the Merge operation. In chapter 1.2 it has been pointed out that unlabeled structures cannot be dealt with at the interfaces. Tolerating temporarily unlabeled structures, which are filtered out at the interfaces, on the other hand, provides the interfaces with a considerable and undesirable amount of derivational power.

Now, if label-determination is tied to the Valuation of unvalued features, it is, however, impossible to determine a label at this point, because none of the two elements merged has its unvalued feature (i.e. the EF) valued and none of the two elements has any

other valued or unvalued feature that can be brought into the derivation.

For the dissolution of the PoS that arises from the Merger of two categorized *n*-heads - which also did not have any unvalued features other than the EFs which did not get valued in the course of the derivation either - it has been argued that a non-default number feature on the incoporee is what prevents total conflation and leads to incorporation. Here no such feature is available. Hence, the two roots conflate into a single root, which is then merged with a categorizing *n*-head. This comports well with the observations for Chinese ‘exocentric’-compounds in Zhang (2007) and the non-recursive, non-productive and non-compositional compounds in German, since, as expected, upon Spell-Out the two roots behave as one and do not individually contribute to the meaning of the compound.

The ordering of the two roots then boils down to a simple PF-matter that can be dealt with in terms of the LCA. Kayne (1994) originally argued that the LCA holds at all levels of representation, however, he devises his version of the LCA in X-bar theoretic terms. With the advancement of BPS it has been shown numerous times (cf. e.g. Chomsky 1995a; Hornstein 2001; Chomsky 2004; Nunes 2004; Fox & Pesetsky 2005; Boeckx 2008a and many many others) that the LCA applies in the phonological component or at the C-I interface but not in FLN. Moro (2000, 2007) develops a version of the LCA that allows for the Merger of two LIs creating a PoS. This PoS is dissolved in the course of the derivation by moving one of the LIs to a higher specifier position. This movement operation in Moro’s approach is driven by symmetry alone and does not rely on uninterpretable features (cf. 2000: 13-14). Although it is doubtful whether all movement can be perceived as PF-driven, as argued for by Moro (2000, 2007)<sup>82</sup>, a PF-driven account that dissolves the PoS in the type of nominal root compound discussed here is perfectly viable.<sup>83</sup>

As Moro (2000: 85) points out, the Merger of two heads that results in a PoS differs from the Merger of two maximal projections that create a PoS in that it does not provide conflicting ordering information but rather no ordering information at all. Nevertheless,

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<sup>82</sup> In fact, even Moro (2000: 93) acknowledges that it is far from clear whether all syntactic movement operations can be relegated to symmetry driven PF-movement.

<sup>83</sup> Thus, when sticking to the PF-movement analysis for the root + root Merger cases, the analysis presented here might even be uniformly derivable under the account on Boeckx (2010b) where *ns* are analyzed as intransitive Phases distinct from transitive *v* Phases. The exact technicalities of such an integration will be left for future research though.

movement of one head into a higher position (which is possibly a specifier position) solves the ordering problem and makes the structure linearizable at PF. Such a strategy seems to be readily available for the structure in (107) with several consequences.

First of all, this movement operation does not interfere with the meaning of the compound. We do not expect that PF-driven movement has an effect on the meaning of the structure and this is what we observe for these root compounds: the two roots are unanalyzed in syntax and treated as one, thus contributing to the drifted and fixed meaning of the compound.<sup>84</sup>

Ultimately, this may well be the reason for the lack of compositionality in these compounds. When merging a third root in the same derivational cycle, this would not lead to any embedding but would derive a flat structure that violates the principle of binary branching. Thus, either the product of the Merger of the two roots  $\alpha$  and  $\beta$  needs to be categorized first and can then be merged with a third root, or it must be accessible in the lexicon as a single root.

This line of reasoning comports well with considerations on parametric variation. The unavailability of recursive, productive and compositional compounding in Romance can then be reduced to the fact that Merger of three roots is generally unavailable across languages. So, Merger of more than two roots does not occur in Romance either. The alternative strategy of Merger of two  $n$ -heads is also unavailable in Romance, because the relevant feature, i.e. number, is not associated with the  $n$ -head in these languages (cf. e.g. Alexiadou, Hageman & Stavrou 2007: 229-235 and references therein).<sup>85</sup> Incidentally, this is also the place that Roberts (2010: 215-216) allocates to parametric variation - at least to the extent that parameters are a meaningful concept in minimalist theorizing at all (cf. e.g. Hornstein 2009; Boeckx 2010a; Kayne 2010; Starke 2010 for further elaboration).

Finally, the fact that this movement operation is an instance of head-movement in

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<sup>84</sup> Basically, the result of Merger of two roots then is a syntactic process, the result of which, however, is not interpreted independently. Thus, the idiosyncratic meaning of the SO that consists of two roots must come from the lexicon. Only if an LI that consists of two roots is listed in the lexicon will the result be well-formed. Otherwise the result of this Merger will be discarded as soon as the resulting SO is sent to Spell-Out, i.e. upon Merger of the categorizing head. The dissolution of the PoS then boils down to a purely phonological operation.

<sup>85</sup> The lack of an overt inflectional marker in nominal root compounds in English can be relegated to the fact that English generally does not distinguish between uncategorized roots and categorized  $x$ -heads by morphological marking in a majority of contexts. Thus, the syncretic nature of English correlates with the lack of overt inflectional marking in compounding, while it does not totally exclude this option as has been shown in the discussion of the data in section 2.2.

the phonological domain, which Chomsky (1995a) initially identified as the place for all instances of head-movement, correlates with the findings in recent accounts on syntactic head-movement, which all put strong emphasis on the fact that not all head-movement is syntactic and that some of it may well be phonological (cf. e.g. Matushansky 2006; Gallego 2010; Roberts 2010, 2011a). The analysis presented here simply allows for clearly dissociating instances of head-movement that take place in narrow syntax from those that take place at PF.<sup>86</sup>

## 2.4 Conclusion

On the basis of data on nominal root compounding primarily from German and English, it has been shown that a clear distinction can be made between productive, recursive and compositional nominal root compounding, on the one hand, and lexicalized, drifted and fixed nominal root compounding, on the other hand. The distinction between these two types of compounds follows from crucial differences in the derivation of the two types. Compositional, recursive and productive compounds result from the Merger of two *n*-heads. These *n*-heads are Phase-heads and the complement domain of these Phase-heads is sent to Spell-Out prior to the Merger of the two heads. In consequence, each of the two categorized roots that are first-merged with the *n*-heads contributes to the meaning of the compound, hence the compositional interpretation. Explicit, i.e. non-default, inflectional marking on one of the LIs is what allows for dissolving a PoS that arises from the Merger of the two *n*-heads and at the same time provides a clear explanation for why compound internal inflectional marking occurs and why this marking allows for the variety of different interpretations typically found with this type of nominal root compound.

Non-compositional nominal root compounds, in contrast, result from the Merger of two uncategorized roots, which are subsequently merged with an *n*-head that constitutes a Phase. In this case, the complex that results from the Merger of the two roots does not allow for an individual contribution of the two roots to the meaning of the compound. In consequence, these compounds have a drifted meaning. Inflectional marking is not expected to occur here, since roots generally do not host inflectional morphology. And the PoS that here arises from the Merger of two uncategorized roots is dissolved by

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<sup>86</sup> Cf. also chapter 4 for further elaboration on a type of head-movement that is exclusively syntactic in nature.

antisymmetry driven head-movement in the PF-component.

Thus, the derivation for the two types of nominal root compounds is strictly in line with the SMT and follows naturally from a Phase-driven derivation of morphological structure without making reference to additional stipulations and unmotivated features or mechanisms, such as a [ $\pm$  affix]-feature of questionable status, a dubious Case-feature, an unmotivated gender feature or an ACP with unclear motivations for movement.

### 3 The Nominalizing of Nominalizations

#### 3.1 The Conundrum

This chapter examines another domain in which an interaction between Phase-theory and PoS resolution can be observed: that of nominalizations and in particular that of nominal gerunds. Just like in nominal root compounding, here a PoS emerges from merging a verb and its internal argument (or object). Once again, the PoS can be resolved by two different strategies and a clear interpretational effect emerges, as is expected under an analysis that is guided by the SMT alone and that does not make use of additional unmotivated stipulations.

A classic conundrum that emerges in this context is the relation of inflectional morphology to derivational morphology. The crucial questions in this context are why they are sometimes the same and what properties carry over from inflectional to derivational structure, or, put differently, how, for instance, does the progressive morpheme *-ing* on the nominalization in (1) relate to the homophonous morpheme on the result nominal in (2) and what about the occurrence of *-ing* in the intermediate form in (3)?

- (1) Ted's painting pictures beautifully
- (2) Ted's/the paintings
- (3) Ted's painting of pictures beautifully

Closer inspection reveals that an expression like (4) carries the activity reading of inflectional *-ing*, but the progressive meaning of the *-ing* morpheme is unavailable. The result nominal in (5), in turn, does not carry any activity whatsoever:

- (4) his painting beautifully
- (5) his ugly painting irritated everyone

The puzzle is not new as is evidenced by the fact that the pattern in (1) - (3) is reminiscent of the forms already discussed in Chomsky's (1970) seminal paper 'Remarks on Nominalization' (cf. ibid: 215):

- (6a) John's refusing the offer

- (6b) John's refusal of the offer
- (6c) John's refusing of the offer

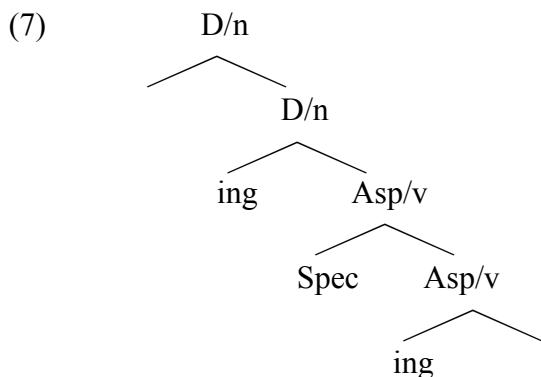
As is well known, the form in (6a) is characterized as a gerundive nominal in Chomsky's account, the form in (6b) is a nominalization and the form in (6c) is described as a 'rather clumsy' (Chomsky 1970: 215) mixed form. Chomsky (cf. *ibid*) draws a line between the derivation of the form in (6a), on the one hand, which is identified as the result of a regular syntactic process of word-formation, and the form in (6b), on the other hand, which is characterized as the product of a lexical process of word-formation. Despite the fact that it shares some characteristics with the form in (6b), the form in (6c) is ultimately described as the product of syntactic word-formation processes on a par with those processes that derive the form in (6a). The original assumption that the form in (6b) is formed in the lexicon and not in syntax has been challenged a number of times since Chomsky suggested it the first time (cf. e.g. more recently Marantz 1997, 2001, 2007; Hale & Noyer 1998a,b, van Hout & Roeper 1998; Roeper & van Hout 1999; Borer 2003, 2005; Alexiadou, Haegeman & Stavrou 2007; and several others). The assumption that the forms in (6a) and (6c) are derived in syntax has been far less controversial<sup>1</sup> and did not face any serious challenges. However, the exact technicalities of the derivational processes involved in generating the two forms are far from universally agreed upon (cf. for instance van Hout & Roeper 1998 vs. Abney 1987; Siegel 1997 and Grimshaw 1990 for just a few fundamentally different suggestions).

However, distinguishing between the forms in (1) - (6) simply in terms of where they are derived, i.e. in syntax or in the lexicon, is not good enough, as it does not provide an answer to why the forms in (2) and (5), which obviously resemble the form in (6b), are interpreted as results and can be pluralized, while the other forms resist pluralization and carry an activity reading. Moreover, arguing for two different places of derivation does not circumvent the question of which processes are operative in the syntax (and in the lexicon) that lead to the formation of these forms nor why syntax can derive both the forms in (1) and (3) or (6a) and (6c) respectively and what the differences between these are.

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<sup>1</sup> In fact, further relativization is probably due here as well. The form in (6a) is much more readily accepted as the result of a syntactic process, while the form in (6c) may also be the result of a lexical process of word-formation even in Chomsky (1970: 214).

Paying heed to reservations against deriving the forms in (2), (5) and ultimately (6b) in the lexicon, this chapter seeks to find answers to how they are derived instead and how they relate to the other forms in (1) - (6). One possible answer that is pursued in detail here comes from considerations on Phase-theory where a parallel set of theoretical questions arises. A substantial number of papers has argued that nominalized forms contain some sort of verbal functional structure (cf. e.g. Hazout 1995; Borer 1999; Alexiadou 2001; Fu, Roeper & Borer 2001; Barrie 2006; Alexiadou, Haegeman & Stavrou 2007, Alexiadou 2008; Harely 2008, Sichel 2009; Alexiadou, Iordăchioaia & Soare 2010). If correct, this strongly suggests that two Phases are involved in these cases: One lower Phase in the verbal domain and one higher Phase in the nominal domain. Apparently, based on the observations in (1) - (3), *-ing* can be generated in both domains:



In (7) the verbal head, i.e. *v* or *Asp*, qualifies as a Phase-head just as much as the nominalizing head, which is represented here as *n* or *D* respectively.<sup>2</sup> Given the SMT, the identification of these heads as Phase-heads means that Transfer applies in both instances.

In consequence, this is also the place where the observed differences in interpretation arise. Under a Phase-theoretic account that adheres to the SMT it is only natural that aspectual information that is related to the lower Phase in (7) is not accessible any more once the derivation has reached the higher Phase. On the other hand, pluralization, which is a property of nominal elements is expected to arise only in the higher Phase and not in the lower one.

In effect then, the two *-ing* morphemes in (1) - (3) are two distinct heads. One is a

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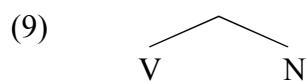
<sup>2</sup> For the time being I will not decide between the two alternatives (*D* vs. *n* and *Asp* vs. *v*). The analysis in this chapter will provide a clear answer to the question which nodes *-ing* instantiates.

verbal head that carries aspectual information and one is a nominal head that can be pluralized in very much the same way as any other *n*-head. Data from German discussed in Bauke & Roeper (*to appear*) and Alexiadou, Iordăchioaia & Soare 2010, as well as data from Romanian in Iordăchioaia & Soare 2008 corroborate this assumption, since German, for instance, distinguishes between two types of nominalizations that correspond to the higher and the lower *-ing* affix of English, namely nominalizations in *-ung*, on the one hand, and *-en* nominalizations (i.e. nominalized infinitives) on the other hand:

- |      |                                  |        |
|------|----------------------------------|--------|
| (8a) | die Kreuzung                     | German |
|      | the cross-UNG(nmlz) <sup>3</sup> |        |
|      | ‘the crossing’                   |        |
| (8b) | das Kreuzen                      | German |
|      | the cross-EN(inf)                |        |
|      | ‘the crossing’                   |        |

This, does not mean, though that German nominalizations in *-ung* or English nominalizer *-ing* forms do not project verbal functional structure (nor that they are derived in a different component of the grammar). It simply means that, as expected from predictions based on the SMT, Phase-boundaries which are established by the projection of the higher Phase-head block access to lower projections. So, in line with the analysis for nominal root compounds in the preceding chapter, the analysis here shows that deep principles of syntax affect morphology and once again evidence from the periphery of grammar for fundamental syntactic principles being at work is taken as the strongest evidence possible that they are real - in syntax and in morphology.

In essence then, *pace* the analysis in Abney (1987), all nominal gerunds here are analyzed as containing verbal functional structure. In a first step, the verb and its internal argument are merged in the lower Phase as in (9):




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<sup>3</sup> *nmlz* stands for *nominalizer*.

When the verb and the noun remain in the lower Phase, aspectual modification is possible, since the verb and its argument are interpreted in the lower Phase as well:

- (10) Ted's painting of the portrait in two days
- (11) Ted's portrait-painting in two days

The alternation between (10) and (11) results from two different strategies to resolve the PoS that arises from the Merger of V and N in (9). Both strategies are discussed in detail at a later point in this chapter.

When the verb and the object move out of the lower Phase, and into the higher Phase instantiated by the nominalizing head, they escape Transfer in the lower cycle and are thus interpreted only in the higher Phase. At this point, aspectual modification is unavailable however, because the verbal Phase, which can host aspectual modifiers, is already spelled-out and thus no longer accessible. Plural morphology on the nominal head, though, is readily available at this point.

A similar scenario can be observed in the sentential domain with *wh*-movement. It is standardly assumed that the *wh*-object moves from its base position in the complement domain of V into an (outer) specifier of vP (cf. e.g. Radford 2004: 393 or Grewendorf & Kremers 2009: 411 for some critical discussion). Movement to this specifier position, which is a Phase-edge position saves the *wh*-word from being sent to Spell-Out when the complement of v is transferred.

- (12) What did [<sub>vP</sub> **what** Ted paint [<sub>VP</sub> **what**]]?

The question is how this movement can be accounted for in the nominal gerund structures. When the noun incorporates onto the verb, both LIs naturally move as a unit into the higher Phase. The result are forms like (13), which have a result interpretation and cannot license aspectual modifiers, which are too low in the tree to be accessible (cf. 14):

- (13) Ted's portrait-paintings
- (14) \*Ted's portrait-paintings in two hours

The remaining question is what happens in non-incorporated structures, i.e. when the verb and the object move separately. Here things are a bit more intricate as the discussion will show. However, the general direction of the answer is already clear. If the verb moves into the higher Phase, it is not expected that aspectual modifiers are licit and this prediction is borne out:

- (15) \*Ted's paintings of the portrait in two hours.

Whether the pluralized forms are licit without the aspectual modifier as in (16) seems to depend on a number of factors:

- (16) ?Ted's paintings of the portrait

These factors will be examined carefully in the following sections of this chapter.

### 3.2 The pattern

The pattern that emerges from the brief introduction and discussion of the data in the previous section is the one in (17):

- (17a) The/Ted's cutting of the grass
- (17b) The/Ted's grass-cutting
- (17c) The/Ted's cuttings of (the) grass
- (17d) The/Ted's grass-cuttings

The nominal gerund in (17a) is equivalent to the mixed form in Chomsky (1970: 215), represented here as (6c), or to the form in (3) respectively. When comparing this form to the verbal structure in (18), it is immediately obvious that the internal argument of the gerund is realized in an *of*-phrase, (which is what lead Abney (1987) to describe this type of gerund as *-ing of gerund*).

- (18) Ted cuts the grass

In (18) the internal argument is directly licensed by the verb instead. In (17b) the internal argument is incorporated onto the gerund-form. The gerund forms in (17c) and (17d) also contain the non-incorporated internal argument realized in an *of*-phrase and the incorporated version respectively. The only difference between (17a) and (17c), on the one hand, and (17b) and (17d), on the other, is that the gerund forms in (17c) and (17d) are pluralized. Thus, we distinguish between non-incorporated and non-pluralized nominal gerunds (17a), incorporated and non-pluralized nominal gerunds (17b), non-incorporated and pluralized nominal gerunds (17c) and incorporated and pluralized nominal gerunds (17d). This is somewhat surprising and leads to the question how this observation is reconcilable with the pattern outlined in Chomsky (1970) and reproduced here in (6a) - (6b), or with the pattern provided in (1) - (3) for that matter.

One possible answer comes from Grimshaw (1990), who in her seminal book *Argument Structure* calls for a distinction to be made between two types of nominalizations. One type of nominalization leads to a result interpretation and is thus termed R-nominal, the other type of nominalization has an eventive character and is described as an argument structure nominal (henceforth AS-nominal). In her analysis Grimshaw describes some nominalizations as being ambiguous between an R-nominal and an AS-nominal interpretation. This is somewhat reminiscent of the forms in (17) where the form in (17d) has a clear result interpretation while e.g. the form in (17a) has an eventive reading. In order to disambiguate those forms that display an ambiguity between an event and a result interpretation, Grimshaw (1990: 46 ff.) lays out an extensive list of test devices, which among other things include diagnostics from argument structure and pluralization.<sup>4</sup>

The following examples are provided in this context (cf. Grimshaw 1990: 54):

- (19a) The assignments were long
- (19b) \*The assignments of the problem took a long time

The form in (19a), which does not project any arguments, is identified as an R-nominal,

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<sup>4</sup> I will not review the full list of test devices that Grimshaw provides, because it is not vital for the discussion here. The reader is referred to Grimshaw (1990) for the full list and to Borer (1999:1) and Alexiadou (2006: 4) for an overview of and some critical remarks on the diagnostics that Grimshaw suggests.

the form in (19b), which projects the internal argument in an *of*-phrase, pretty much in the same vein as the forms in (17a) and (17c), is analyzed as an AS-nominal. Thus, Grimshaw (1990) arrives at a classification in which those nominals that project the direct internal argument of the underlying verb in an *of*-phrase are typed as AS-nominals. This, however, does not allow for a distinction between the forms in (6a) - (6c), since all of these project the internal argument in an *of*-phrase. As for the forms in (1) - (3) in turn, the form in (2) can be identified as an R-nominal, because here no internal arguments are projected and the eventive character is also absent.

Another diagnostic that Grimshaw (1990: 54) suggests is that of pluralization. As can again be seen in (19a) vs. (19b) AS-nominals cannot be pluralized, whereas R-nominals are fine with plural forms. Once again, when applied to the forms in (1) - (3) and (6a) - (6c) respectively, everything falls in place. The form in (2) can be pluralized, has the predicted result interpretation and does not project the internal argument. All other forms project the internal argument, have an eventive character and resist pluralization:

- (20a) \*Ted's paintings pictures beautifully
- (20b) \*Ted's paintings of pictures beautifully
- (20c) \*John's refusings the offer
- (20d) John's refusals of the offer
- (20e) \*John's refusings of the offer

However, when bringing the forms in (17) back into the game, the pattern breaks down. The forms in (17c) and (17d) clearly project the internal argument while, at the same time, they show plural morphology.

The fact that Grimshaw (1990: 50) insists that identifying one of the diagnostics she lists suffices to classify a nominal form as either an R-nominal or as an AS-nominal paired with the remark that *-ing* nominals are always eventive AS-nominals (cf. ibid: 50) only complicates things further. Why then can the *-ing* forms in (17) project the internal argument and still alternate between a result and an activity reading and in how far is the form *grass-cuttings* in (17d) different from *paintings* in (2)? And why do both of the forms in (17a) and (17b) license aspectual modifiers or adverbial phrases and the *do-so* anaphor (cf. also Fu, Roeper & Borer 2001) while neither the forms in (17c) and (17d) nor the form

in (2) do:

(21a) Ted's cutting of the grass....

Ted's grass-cutting

- .... [PP in an hour]
- .... [PP for an hour]
- .... [PP with a scythe]
- .... [AdvP immediately]
- .... \*[AdvP unfortunately]
- .... [and Bobby's doing so too]

(21b) Ted's cuttings of the grass....

Ted's grass-cuttings

Ted's paintings

- .... \*[PP in an hour]
- .... \*[PP for an hour]
- .... \*[PP with a scythe]
- .... \*[AdvP immediately]
- .... \*[AdvP unfortunately]
- .... \*[and Bobby's doing so too]

Ultimately, the deeper question emerging here is how the eventive character of argument structure projecting AS-nominals and the result character of R-nominals can be described in structural terms. That is, why can the LI *cut* which is affixed by *-ing* in (21a) (or (17a) and (17b)) project argument structure and have an activity interpretation, while the same LI when affixed with *-ing* in (21b) (or (17c) and (17d)) can still project argument structure in an of *phrase* while it has a result reading at the same time. When taking the SMT at face value, the interpretational effect that is observed here should emerge from clearly discernible differences in the derivation of the two patterns. Especially so, when considering that nothing about everyday meaning rules out the illicit modifications in (21b). The example in (22) can be conceived of as a pluralized event, i.e. as an event that happened over and over again and still not even the atelic aspectual modifier is licensed:

- (22) \*The shootings of prisoners for hours in the bloody war did not bother the aggressors.

Although the intended meaning of the sentence in (22) is immediately accessible, it is not well-formed. Hence, the ungrammaticality of this sentence must be rooted in the structural make-up and this is what will be discussed step by step in the following sections.

### 3.3 Towards a Structural Analysis

#### 3.3.1 Non-incorporated Non-pluralized Nominal Gerunds

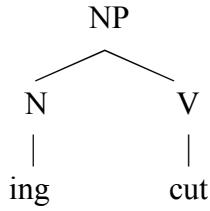
The distinction between R-nominals and AS-nominals in Grimshaw (1990) rests first and foremost on semantic pillars. Consequences for structural representations are not discussed. This, of course, does not mean that syntactic accounts do not exist. In fact a number of different approaches exist, which usually take the eventive interpretation of AS-nominals as an indication that verbal functional structure is projected at least in these nominals (cf. among others Harley & Noyer 1998a; van Hout & Roeper 1998, Alexiadou 2001, Borer 2003 for just a few examples). It is not the aim of this chapter though to review the numerous approaches available in the literature with all their merits and shortcomings. Instead, the purpose here is to take these accounts as a starting point for developing a structural analysis that adequately describes the full pattern in (17). This analysis is guided by the SMT and independent principles from Phase-theory.

Abney (1987) identifies four types of gerunds<sup>5</sup> and argues that nominal gerunds, which correspond to the form in (17a), do not project any verbal functional structure. In fact, under Abney's analysis the nominalizing affix is projected directly above the verb (cf. ibid: 223):

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<sup>5</sup> Actually, Abney (1987) identifies three basic types of gerunds, two verbal gerunds (also called gerundives), which he refers to as POSS-ing and ACC-ing gerunds (cf. ibid 222-227), and derived nominals, which correspond to the nominal gerund in (17a), and which he classifies as *-ing of* gerunds. Abney further identifies PRO-ing gerunds, but these, he argues, do not constitute a basic type, because they are structurally identical to the gerundives (cf. ibid 183-188).

(23)

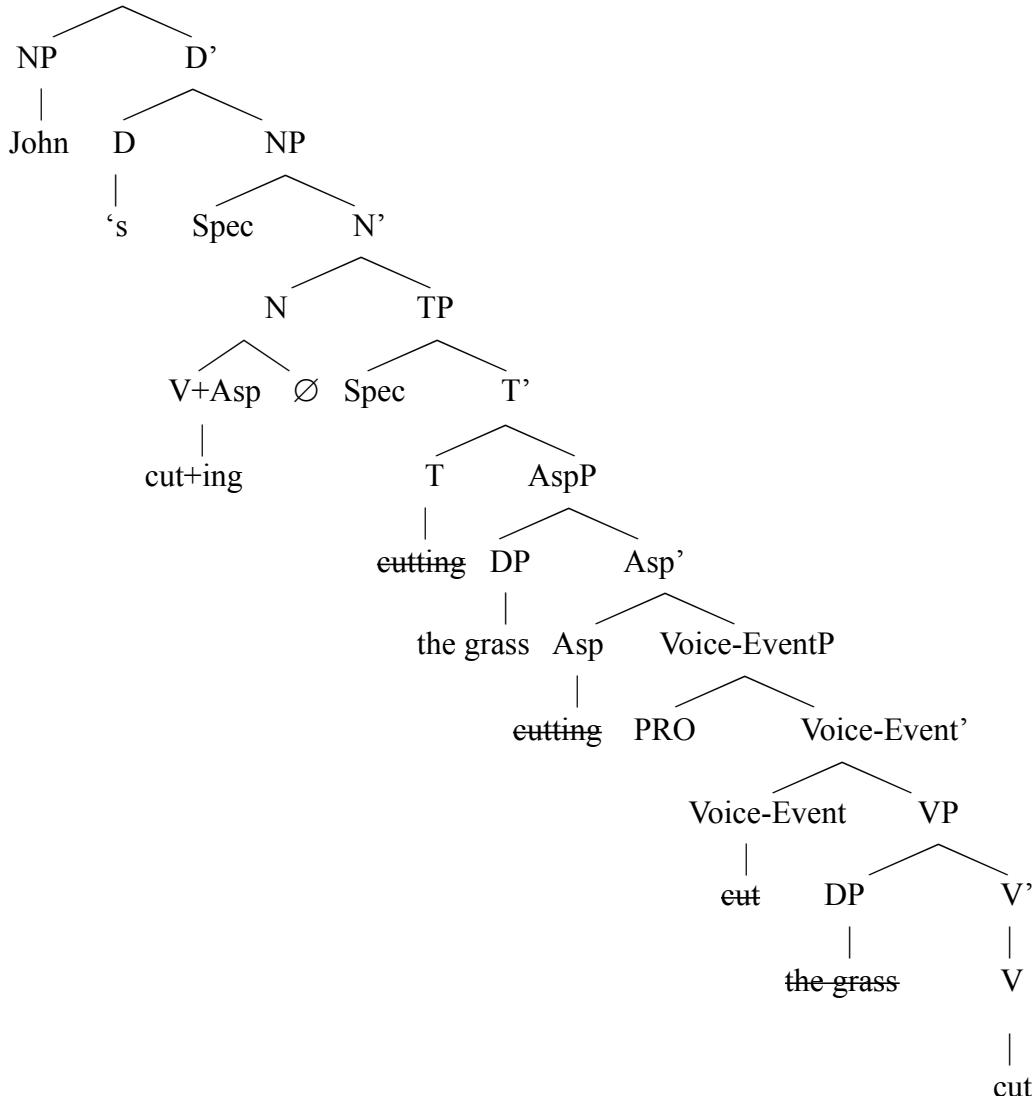


The internal argument in the *of* phrase is projected as a PP on top of the nominal node in Abney (1987) and *-ing* affixation in (23) is described as a morphological process. This is in stark contrast to Chomsky's analysis of mixed forms, which - again being identical to the form in (17a) - are derived in syntax.

On the other end of the spectrum, van Hout & Roeper (1998) provide the structure in (25) for the nominal gerund in (24) (cf. *ibid*: 186):

(24) John's cutting of the grass

(25) DP



So, here the nominal gerund projects the full range of verbal functional structure, all the way up to TP. The question here of course is, whether all these projections are motivated. Two indications for the projection of at least some verbal functional structure have already been mentioned in the preceding paragraphs. For one, a substantial number of verbal modifiers are licensed and secondly the internal argument is projected.

Let us start with the latter first. In a first step the DP *the grass* is merged with the root *cut*. Notice that at this point the LI *cut* is not categorized yet. Merger of *cut* and the DP is possible though (at least) by virtue of the EF on *cut* (cf. Chomsky 2008; Narita 2009; 2011). Notice further that, in line with the discussion in Chapter 1 and with standard assumptions in the literature (cf. e.g. Marantz 2001, 2007; Borer 2005a, 2005b; Ramchand 2008) it is not assumed that *cut* c-selects or s-selects the DP and it also does not assign a theta-role to the DP. Hence, the situation at this point is that a fully specified DP with interpretable  $\varphi$ -features and a root without any syntactically relevant features other than EFs are combined by Merge. The DP like all DPs additionally is specified for an uninterpretable and unvalued Case feature. This Case-feature cannot be satisfied by the root though. However, in contrast to the situation described for nominal root compounds in Chapter 2, here the unvalued Case-feature prevents incorporation of the DP.

Now, it could, of course be argued, that the DP *the grass* cannot be incorporated anyway, simply because it is a maximal category. Recall that it was pointed out in Chapter 2, following the argumentation in Roberts (2010) that only minimal categories can incorporate. Two questions emerge here though. First of all, how does a BPS syntax ‘know’ that a syntactic object is a maximal category? Of course, a relational definition of projection levels (cf. e.g. Chomsky 1995a: 398; Boeckx 2006: 175-176; Hornstein, Nunes & Grohmann 2006; Boeckx 2008a: 75-77) can surely function as a lifeline here.<sup>6</sup> However, when assuming that the DP is a Phase - as is suggested and discussed in a number of places (cf. e.g. Svenonius 2004; Bošković 2005; Hiraiwa 2005; Matushansky 2005; Müller & Heck 2008; Ott 2008; Samuels 2008, Richards 2012) - this has the somewhat unexpected consequence that a specifierless DP (i.e. a DP which has only the

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<sup>6</sup> In fact it is probably more than just a lifeline and could thus be regarded as a perfectly sufficient motivation against incorporation. But, see comments below for some minor reservations.

determiner as its edge) may count as a head for the remainder of the derivation (cf. Narita 2009, 2011).

The second point to be kept in mind here is that I argued in chapter 2 that a bare plural noun is analyzed as a root LI merged with a categorizing *n*-head. Thus, if the DP status of the SO *the grass* in (24) were the only argument against incorporation, it would be expected that a bare plural is automatically incorporated just as in the compound cases discussed in chapter 2. This, however, is not borne out:

- (26a) Ted's painting of pictures
- (26b) \*Ted's pictures-painting

The plural bare noun *pictures* is not incorporated onto the verb. In fact, incorporating the *nP* results in ungrammaticality as (26b) illustrates. So, again, it is unvalued Case on *pictures* that prevents incorporation in this case and the only difference between the form in (26a) and the form in (24) is one in definiteness that is expressed by the presence vs. absence of the DP in (24) vs. (26a) respectively (cf. also Borer 2005, Alexiadou 2008 for arguments that go into the same direction)<sup>7</sup>.

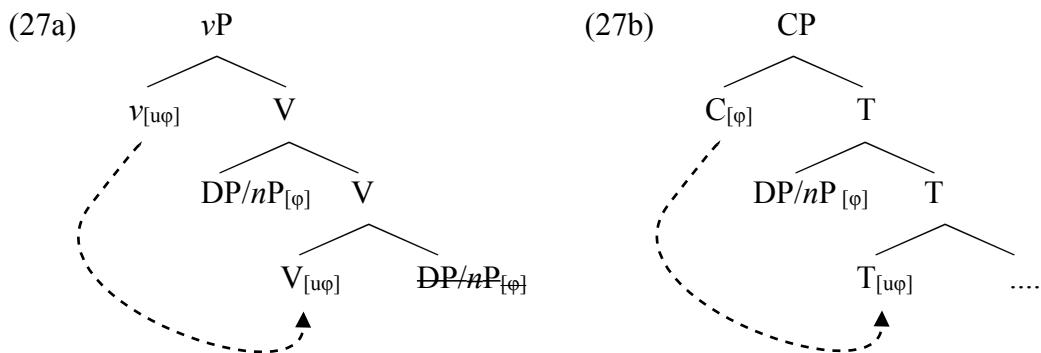
Thus, it is safe to assume that Merger of VP or rather rootP and DP/*nP* is in fact the first step in the derivation of the nominal compound. However, this much is hardly ever contested. What is much more of an issue is whether the rest of the functional structure that van Hout & Roeper (1998: 186) argue for is also projected or not. This I will come to imminently and the modifical properties mentioned above will play a major role in this context.

However, before turning to the next functional projection let me briefly address the position in which the internal argument is merged. In the structure provided by van Hout & Roeper (1998) shown in (25) the internal argument is merged in the specifier position of VP, which is based on the analysis in Larson's (1988) VP shell analysis (cf. also van Hout

<sup>7</sup> Actually, both, Borer (2005) and Alexiadou (2008) argue for a much more fine-grained nominal structure in which not only DP but also NumP, QP and/or classifier phrases are projected. In chapter 2.3.5 it has been pointed out already that this conception, although it is not totally irreconcilable with a Phase-based account, may be somewhat problematic. I will refrain from a more detailed analysis at this point, since it is dissociated from the point to be made here. Whatever may turn out to be the 'correct' projection in the nominal domain, it must provide for an explanation that includes the incorporation structures in nominal root compounds and the non-incorporated forms of nominal gerunds (as well as the incorporated versions as the discussion in the following sections will show!).

& Roeper 1998: 179) and Hale & Keyser (1992, 1993). However, this analysis is problematic in the present framework. Given the order independence of Merge and the absence of intermediate projections in BPS, the position that van Hout & Roeper (1998) argue for is indiscernible from a complement position. Furthermore, not even the distinction between complement and specifier in terms of First-Merge and Second-Merge (already pointed out as problematic in Chapter 1.2) is applicable here either, since the DP is the first merged constituent, which again points to its complement status.

Still, identifying the DP as the complement of RootP does not mean that RootP selects the DP in any way. Recall, that RootP is analyzed in the same way that RootPs in Chapter 2 are analyzed, as lacking any syntactically active features, other than EFs. So, the picture that emerges here is that the DP is merged with the (verbal) root forming RootP. What is at issue now is whether the DP moves from its Complement position into the specifier of VP/RootP. In ‘Beyond explanatory adequacy’ and again in ‘On Phases’ Chomsky (2004, 2008) argues that the internal argument moves from Comp, VP to Spec, VP (instead of Spec, vP, as previously assumed), where the uninterpretable and unvalued Case features of the DP are matched and valued by the Case features that V (or the root) inherited from  $v$ , and where the uninterpretable and unvalued  $\varphi$ -features on V (which V inherited from  $v$ ) are valued against the interpretable and valued  $\varphi$ -features on the DP, thus driving home the analogy between  $v$  and C as Phase-heads (cf. also Grewendorf & Kremers 2009: 389-390 for valuable discussion):



This scenario seems plausible enough under van Hout & Roeper’s (1998) analysis, where vP also is the next functional projection on top of VP. The unvalued Case feature on the DP/nP could be identified as the relevant feature here that is assigned a value (after movement) in a Spec-Head configuration between V, which inherited  $\varphi$ -features from  $v$ ,

and its specifier position.

However, even when abstracting away from the fact that feature inheritance is not an entirely unproblematic operation neither for C-to-T nor (and especially not) for *v*-to-V feature inheritance (cf. Grewendorf & Kremers 2009; Richards 2007), several things are at issue here. First of all, it is not entirely clear, whether *v* really is the next item that is merged with the RootP. Secondly, it is pretty obvious that in the nominal gerund's Case Valuation by feature inheritance from *v* to V is not an option and thirdly considerations on anti-locality (cf. Abels 2003; Grohmann 2003; Boeckx 2007; 2008a, and many others) seem to rule-out any type of Comp-to-Spec roll-up movement illustrated in (27a).

Let me start with the latter point first. Anti-locality was also briefly mentioned as a reason against head-movement in nominal root compounds in chapter 2.3.5.<sup>8</sup> However, it was not regarded as a major obstacle there and will not be regarded as such here either. If anti-locality is regarded as movement that is problematic under LCA considerations, this should not be regarded as a hinderance here for at least two reasons. First, the discussion in chapter 2 has shown already that the LCA does not apply in narrow syntax (in line with Chomsky 1995a and subsequent literature). Secondly, even if syntactic operations were involved, Nunes (2004) clearly shows that unpronounced copies do not pose an LCA violation under the copy theory of movement (cf. also Boeckx 2010b: 73-74 & 82-84 for an argument that anti-locality may turn out to be an epiphenomenon that does not count as a genuine explanation for a ban on Comp-to-Spec roll-up in some contexts).

The second point mentioned above is a more serious challenge. Harley & Noyer (1998b: 155-156) already mention *of*-insertion as a last resort for accusative Case assignment to a DP merged with a root. The examples they give are provided below (cf. *ibid*):

(28a) [DP The barbarians' [<sub>VP</sub> destruction of the city]]

(28b) [DP Belushi's [<sub>VP</sub> mixing of drugs and alcohol]]

The form in (28b) is a clear case of a nominal gerund and the form in (28a) is one of the

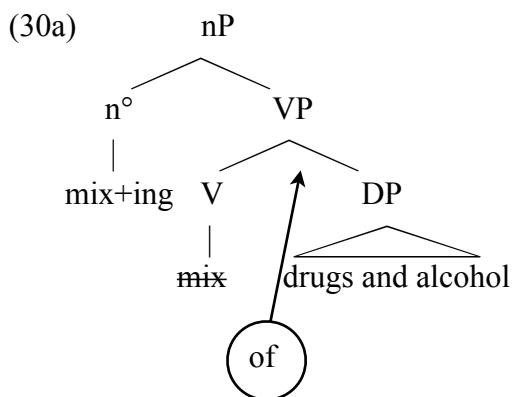
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<sup>8</sup> It was mentioned as a reason against the movement operation that Roeper & Snyder (2005) and Roeper, Synder & Hiramatsu (2002) postulate for nominal root compounds in which the LI merged in the ACP is moved to the specifier position of the same head it is initially merged with.

nominalizations that Grimshaw (1990) identified as displaying the R- vs. AS-nominal ambiguity. In both cases, Harley & Noyer (1998b: 155) argue that *of* is inserted as a last resort because the RootP is merged with a nominalizing DP and thus accusative Case assignment by a VoiceP or vP is unavailable. Hence, in Harley & Noyer's account no further verbal functional structure is projected. This line of reasoning is reiterated in Harley (2008: 7) and in Harley (2009: 9) where *of*-insertion is likewise treated as a last resort operation tied to the absence of higher verbal functional projections.

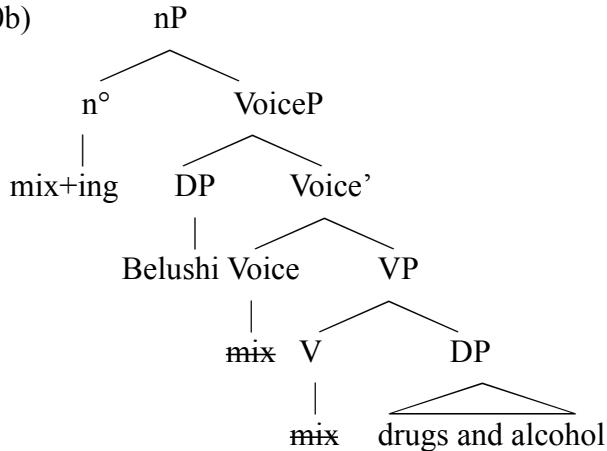
In fact Harley (2008: 7 & 13-15) relates the distinction between verbal and nominal gerunds to the presence vs. absence of VoiceP or vP from which the presence vs. absence of accusative Case on the internal DP argument is derived. Thus, Harley (2008: 7) provides the structure in (30a) for the nominal gerund in (29a) and the structure in (30b) for the verbal gerund in (29b)<sup>9</sup>:

- (29a) (The/Belushi's) mixing of drugs and alcohol  
(29b) PRO/Belushi('s) mixing drugs and alcohol



<sup>9</sup> In fact, Harley later on modifies the structure for the verbal gerund (cf. 2008: 13-15) adding yet more structure, which is basically motivated by the fact that the external argument cannot be licensed in Spec, VoiceP. However, the tenor remains the same: nominal gerunds are nominalized directly on top of VP and verbal gerunds contain (way) more verbal functional structure.

(30b)



In (30a) *of* is then inserted post-syntactically in order to guarantee the morphological well-formedness of the structure (cf. Harley 2008: 15).

When viewed from this perspective, it is immediately obvious that the question of *of*-insertion is closely linked to the first point addressed above, i.e. whether there is additional verbal functional structure on top of the V/root + DP complex. For Harley the answer is a clear no. It is worth noticing, though, that *of*-insertion in any case takes place only after Merger of a higher functional element. This element is the categorizing *n*-head for Harley (2008, 2009), which is a Phase-head that triggers Spell-Out of its complement domain. Therefore, *of*-insertion is a last resort mechanism that prevents the derivation from crashing by virtue of satisfying the unvalued Case feature on the DP. This, however, entails that *pace* Harley (2008: 15) *of*-insertion cannot be a post-syntactic operation, because this would require that a structure with an unvalued feature can be transferred to the interfaces without inducing a crash, unless Case Valuation is ostracized from narrow syntax anyway. Although not completely impossible, this latter option does not seem to be viable though, at least not in the framework pursued here, where the presence of unvalued Case is - amongst other things - the relevant factor for preventing incorporation.

Several alternative solutions are easily conceivable though. It could either be argued that *of* is the Spell-out of accusative Case as in Fu, Roeper & Borer or that a functional projection that licenses accusative Case is projected on top of VP/RootP but crucially below the Phase-head (cf. e.g. Harley 2008 for some speculations that go in that direction, which she ultimately discards though). This functional projection could simply be FP, Agro as in Chomsky (1995a), AspP as in Roeper & van Hout (1998), AspQP as in Borer (2005) or ProcP as in Ramchand (2008). There are a number of sound arguments for

and against assuming any one of these projections. Since it is not my central goal here to determine which one is the most plausible solution, I simply assume that *of* insertion is a last resort operation that values the unvalued Case feature on the internal argument DP and thus enables this DP to pass Spell-Out without stalling the derivation, when sent to the interfaces as part of the complement domain of a Phase-head merged on top of VP/RootP.<sup>10</sup>

With so much in place, it is now time to turn to the next Merge operation. As has been pointed out already, Harley (2008, 2009); Harley & Noyer (1998a) and many others do not assume any verbal functional structure in nominal gerunds on top of RootP. Harley's main motivation for the absence of verbal functional structure comes from the unavailability of verb-particle alternations in nominal gerunds. The examples she provides are the following (cf. Harley 2008: 9-14):

- (31a) Ted wrote the bill up
- (31b) Ted wrote up the bill
  
- (32a) Ted('s) writing up the bill surprised Orin
- (32b) Ted('s) writing the bill up surprised Orin
  
- (33a) Ted's writing up of the bill surprised Orin
- (33b) \*Ted's writing of the bill up surprised Orin

While the position of the particle alternates freely in the verbal structures in (31) and in the verbal gerunds in (32), the examples in (33) show that in nominal gerunds the DP cannot move higher than *up*. Harely (2008: 14) concludes from this that DP-movement is blocked

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<sup>10</sup> In fact, van Hout & Roeper 1998: 185) already point out that this is a problem that extends beyond the domain of nominalizations and that bears on other cases of Case-absorption, which, lacking a comprehensive theory on structural and inherent Case assignment, presently cannot be accounted for. The situation does not seem to have changed very much since then. Interestingly enough, though, Grewendorf & Kremers (2009) point to research on the properties of nominative Case assignment which hinges on an intricate interplay between overt T and C. Maybe a similar mechanism is at work here.

Alternatively, *of* can be seen as the Spell-Out of inherent Case (cf. also Harley 2009: 9). This has the advantage of circumventing the problematic character of *of*-insertion, which cannot be post-syntactic but can also not be accounted for in syntax, while at the same time maintaining the view that feature inheritance from *v* to *V* is not interrupted by any intervening aspectual (or other) projections (cf. also below for further arguments that go into the same direction). Notice also, that this is in line with the argument that it is Case-marking on the DP that prevents it from incorporating onto *V*.

simply because there is no probing head higher than *up* and thus also no potential landing site for the DP. However, this conclusion is a bit premature for several reasons.

Alexidaou, Iordăchioia & Soare (2010) provide an analysis of nominal gerunds that is similar to Harley's account in so far as verbal functional structure is not projected there either. This does not mean that higher functional structure which could in principle host the internal argument DP is not projected, though. Instead Alexidaou, Iordăchioia & Soare (2010) argue for a distinction between verbal and nominal gerunds in terms of boundedness and thus for the projection of Class(ifier)Ps and Num(ber)Ps in the latter case. Thus, *a priori* there does not seem to be any reason for excluding movement of the internal argument DP to any of these projections.<sup>11</sup> So, the ungrammaticality of (33b) needs to be accounted for in terms other than just stipulating the lack of a functional projection on top of the RootP that can host the DP<sup>12</sup> and the analysis in Alexidaou, Iordăchioia & Soare (2010) seems to be a viable first step.

Two things, however, remain problematic under an analysis that does not recognize the functional structure on top of the VP/RootP + DP complex as verbal. First of all, the presence of verbal modifiers, already illustrated in (21) and repeated here in (34) remains unexplained:

- (34a) Ted's painting of the picture in an hour
- (34b) Ted's painting of the picture for an hour
- (34c) Ted's painting of the picture with an old brush
- (34d) Ted's painting of the picture immediately
- (34e) Ted's painting of the picture and Jack's doing so too
- (34f) Ted<sub>i</sub> enjoyed the painting PRO<sub>i</sub> of the picture

The examples in (34) clearly show that a remarkable number of verbal modifiers are licensed. Atelic modification is possible as (34b) shows and even telic modifiers are

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<sup>11</sup> I am brushing over a number of intricate details here, but I will come back to a more detailed analysis of Alexidaou, Iordăchioia & Soare's (2010) account when dealing with pluralized nominal gerunds in subsequent sections of this chapter.

<sup>12</sup> I am just pointing this out as an inconsistency in Harley's account and do not intend to offer an explanation for the data in (33) at this point - but cf. the analysis in Chapter 4 for some thoughts on verb-particle alternations in the current framework.

grammatical (cf. 34a), which clearly shows that verbal functional structure must be available (cf. e.g. Borer 2005 for a very elaborate account on the emergence of telicity in the context of verbal functional structure). Furthermore, prepositional modifiers (34c) and non-sentential adverbial modifiers (34d) are licit, the relevant form of the *do-so* anaphor is perfectly acceptable (34e) and control is possible (34f).

So, it seems safe to assume that verbal functional structure **is** projected in nominal gerunds. The remaining question is what exactly the relevant projections are. The structure provided by van Hout & Roeper (1998: 186) illustrated in (25) shows a Voice-EventP and an aspectual projection (AspP). Voice-EventP equals Chomsky's (1995a and subsequent literature) vP or Kratzer's (1996) VoiceP and is the place where an implicit (external) argument (i.e. PRO) is projected in the specifier position<sup>13</sup> that can be coindexed with the matrix subject as in (34f).

Further evidence that van Hout & Roeper (1998: 184) provide is that purpose clauses are licensed by the implicit argument in Spec, vP. Here the relevant examples are those in (35) (cf. van Hout & Roeper: *ibid*):

- (35a) The/The army's destruction of the city to prove a point
- (35b) The/The boy's consumption of drugs to go to sleep

The examples in (36) illustrate that the same argument carries over to nominal gerunds:

- (36a) Ted's painting of the picture in just to days to prove a point
- (36b) Ted's mowing of the lawn to avoid a snappy remark from his brother

A similar case in point can be made on the basis of the following observation on *-er* nominals:

- (37a) The mower of the lawn just walked in

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<sup>13</sup> Whether nominalizations - and thus nominal gerunds - realize an implicit agent is subject to some debate (cf. Sichel 2009 and references therein for an overview and some arguments in favor of this view). I here follow the view expressed e.g. in Roeper (1987, 1993, 2005); Longobardi (2001a) Sichel (2009, 2010) that an implicit agent is projected but remain agnostic as to whether it is PRO or *pro* (cf. e.g. Borer 1999) as well as to how this element is licensed under a Phase-theoretic approach to BPS (but cf. Herbeck *in preparation* for valuable comments on this).

- (37b) The lawn-mower just walked in

The obligatory agent reading of the form in (37a), in contrast to the variable agent vs. instrument reading of the form in (37b) can be seen as yet another indication that PRO is base-generated in Spec, vP also in *-er* nominals.<sup>14</sup> Thus, the projection of verbal functional structure and in particular of vP in nominal gerunds is not so far off as it might seem *prima facie*. Additionally, Merger of *v*, which is initiated by the EF on *v*, has the effect of verbalizing the RootP + DP complex - thus making it a VP in very much the same way that Merger of *n* (discussed for the nominal root compounds in chapter 2) has the effect of nominalizing the root. The only difference between the ‘verbal’ and the ‘nominal’ root is, that the latter is intransitive, i.e. it does not have any complements, while the former is transitive, i.e. hosting the internal argument DP (cf. Boeckx 2010b for a detailed argument along these lines). In fact, only the verbalizing character of vP makes the DP inside RootP an argument DP for which a thematic role can be read off at the interfaces, because it is in a given structural configuration (cf. again Boeckx 2010b; Boeckx 2008a: 76; Pietroski & Hornstein 2009: 125-129; Borer 2005).

In analogy to *n*, categorizing *v* is a Phase-head that induces Transfer of the Phase-complement. Thus, the RootP/VP and the DP in its specifier position are spelled-out. This has the effect of rendering the complement domain inert. So, the only difference between Chomsky’s *v\** and the *v* identified here for nominal gerunds, so far seems to be the lack of the Case Valuation property of *v* for nominal gerunds.

As has been pointed out above already, van Hout & Roeper (1998: 183-184) further assume that an AspP is projected on top of vP. The head of AspP is the aspectual *-ing* affix and the specifier position of AspP is the place where the telicity of the nominalization is checked in terms of Spec-Head agreement between a quantized DP and the aspectual head. In this respect van Hout & Roeper (1998) deviate from earlier assumptions made in van Hout’s original proposal, where the telicity of the DP is checked in AgroP. Their argument for this deviation is that van Hout & Roeper (1998: 184-185) aim at a more general

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<sup>14</sup> Actually, the example in (38) is mentioned by van Hout & Roeper (1998: 188). However, in their analysis of *-er* nominals no PRO is generated. Instead, *-er* is generated in Spec,vP from where it seems to incorporate onto *v*, which is then moved all the way up to *n* (through Asp and T). It is beyond the scope of this chapter to offer a detailed analysis of *-er* nominals, however, the distinction between the incorporated form in (37b) and the non-incorporated nominal in (37a) will be readdressed when comparing incorporated and non-incorporated nominal gerunds in the next section.

aspectual phrase thereby tentatively trying to accommodate for the absence of accusative Case in the nominal gerund, while at the same time maintaining the assumption that *-ing* is an aspectual affix.<sup>15</sup>

This, however is a problematic assumption in so far as it would require the DP, which is in the complement domain of vP, and thus inert after Spell-Out, to move out of the already spelled-out domain past the Phase-head into a higher specifier position of the aspectual phrase.

A number of potential solutions are available here. For instance, the DP could move through an outer specifier of vP. This, however, leads to a number of ordering problems inside vP and to the question when exactly this movement operation takes place and what this means for Transfer and Valuation of the Phase-complement (cf. Grewendorf & Kremers 2009).

Alternatively, as argued in Fu, Roeper & Borer (2001), the relevant aspectual projection, which even van Hout & Roeper (1998) associate with what Chomsky originally identified as Agro after all, could be generated below vP. Under this view vP, of course, remains the place where the implicit agent is projected and it remains the Phase-head. AspP is also still the place where telicity is checked (cf. Fu, Roeper & Borer 2001: 567-568). However, the status of AspP is somewhat unclear then, because the verbal aspectual projection is *de facto* merged with a transitive uncategorized RootP. This means that either AspP has the status of a categorizing head, akin to *v* and *n* (and thus emerges as a Phase-head), or that telicity must be checked otherwise.<sup>16</sup>

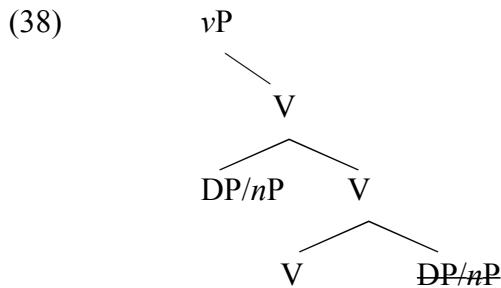
Recall, that, following Chomsky (2004, 2008) I argued for feature inheritance from *v* to V in (27). Under this view, movement of the DP from the complement position of V to its specifier position is forced<sup>17</sup>:

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<sup>15</sup> Van Hout & Roeper (1998: 185) further point out that *-ing* in contrast to other nominalizing affixes like e.g. *-tion*, entails an imperfective event. So the distinction between a/telicity and im/prefectiveness is associated with one and the same head in this account, which ultimately means that the distinction between inner and outer aspect is conflated in one and the same node.

<sup>16</sup> Yet another solution would be to maintain *v* as a Phase-head and Merge Asp on top of it and then extend the Phase to the Asp head by Phase-sliding (cf. Gallego 2010; Gallego & Uriagereka 2007). What is not clear, however, is how the mechanism of Phase-sliding can be accounted for in English (cf. Gallego 2010 for conditions on Phase-sliding).

<sup>17</sup> This movement operation, it will turn out in chapter 4 (and can already be inferred from the analysis in chapter 2), is less innocent than it seems. However chapter 4 will also provide a solution to phrasal movement that is immediately applicable to the IM operation described here. Thus, for the time being, I will assume that this IM is, in principle, unproblematic.



A number of consequences automatically follow. Theta-roles can be ‘assigned’ or rather read off the structural configuration at the C-I interface, (which can possibly be associated with the need for inherent case-marking by *of*), the root is categorized, and unvalued φ-features are valued.

When the DP/nP remains in a projection inside the complement domain of vP (i.e. in Spec, VP), this means that at the C-I interface the relation between this DP and the V-head is interpreted. Thus, it seems plausible enough that this is also the place where the telicity alternations are checked. The fact that telicity checking actually takes place and thus hinges on the verbal properties of the root, which it inherits from *v* via feature inheritance, is corroborated by the fact that verbal aspectual modifiers are sensitive to the nature of the internal argument also in nominal gerunds, where they show the same alternations that are so well studied for verbal structures:

- (39a) Ted’s cutting of lawns for two hours/\*in two hours

- (39b) Ted’s cutting of the lawn in two hours

- (40a) Ted cut lawns for two hours/\*in two hours

- (40b) Ted cut the lawn in two hours

In (39a) telic modifiers are not licensed, due to the bare plural form *lawns*, which is the internal argument of *cut*. A quantized DP such as *the lawn* in (39b), however, renders modification by telic modifiers possible. Thus, the same pattern that is observed for the verbal forms in (40) emerges (cf. e.g. Borer 2005 for a very thorough and well informed

overview on what the relevant properties for the emergence of telicity are). Under this view, no additional projection is necessary for telicity checking.<sup>18,19</sup>

To summarize thus far: the licensing of verbal modifiers in nominal gerund structures suggests that verbal functional structure is projected inside this type of gerund. This assumption is further substantiated by facts from implied agents and the telicity sensitivity of this construction. The uncategorized transitive RootP is categorized by  $v$ , which hosts the *-ing* affix as its head and the implied agent (i.e. PRO) in its specifier position. The crucial difference between this type of  $v$  and verbal  $v$  is that the present type of  $v$  does not and cannot value Case on the internal argument DP. Apart from that,  $v$  exhibits all the other properties that verbal  $v$  also exhibits.

Thus, the structure that has been established for the nominal gerund in (41) so far is the one in (42):<sup>20</sup>

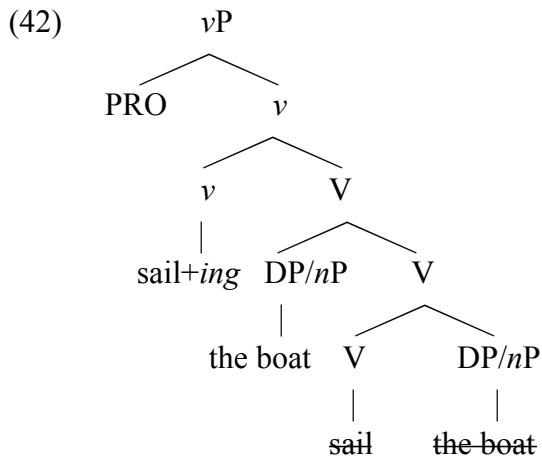
(41) Ted's sailing of the boat

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<sup>18</sup> Additionally, it is worth noticing that this view on an interrelation between telicity checking and feature inheritance from  $v$  to V comports well with the broadly discussed consequences that feature inheritance has for the version of the PIC that needs to be adopted (cf. e.g. Grewendorf & Kremers 2009; Hornstein 2009; Boeckx 2010a; Gallego 2010). When feature inheritance, as argued for in Chomsky (2004, 2008) is adopted, this automatically leads to what is known as the stronger version of the PIC (cf. Chomsky 2000) according to which the complement domain of a Phase-head is inaccessible upon Merger of that Phase-head and not upon Merger of the next higher Phase-head (cf. Chomsky 2001). This in effect means that it is virtually impossible to have AspP projected outside of vP and at the same time to target the DP in Spec, VP for telicity checking.

<sup>19</sup> One more aspect that maybe cannot be regarded as particular support for the approach taken here, but that at least does not undermine it in any way is that of analogy. Categorizing  $v$  has the same effect that categorizing  $n$  has for the root in the nominal root compounds discussed in chapter 2, where intervening projections such as gender, number, person etc. have not been adopted either (cf. also Boeckx 2010a; Narita 2009, 2011 and many others for arguments against an all too cartographic approach) and it pertains to the ‘core structural rhythm of syntax’ (cf. Boeckx 2010b: 91, 2008d: 5) that alternates between Non-Phase - Phase - Non-Phase - Phase etc.

<sup>20</sup> The incorporation of V onto  $v$  can be treated along the same lines that the incorporation of the root onto the categorizing  $n$ -head has been treated in chapter 2.3.5, i.e. as late insertion exhibited by a mechanism of conflation along the lines of Hale & Keyser (2002) or Harley (2004), which is in line with Roberts’ (2010) assumptions on head-movement, or as radically late insertion as outlined in Boeckx (2010b: 90), or as a PF type of head-movement argued for in Chomsky (2000), and thus does not cause any problem here.



In the structure provided in van Hout & Roeper (1998), adapted here in (25), nominal gerunds also project TP. Thus, even more verbal functional structure is projected there. The main motivation for the existence of a TP that is discussed in van Hout & Roeper (1998: 185-186) is that this is the place where the event variable is closed off. In essence, van Hout & Roeper here point at the syntactic locus that provides for the eventive character that Grimshaw (1990) attributes to nominal gerunds - and AS-nominals in general.<sup>21</sup> In order to support their analysis van Hout & Roeper (1998) provide the data in (43), which shows that the entailed event in ambiguous AS-nominals (i.e. those of the *-tion* type) can be referred to by a pronoun in the following sentence (cf. *ibid*: 185).

- (43a) I hated the destruction of the city. **It** took place last summer.
- (43b) I hated the destruction of cities. **It** took place last summer.
- (43c) #I hated city-destruction. **It** took place last summer.

As (43a) and (43b) show, telicity does not have any impact here. Incorporated forms, on the other hand, which in van Hout & Roeper's (1998) account are nominalized directly on top of VP (cf. *ibid*: 190-193) and thus do not project neither TP nor any other verbal functional structure<sup>22</sup>, are out, as (43c) illustrates.

Parallel examples of nominal gerunds in (44) *prima facie* seem to point into the

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<sup>21</sup> A similar and again much more elaborate version of this line of reasoning can be derived from Borer (2005a;b).

<sup>22</sup> This is an issue that is still to be discussed and that will be substantially revised in the following subchapter. For the moment though, I will refrain from further comments.

same direction:

- (44a) I hated the shooting of the deer. **It** took place last summer.
- (44b) I hated the shooting of deer. **It** took place last summer.
- (44c) #I hated deer-shooting. **It** took place last summer.

What needs to be paid attention to here though is that the presence of a determiner or a possessive phrase in the examples in (43c) and (44c) significantly improves the acceptability of these sentences as is illustrated below:

- (43c') I hated the/the army's city-destruction. **It** took place last summer.
- (44c') I hated the/the poacher's deer-shooting. **It** took place last summer.

And at the same time omission of the determiner in (43a)-(43b) and (44a)-(44b) renders these sentences bad<sup>23</sup>:

- (43a') #I hated destruction of the city. **It** took place last summer.
- (43b') #I hated destruction of cities. **It** took place last summer.
  
- (44a') #I hated shooting of the deer. **It** took place last summer.
- (44b') #I hated shooting of deer. **It** took place last summer.

This can be accounted for in two ways. Either incorporated structures contain a TP just as much as non-incorporated structures do and thus can close off the event entailment in exactly the same way, which is why the event can be referred to by a pronoun as well. Or, alternatively, neither the incorporated nor the non-incorporated forms project a TP.

When adopting the first strategy, one question that immediately emerges is why TP does not have the capacity of assigning nominative Case to the external argument of *v*. Of course, one possible explanation could be that only finite and overt T can license nominative Case and maybe only in combination with overt C, as argued for in

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<sup>23</sup> Notice that under Grimshaw's (1990: 50) diagnostics according to which it is AS-nominals that can stand without a determiner this comes as a bit of a surprise.

Grewendorf & Kremers (2009) (cf. also footnote 10 above). However, as Gallego (2010) notes, this leaves a number of questions unresolved. Tellingly, even van Hout & Roeper (1998) acknowledge in a footnote that TP in nominalizations “[o]bviously [...] differs from sentential tense” (*ibid*: 185).

Furthermore, following the stance reiterated in Fu, Roeper & Borer (2001), the analysis in van Hout & Roeper (1998) indicates that sentential adverbial modifiers are not licensed, in contrast to lower non-sentential adverbial modifiers (cf. *ibid*: 181):

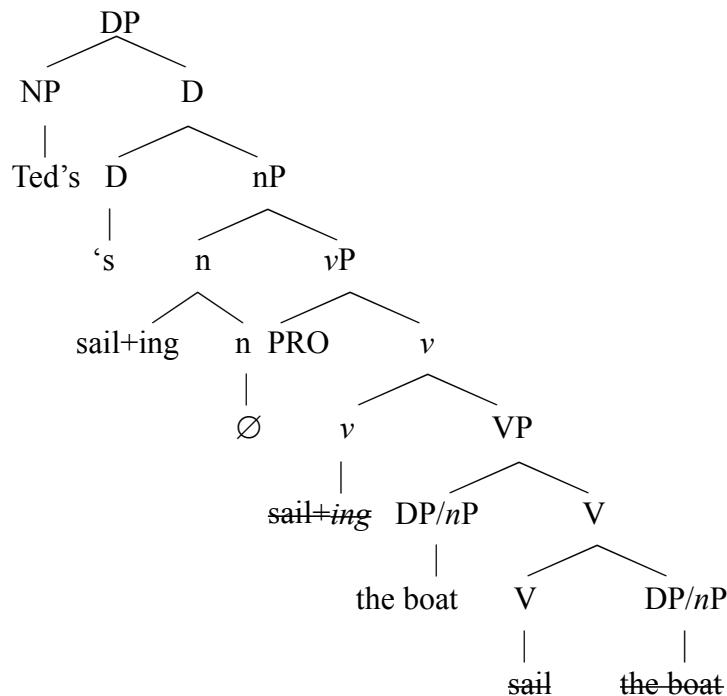
(45a) \*Ted’s cutting of the grass unfortunately

(45b) Ted’s cutting of the grass immediately

In Fu, Roeper & Borer (2001) this is taken as an indication that TP is not projected, while it receives no further mentioning in van Hout & Roeper (1998).

Thus, for the approach here, no conclusive evidence in favor of the projection of TP can be found. Therefore, the nominalizer that eventually provides the nominal character of a nominal gerund like *Ted’s sailing of the boat* is merged and again, the *v + V* complex incorporates onto this node, which it can by virtue of the EF on *v*, as discussed in chapter 2 already. The structure for non-incorporated non-plural nominal gerunds thus is the following:

(46)



The *n*-head is a Phase-head just like any other categorizing little *x*-head is (cf. Marantz 2001, 2007) and is on *a par* with what Marantz (2007: 4-6) identifies as an instance of outer morphology, where a categorizing head is merged with an already categorized piece of structure thus leading to two word-internal Phases.<sup>24</sup>

The next section looks at the structures of the incorporated counterparts of the non-incorporated non-plural nominal gerunds discussed here and the structure for this type of nominal gerund will be compared to the one in (46).

### 3.3.2 Incorporated Non-pluralized Nominal Gerunds

The analysis of non-incorporated non-plural nominal gerunds in chapter 3.3.1 above, according to which this type of nominal projects verbal functional structure inside the nominalization, of course, automatically raises the question whether the incorporated counterparts of these forms pattern alike or whether verbal functional structure is not projected inside the incorporated forms. Put differently, the issue here is whether in incorporated nominal gerunds (henceforth INGs) the *-ing* affix is a verbal/aspectual affix, on *a par* with the affix identified in (46) for the non-incorporated nominal gerunds, or whether it is a nominalizer akin to the affix suggested in e.g. Abney (1987), Siegel (1997) or Alexiadou, Iordăchioaia & Soare (2010) and, provided it is a nominalizer, whether *-ing* is an instance of inner or outer morphology (cf. Marantz 2007: 4-6) then.

To tackle this question a comparison between the nominal gerunds analyzed in section 3.3.1, INGs and verbal structures serves as a good starting point. Relevant examples are provided in (47):

- (47a) Ted's portrait-painting
- (47b) Ted's painting of the portrait
- (47c) Ted paints the portrait.

Following standard reasoning (cf. e.g. Parsons 1990; Kratzer 1994; Heim & Kratzer 1998 and also more recently e.g. Pietroski & Hornstein 2009 and references therein) van Hout &

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<sup>24</sup> Further support that this is on the right track comes from Marantz's (2007: 6) description of outer affixation as morphology of 'predictable form and predictable meaning'. This dovetails nicely with Abney's (1987) observation that nominal gerunds (i.e. his *-ing* of gerunds) display verbal properties in so far as they 'do [...] not permit passive without passive morphology' (*ibid*: 214).

Roeper (1998) argue that the event interpretation for the structure in (47c) results from existential closure of the eventuality variable upon Merger of a finite T-head. The form in (47b) in their account also receives its eventive character by existential closure when the T-head is merged (cf. the structure in (25)).<sup>25</sup> For incorporated forms, such as those in (47a) van Hout & Roeper (1998) identify an ambiguity between an event and a result reading. The relevant examples they provide are the following (cf. ibid: 188)

- (48a) The lawn-mower just walked in.
- (48b) The mower of the lawn just walked in.

While the non-incorporated form in (48b) is an event entailing form, the form in (48a) does not entail an event of *lawn-mowing*. In fact, a *lawn-mower* can even be a person who has not mowed a single lawn in their entire life (cf. ibid: 178-179). The example in (49) makes the even stronger point that the incorporated form alternates between an instrument and an agent interpretation:

- (49) The lawn-mower is in the garage.

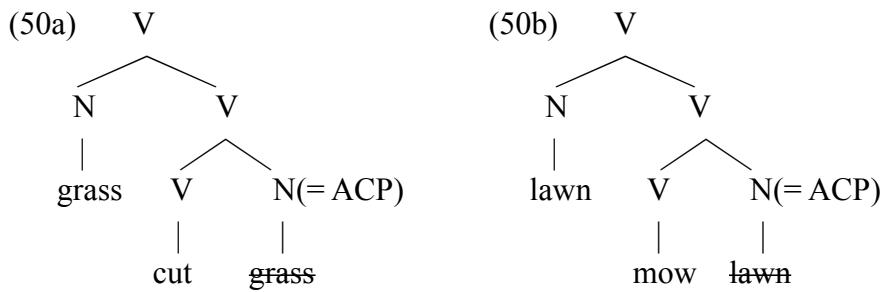
Under the agent reading in (49) and under the event reading in (48a), van Hout & Roeper (1998) argue that “the eventuality variable introduced by the verb in a compound [i.e. incorporation (LSB)] is somehow bound generically” (ibid: 189). This move is necessary for van Hout & Roeper (1998), because under their analysis the incorporated forms of the -er nominals in contrast to their non-incorporated counterparts do not realize a TP, nor any other verbal functional structure in which the event variable can be closed off

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<sup>25</sup> Recall that van Hout & Roeper (1998) argue for the projection of T also in nominal gerunds (and other types of nominalizations) and thus also argue for existential closure by an  $\langle s, t \rangle$  type head (cf. ibid: 185). However, this is already a bit problematic, because standardly only finite T can existentially close an event variable. So unless another means of existentially closing the event variable is found (which is easily available (cf. e.g. Pietroski & Hornstein 2009: 128-129 and comments in footnote 26 below)), this does not count as an explanation for the structure in (47b) either and is, in fact, another indication that the non-incorporated non-pluralized nominal gerunds discussed in the previous subchapter do not contain a TP.

alternatively.<sup>26,27</sup>

In fact, van Hout & Roeper (1998) argue that the incorporated forms are the result of head-incorporation via the ACP with subsequent cliticization onto a nominal affix. In other words, the incorporation in *grass-cutting* or *lawn-mower* proceeds via the ACP in the way illustrated in (50):



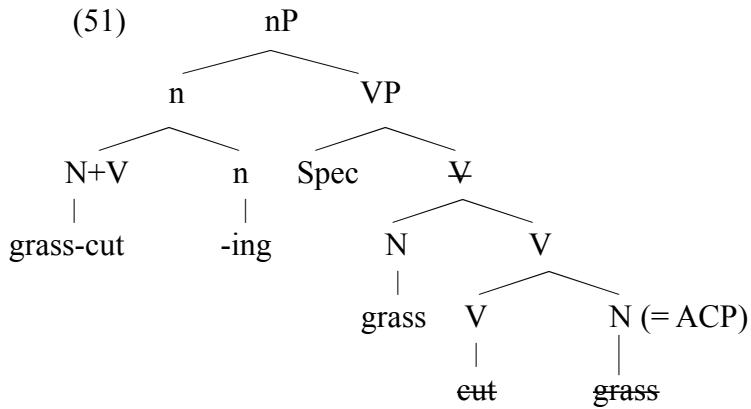
Recall from the discussion of the ACP in chapter 2 that Keyser & Roeper (1992) originally argued for the ACP in the context of verbs and only later, in Roeper, Snyder & Hiramatsu (2002) and Roeper & Snyder (2005), this analysis is extended to nouns (and other lexical categories). So, the nominal head that is merged in the ACP of the verb incorporates from there.

In a second step, the complex V is merged with a nominalizing head, either *-ing* or *-er* onto which the head also incorporates. The resulting structure is shown in (51) for *grass-cutting*:

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<sup>26</sup> The structure that van Hout & Roeper (1998) provide for the non-incorporated *-er* nominal in (48b) is akin to the structure they provide for the nominal gerund, reproduced here in (25). The only difference, which - although not unproblematic in its own right - we can abstract away from here is that the *-er* affix is not generated as the head of AspP or vP but in the specifier position of vP, from where it incorporates onto the verb and then moves through Asp and T to a zero-nominalizing head in *n*.

<sup>27</sup> So generic binding seems to be a strategy that should be available for the non-incorporated nominal gerunds discussed in chapter 3.3.1, (cf. also Pietroski & Hornstein 2009 for arguments that go into the same direction) and can thus be seen as another indication that TP is not projected in the non-incorporated forms either.



[adapted from van Hout & Roeper 1998: 190]

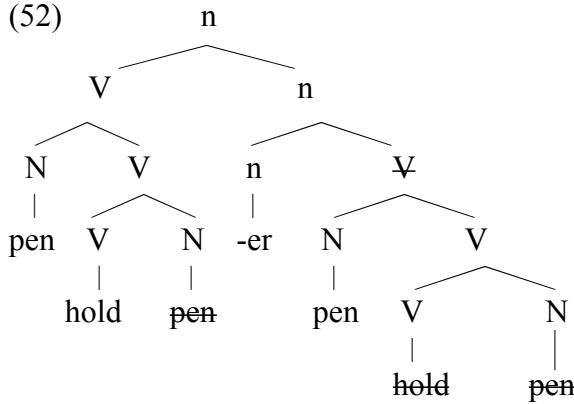
While this account may provide what *prima facie* looks like a natural explanation for why the incorporated forms do not necessarily have the event interpretation of their non-incorporated counterparts, it does not provide an explanation for those cases in which the INGs indeed have an eventive agent reading. Additionally, an incorporation analysis in terms of the ACP raises some questions on the status of the ACP and the elements merged in this position.

As discussed in chapter 2, the hallmark of the ACP in nominal root compounds is that it is a position in which copies, which are not arguments, can be deleted (cf. Roeper & Snyder 2005).<sup>28</sup> This is incompatible with the argument status of the noun in the ACP and indeed, Roeper & Snyder (2005: 156) argue against an analysis that involves the ACP for the form in (51). Instead, in their analysis they derive a synthetic compound that incorporates the internal argument into the verb before incorporating the verb into the nominalizing affix. Hence, the resulting structure is one in which unpronounced copies of arguments are not deleted from the derivation:

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<sup>28</sup> Notice though, that this was the hallmark of Roeper & Snyder's (2005) analysis and not of the analysis detailed here. The analysis of nominal root compounds in chapter 2 clearly shows that multiple insertion can easily be circumvented when compound nouns also have an ACP.

(52)



[adapted from Roeper &amp; Snyder 2005: 165]

Although (52) is virtually indistinguishable from (51) in structural terms<sup>29</sup>, Roeper & Snyder (2005: 165) argue that a distinction is to be made between the two structures, because due to the argument status of the head *pen* which is merged with *hold* in (52) no ACP - which they take to be associated with modifiers rather than with arguments - is involved. However, this distinction is unfit for an explanation of the ambiguous agent/eventive and instrument/result interpretation discussed for (47a) and (48a), since the former cannot be accounted for neither by (51) nor by (52).

Additionally, the question how the argument status of *pen* in (52) or *grass* in (51) is determined remains unanswered. In the analysis for the unincorporated forms in the preceding subchapter it has been argued that the internal argument DP moves from the complement position of V to its specifier position, where φ-features of V, which are passed down from *v*, and φ-features of the DP are matched and valued. In this configuration, thematic relations are then read off the structure at the C-I interface. This solution does not hold up in the incorporated forms for two reasons though. First, the verbalizing *v*-head is not merged and thus does not pass any features down to V, which is just a root at this point that does not have any φ-features of its own. Second, the ‘argument-to-be’ does not move to Spec, VP but is incorporated from the First-Merge position as the complement of V. So, either the argument status must be identified otherwise or the bare N is not an argument of V/the root.

Harley (2009: 13-16) follows the second strategy and provides an analysis in which the incorporated elements are not arguments of the verb/root. All that is needed for the

<sup>29</sup> The only real difference is that in (51) VP projects a specifier, which is impossible to motivate under a BPS account anyway.

nouns to incorporate onto the root is that they are merged in a position from which incorporation can be launched. This is a position, which Roeper & Siegel (1978) already identified as a first-sister position.<sup>30</sup>

The question is, how feasible this explanation is in the current context. When comparing the INGs that have an eventive interpretation to their non-incorporated counterparts, it turns out that the latter get a *specific*-interpretation, while the former have a *kind*-reading.<sup>31</sup>

- (53) Bobby's cookie-eating
- (54) Bobby's eating of the cookie

The form in (54) clearly refers to a specific event. This event can be described as an eating event that involves the cookie as a THEME and Bobby as an AGENT. The form in (53) on the other hand, only modifies Bobby's eating activity and contrasts his cookie-eating with e.g. apple-eating. This parallels an observation already made in Williams (1980) that incorporated nouns are not arguments but rather manner phrases, which nonetheless absorb the THEME argument projection of the verb (cf. also Baker 2009: 154 for a similar point). The following examples further illustrate this:

- (55) Ted enjoys opera-singing
- (56) \*Ted enjoys opera-singing of Verdi
- (57) \*Ted enjoys opera-singing of songs
- (58) Ted enjoys opera-style-singing of songs

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<sup>30</sup> This is basically the position of the ACP in Keyser & Roeper (1992).

<sup>31</sup> It is worth noticing that a similar point can be made for nominal root compounding, where the same pattern arises:

- (i) coffee-cup
- (ii) cup of coffee

When interpreting *of* in (ii) as the manifestation of Case (cf. e.g. Rauh 1997a,b; 1999; 2002 for arguments in favor of analyzing *of* as Case) and thus as the result of *of*-insertion the difference between the *kind*-reading in (i) and the *specific*-reading in (ii) follows from the same structural configuration that is observed for (53) and (54). The only difference is that the root compounds do not contain verbal functional structure and thus do not license a thematic interpretation (cf. comments below and at the end of this section for further elaboration of this point).

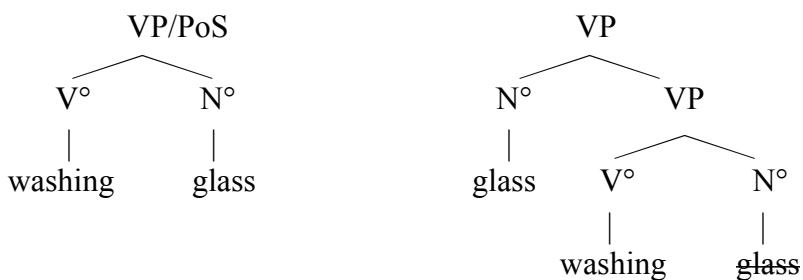
The incorporated noun *opera* in (55) is not an argument of the verb *sing*, however, but rather indicates the kind of singing that Ted enjoys. Yet, it is not possible, to project an argument in an *of*-phrase as the examples in (56) and (57) show, unless, as in (58), the incorporated bare noun is explicitly marked as a manner modification. In this latter case, projecting the argument in an *of*-phrase is perfectly acceptable.

Thus, it can be concluded that incorporation leads to a *kind*-reading, but this does not automatically entail a manner interpretation. In effect, then, the strategy adopted in Harley (2009) does not seem to be viable, because it still does not account for how the THEME interpretation of the incorporated element comes about.

One possible explanation that seems to be in line with an account in terms of the ACP comes from the original ACP analysis in Keyser & Roeper (1992) where the incorporated head moves from an argument position, in which the THEME is satisfied to the clitic position from where it then incorporates. What is totally unclear though is how these two movement steps are motivated and how the argument status of the incorporated head is licensed.

So what about the alternative strategy of motivating the argument status of the noun differently? Here Barrie (2006) offers an interesting solution. Following considerations on antisymmetry as outlined in Moro (2000, 2007), Barrie observes that Merger of the verb and its bare noun argument results in a PoS that is dissolved by incorporation. Thus, the structure that Barrie (2006: 154-155) provides is the following:

(59)



What is interesting about this structure is that Barrie (2006) labels the incorporated form as

verbal.<sup>32</sup> This is in stark contrast to the analysis in e.g. van Hout & Roeper (1998); Roeper & Snyder (2005) and Harley (2009). What is left unclear in this analysis, though is the status of the *-ing* suffix. It is analyzed as a verbal suffix, but it is unclear how this verbal character is motivated in Barrie's account.

So a few more thoughts are in order here. First of all, recall from the discussion on PoS resolution in chapter 2 that movement that is motivated solely by (anti)symmetry is PF-movement and not movement in FLN. Furthermore, it is important to remember that at this point the verb is just a root, while the incorporated element is an already categorized LI (cf. Harley 2009: 11; Barrie 2006: 151-152). Thus, the situation we are looking at here is one in which an already categorized little *n*-head is supposed to incorporate onto an acategorial root, which does not bear any features other than the EF that initiates the Merge operation in the first place. This is a highly unlikely scenario and begs the question why we do not see the root incorporating onto the categorized *n*-head, if anything. Neither under Harley's (2004, 2009) approach to incorporation nor under the incorporation analysis of Roberts (2010), discussed in chapter 2, this type of incorporation is feasible.

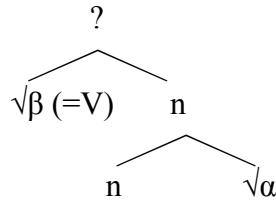
Actually, under a Roberts' type of incorporation analysis the reverse scenario, of the root incorporating onto the categorized head is the only scenario possible, because the set of features of the root is a proper subset of the set of features of the *n*-head.<sup>33</sup> However, for the incorporation operation to take place, it must be triggered by a Phase-head. The only Phase-head that is in the derivation upon Merger of the categorized *n*-head and the (verbal) root is the *n*-head, which is already spelled-out and which is not expected to trigger any further operations. So, it should be expected that Merger of *n* and the (verbal) root does not trigger any further operations:

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<sup>32</sup> Harley (2009: 18) notes that an analysis that identifies the result of incorporation as verbal is not viable, due to the absence of forms like *to truckdrive* in English. This, however, is a weak argument, since incorporation of nouns into verbs is well-attested cross-linguistically (cf. e.g. Baker 1988; 1995 for data from Mohawk; Massam 2001; 2009 for data from Niuean; Baker 2003; Baker, Aranovich, Golluscio 2005 for data from Mapudungun, Barrie 2006; Barrie & Spreng 2009 for data from Oneida and German; Johns 2009 for data from Inuktitut; and even Keane 2007 for English). And Harley (2009: 20-21) herself sketches an analysis in which the constraint on noun-incorporation into the verb in English can be relegated to PF-restrictions. Another approach that seems perfectly viable is a narrow syntactic parameter analysis in terms of Roberts (2011a;b).

<sup>33</sup> This is, of course the situation that obtains for the categorized *n*-head. This head is the result of Merger of an uncategorized root with a categorizing *n*-head, which is a Phase-head. This Phase-head triggers the incorporation and leads to the  $[_n n[\sqrt{\alpha}]]$  structure discussed in chapter 2 in great detail.

(60)



Merger of  $\sqrt{\beta}$  is, of course, possible by virtue of the EF on the LI  $\beta$ . Now, when in a next step another Phase-head is merged, this Phase-head will categorize the root  $\beta$ . Let us suppose, following Barrie (2006) that this Merger categorizes  $\beta$  as verbal, i.e. that  $v$  is merged. If on the right track, we should expect that the root inherits the  $\varphi$ -features from  $v$  and is verbalized from there on out. Thus,  $v$  passes its unvalued  $\varphi$ -features down to V, which matches and values its own features against those of  $n$ .  $n$ , of course, bears valued and interpretable  $\varphi$ -features. Now, recall that  $v$  in the non-incorporated structures, discussed in chapter 3.3.1, did not have any Case features. By analogy,  $v$  here should not have any Case-features either. This comports well with the obvious absence of Case features on  $n$ .

In consequence,  $n$  only bears valued and interpretable  $\varphi$ -features for person and number. V now bears unvalued and uninterpretable  $\varphi$ -features for person and number, which are matched against those of  $n$ .<sup>34</sup> This is shown in (61) in analogy to the representation provided in chapter 2:

<sup>34</sup> A very legitimate question at this point is what the valued and interpretable  $\varphi$ -features on  $n$  are. Barrie (2006: 151) correctly points out that plural does not seem to be licensed on the incorporated  $n$ . This is what leads him to argue that plural is projected in NumP on top of  $n$ . This, of course flies in the face of the analysis in chapter 2. However, such a move does not seem to be necessary. Remember that the incorporated elements are interpreted as *kinds*. Such a *kind*-reading can only be established for ‘bare’ nouns (cf. e.g. Borer 2005a: 87-90). Thus, a plural marker on  $n$  would contradict the *kind*-interpretation (cf. also Baker 2009 152-153 for a different set of arguments that it is a bare but categorized  $n$  that is incorporated).

In fact, Barrie (2006: 151-152) already provides a line of reasoning that goes into the same direction when pointing out that the non-incorporated form in (i) can only be interpreted as *mass*, while the incorporated form in (ii) is interpreted either as *mass* or as *specific*. In order to get a *specific*-interpretation for the non-incorporated form, pluralization is necessary, as is shown in (iii). For a *specific*-interpretation to emerge Num is, however, necessary. Thus, under the *specific*-interpretation in (ii) NumP would have to be projected. For Barrie (2006: 154, 2010:), this would not be possible, however, because projecting NumP would dissolve the PoS and thus prevent incorporation. So a natural solution here is that the number features are realized on  $n$ .

- (i) Ted’s washing of glass
- (ii) Ted’s glass-washing
- (iii) Ted’s washing of glasses

Further evidence comes from German, where it is possible to project number features on the incorporated  $n$ , and only then the *specific*-interpretation pointed out by Barrie emerges. So we might be looking at a constraint of English here and not at a general ban on the projection of number. In any case, the situation that arises here does not contradict the analysis of number in chapter 2.

(61) Trigger for Agree

V [Pers: unval., Num: unval] [EF: unval.]

*n* [Pers:  $\alpha$ , Num:  $\beta$ ] [EF: unval.]

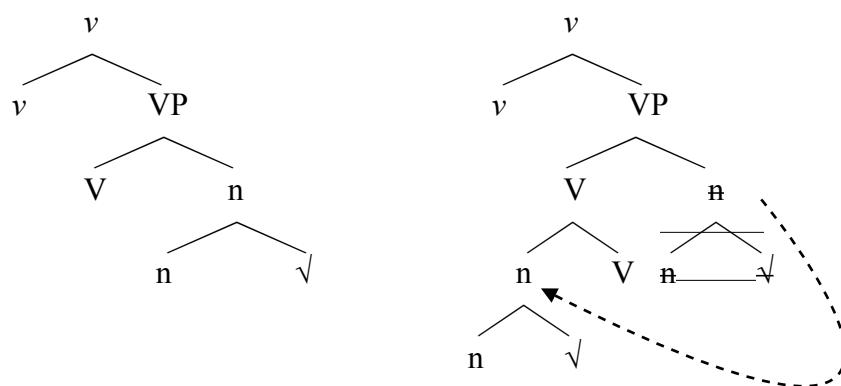
After Match

V [Pers:  $\alpha$ , Num:  $\beta$ ] [EF: unval.]

*n* [Pers:  $\alpha$ , Num:  $\beta$ ] [EF: unval.]

Since *n* does not bear any other  $\varphi$ -features, Matching between the Probe and the Goal fully exhausts the  $\varphi$ -feature content of the Goal. This is precisely the situation, described in Roberts (2010), under which incorporation takes place. So the scenario we are looking at is the following:

(62)



So, the picture that emerges here is that the incorporation of the bare *n* in INGs is possible only when *v* is projected. This in turn implies that *pace* van Hout & Roeper (1998); Roeper & Snyder (2005); Harley (2009) INGs project verbal functional structure. This is corroborated by the fact that INGs license (almost) all the modifiers that the non-incorporated counterparts license:

- (63a) \*Ted's picture-painting in an hour

- (63b) Ted's picture-painting for an hour

- (63c) Ted's picture-painting with an old brush

- (63d) Ted's picture-painting immediately

- (63e) Ted's picture-painting and Jack's doing so too

- (63f) Ted<sub>i</sub> enjoyed the picture-painting PRO<sub>i</sub>

The only type of modifier that is not licensed for INGs but is licit for the non-incorporated forms is the telic aspectual modifier in (63a). This is totally expected, because the bare *n* does not have the telicity-checking properties of a quantized DP.

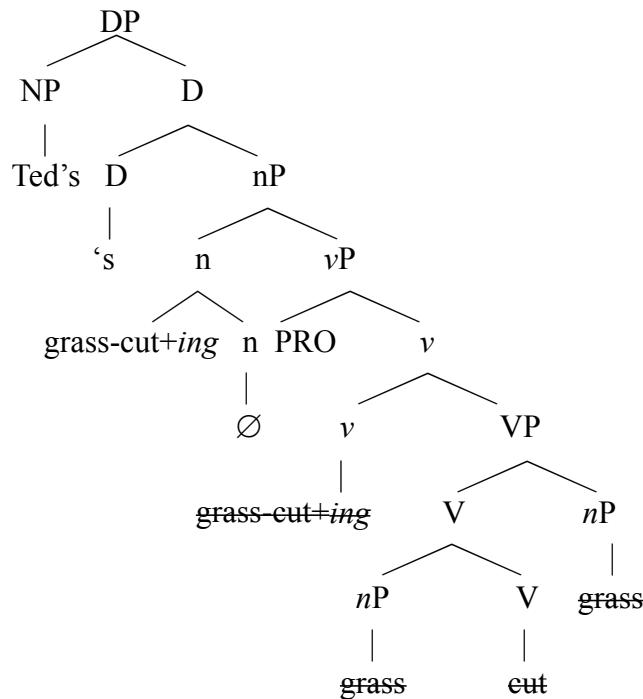
It is also expected that sentential adverbial modifiers are not licensed in INGs, because there is no indication that these forms project TP or any other higher verbal functional structure:

- (64) \*Ted's grass-cutting unfortunately

The fact that atelic modifiers (63b), prepositional modifiers (63c), non-sentential adverbial modifiers (63d), the anaphor *do-so* (63e) and the licensing of PRO-forms (63f) are available for INGs strongly suggests that these project exactly the same structure on top of the incorporation site that is also found on the non-incorporated forms. Thus, the ING in (65) has the structure in (66):

- (65) Ted's grass-cutting

- (66)



The crucial difference between (65) and (46) then rests on the distinction between incorporation - which is low in the tree in (65) and follows naturally from an incorporation analysis along the lines discussed in Roberts (2010) - and the lack thereof in (46). The subtle but clear meaning differences between these two forms are expected under the SMT. Depending on whether the internal argument incorporates as a bare noun from the complement position of VP or whether it moves to the specifier position of VP, where *of*-insertion is instantiated, a *kind-* vs. a *specific*-reading emerges at the C-I interface, Case-assignment and theta-role assignment fall in place and the verbal character of the two types of structures can be accounted for in a uniform way.

### 3.3.3 Non-incorporated Pluralized Nominal Gerunds

As the discussion in the previous two subchapters has shown, there is good reason to assume that English nominal gerunds contain verbal functional structure. In this chapter the analysis is extended to those nominal gerunds that can be pluralized. First of all, it is to be noted that the fact that plural does occur on nominal gerunds is sharply at odds with Grimshaw's (1990) characterization, where the lack of plural marking is one of the hallmarks of nominal gerunds. Still, the forms in (67) clearly show that plural marking is available:

- (67a) the cuttings of grass
- (67b) the shootings of journalists
- (67c) the bombings of the cities

In fact, Roodenburg (2006) argues that plural marking on AS-nominals is subject to cross-linguistic variation. While Romance languages allow plural marking, this is not licit in Germanic languages. In those cases, where AS-nominals show plural marking in Germanic, this is accompanied by a shift from an eventive to a result interpretation for the nominalized verb and by a shift from a THEME to an POSSESSOR interpretation for the complement DP. The relevant examples that Roodenburg (2006) provides are the following from German and French:<sup>35</sup>

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<sup>35</sup> The judgements and translations are Roodenburg's. Especially for the German forms these will be refined later on in this chapter.

- |                                                                                  |        |
|----------------------------------------------------------------------------------|--------|
| (68a) die Beobachtung <sub>EVENT</sub> von Vögeln <sub>THEME</sub>               | German |
| ‘the observation of birds’                                                       |        |
| (68b) die Beobachtungen <sub>RESULT</sub> von Vögeln <sub>POSSESSOR</sub>        | German |
| ‘the observations of birds’                                                      |        |
| (69) seules les observations <sub>EVENT</sub> d'animaux adultes <sub>THEME</sub> | French |
| ont été prises en compte                                                         |        |
| ‘only the observations of adult animals have been taken                          |        |
| into account’                                                                    |        |

So, Roodenburg attributes the availability of plural markers on AS-nominals to inter-language variation, with Germanic languages patterning along the lines predicted by Grimshaw (1990) and Romance languages deviating from this pattern in allowing plural markers on event denoting AS-nominals.

However, this does not account for the availability of plural markers on the English forms in (67), which have a clearly event-denoting character, nor does it fit with the analysis of Romanian in Iordăchioia & Soare (2008) and Alexiadou, Iordăchioia & Soare (2010). Alexiadou, Iordăchioia & Soare (2010), basically following the analysis in Iordăchioia & Soare (2008), argue that Romanian has two types of AS-nominals, one is the infinitival form that is derived from the infinitive, the other is the supine form that is derived from the past participle (cf. Alexiadou, Iordăchioia & Soare 2010: 3)

- (70a) Infinitival nominal:  
cînta-r-e Romanian  
sing.inf-fem.sg

(70b) Supine:  
cînta-t Romanian  
sing.sup

Alexiadou, Iordăchioaia & Soare (*ibid*) further argue that only the nominalized infinitive can be pluralized in Romanian and the supine form cannot:

- (71a) Infinitive:
- |             |          |
|-------------|----------|
| cîntă-r-i   | Romanian |
| sing.inf.pl |          |
- (71b) Supine:
- |              |          |
|--------------|----------|
| *cîntă-t-uri | Romanian |
| sing.sup.pl  |          |

Thus, what Roodenburg identifies as interlanguage variation here turns out to be intralanguage variation. Alexiadou, Iordăchioia & Soare (2010: 3-4) further point out that the infinitive is marked for feminine while the supine is marked for default gender, i.e. neuter, as well as that the infinitive form is countable while the supine form is not. Additionally, as is expected from the count vs. mass distinction, the infinitive combines only with telic verbs and thus has the ability to project the THEME, and lead to a result interpretation, while the supine can combine with telic and atelic verbs, rendering them all atelic via an aspectual shift operation (cf. *ibid* 7-8), which also means that it does not ever lead to a result interpretation.

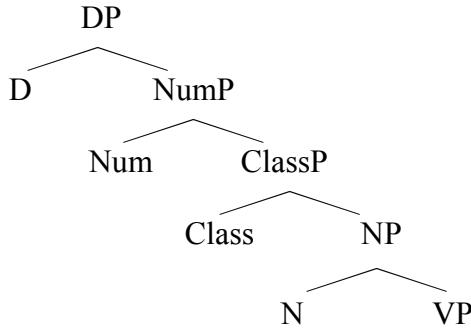
So, Alexiadou, Iordăchioia & Soare (2010: 4-6) conclude that the infinitive has a nominal character, while the supine form has a verbal character. In order to thus account for the difference between the two types of AS-nominals Alexiadou, Iordăchioia & Soare (2010: 6) argue for a distinction in terms of boundedness, which is a broader notion than the purely verbal aspectual distinction and can thus be easily transferred to the nominal domain.<sup>36</sup> The structures that Alexiadou, Iordăchioia & Soare (2010: 9-10) suggest are provided in (72) for the infinitive and in (73) for the supine form.<sup>37</sup>

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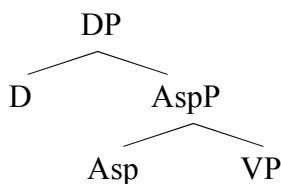
<sup>36</sup> In a way, this is reminiscent of van Hout & Roeper (1998) attributing the distinction to an aspectual projection that is higher than vP in nominal gerunds. However, it has the complete opposite effect with respect to the distinction between inner and outer aspect (cf. also footnote below).

<sup>37</sup> The Classifier and Number projections are the ones where telicity or rather boundedness is checked in the infinitive. In the supine, these are absent since Number and Aspect are in complementary distribution in Alexiadou, Iordăchioia & Soare (2010) and thus, only the atelic interpretation in the aspectual projection can emerge.

(72)



(73)



Alexiadou, Iordăchioia & Soare (2010: 11-14) extend this pattern to English (and German, cf. ibid: 14-15) and argue that the structure in (72) is the one for nominal gerunds, while the structure in (73) is illustrative of verbal gerunds.<sup>38</sup> Thus, in (72) the *-ing* affix is a nominal affix that attaches under N, while in (73) it is a verbal affix hosted by Asp. Hence, in contrast to the analysis in van Hout & Roeper (1998) where the distinction between inner and outer aspect is conflated into one node, as pointed out in the previous chapter, Alexiadou, Iordăchioia & Soare (2010: 16-17) make a point that nominal *-ing* operates on inner aspect exclusively, while verbal *-ing* operates on outer aspect.

Now, at least the structure in (72) is clearly at odds with the analysis presented in the preceding chapters, while the structure in (73) is almost identical to the structure in (46), with the caveat that the structure in (46) is the one for nominal and not for verbal gerunds.<sup>39</sup>

The principal reason for excluding verbal structure from the form in (72) in

<sup>38</sup> In fact Alexiadou, Iordăchioia & Soare (2010: 18-19) argue that in English the nominal gerund is less well-behaved than the Romanian infinitive in so far as it does not always display Number. In particular, Number is not projected when the ClassifierP is marked as [- count]. The [- count] value on the classifier is tied to the progressive/imperfective nature of the *-ing* affix. This move, however, equates to bringing back in inner aspect (cf. ibid: 15), which allegedly plays no role in nominal gerunds. In the analysis here, as will be shown below, inner and outer aspect are still conflated in the same node, as argued in van Hout & Roeper (1998), thus avoiding the complications that Alexiadou, Iordăchioia & Soare's analysis faces and avoiding the postulation of stacked nominal and/or verbal projections, as argued already in chapter 2.3.5.

<sup>39</sup> It is also not clear, whether the aspectual head is a Phase-head in Alexiadou, Iordăchioia & Soare's (2010) analysis. However, this seems to be the only assumption viable in a Phase-based BPS account, since otherwise the verbal character of the whole construction could not be identified; after all, VP is just a root in (72) and in (73).

Alexiadou, Iordăchioaia & Soare (2010) is that nominal gerunds tolerate adjectival modifiers only and are illicit with adverbial modifiers, while verbal gerunds behave the opposite way. The examples provided in Alexiadou, Iordăchioaia & Soare (2010: 12) are the following:

- (74a) \*The carefully restoring of the painting
- (74b) \*His prompt answering the question

However, it has been pointed out in chapter 3.3.1 already that nominal gerunds tolerate adverbial modifiers perfectly well, as long as they are generated in the right periphery of the nominal gerund. This follows naturally from the structure in (46) where it is shown that the nominalizing node is merged on top of the verbalizing node. Precisely because the topmost node in the nominal gerund is a nominal node it is never expected that adverbial modifiers are licit in a pre-head position, since adverbial modifiers never occur in a nominal context, just as much as adjectival modifiers do not occur in a verbal context as

the examples in (75) clearly illustrate:<sup>40</sup>

- (75a) The careful restoring of the painting
- (75b) The restoring of the painting carefully
- (75c) \*The restoring the painting careful
- (75d) His/?The promptly answering the question
- (75e) His/The answering the question promptly
- (75f) \*His/The answering the question prompt

Thus, excluding verbal structure from nominal gerunds on the basis of their modifical properties is not very convincing, as has already been demonstrated and argued in chapters 3.3.1 and 3.3.2. What is still at odds though, is why these nominal gerunds license plural forms, which, as Alexiadou, Iordăchioia & Soare's (2010) correctly point out they do.

First, it is to be noted that pluralized nominal gerunds do not show the modifical properties that their non-pluralized counterparts display:

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<sup>40</sup> Additional evidence comes from Fu, Roeper & Borer (2001: 560-563) where the grammaticality of the (a)-examples in (i)-(iii) in contrast to the ungrammaticality of the (b)-examples is yet another indication for the presence of verbal functional structure in nominal gerunds:

- (ia) The restoring of the painting carefully took six months
- (ib) \*The restoring carefully of the painting took six months
- (iia) The removing of the evidence deliberately resulted in obscuring the case
- (iib) \*The removing deliberately of the evidence resulted in obscuring the case
- (iiia) The consulting of the expert immediately saved the project
- (iiib) \*The consulting immediately of the expert saved the project

Additionally, if nominal gerunds did not contain any verbal structure at all, as illustrated in (72), it would be expected that at least those adjectives that can occur in post-head positions in English are licensed (cf. Alexiadou, Haegeman & Stavrou 2007: 295-298). This, however is not the case, as the examples below clearly illustrate:

- (iva) \*The restoring of the painting visible/present took six months
- (ivb) \*The removing of the evidence visible/present resulted in obscuring the case
- (ivc) \*The consulting of the expert visible/present saved the case

Further evidence comes from the fact that a switch between cooccurring modifical adverbs in post-head positions and adjectives in pre-head positions leads to an interpretation difference (cf. also Fu, Roeper & Borer 2001: 564):

- (va) The careful restoring of the painting immediately was the right decision
- (vb) The immediate restoring of the painting carefully was the right decision

And lastly, the fact that complements of nominal gerunds can be modified by adverbial instead of by adjectival modifiers again highlights their verbal character (cf. also Fu, Roeper & Borer: ibid):

- (vi) The consulting of the experts individually lead to interesting insights.

- (76a) \*Ted's cuttings of the grass in an hour
- (76b) \*Ted's cuttings of the grass for an hour
- (76c) \*Ted's cuttings of the grass with a scythe
- (76d) \*Ted's cuttings of the grass immediately
- (76e) \*Ted's cuttings of the grass and Jack's doing so too
- (76f) \*Ted<sub>i</sub> enjoyed the cuttings PRO<sub>i</sub> of the grass

None of the modifiers that are licensed under the non-pluralized forms are available here.

These data are far less puzzling when we observe a subtle but clearly identifiable distinction. The pluralized forms do not denote a simple event any longer but they denote either a result as (in (76) repeated below) in (77a) or they denote a plurality of individualized and distinguishable events as in (77b):

- (77a) Result:  
The cuttings of the grass
- (77b) Event variation:  
The illegal shootings of the deer in the forest happened under very different circumstances, so different fines were levied.  
The renderings of the murder in court testimony are very sharply at odds.

The distinction between the result and the event variation interpretation is closely tied to the nature of the direct object, as the examples in (78) illustrate:

- (78a) The roastings of coffee > different roasts, e.g. strong and mild coffee
- (78b) The roastings of the coffee > same coffee, roasted more than once

As the distinction between (78a) and (78b) shows only when the direct object is a definite description the plurality of individualized and distinguishable events readings is available. When the direct object is a bare noun, this is not possible. Additionally, basically the same effect can be observed when the direct object is a plural form:

- (79a) The screenings of movies
- (79b) The killings of journalists<sup>41</sup>
- (79c) The firings of guns
- (79d) The snatchings of cell phones
- (79e) The bombings of Hiroshima and Nagasaki
- (79f) The trouncings of Germany at major tournaments

There are other forms, however, where pluralization is not as felicitous as in the examples in (79):

- (80a) ?The mowings of the lawn
- (80b) ?/\*The shootings of the journalists
- (80c) ?/\*The burnings of the flag

In (80a) in principle different styles of mowing the same lawn are conceivable, but not normal, just as much as several different shootings of the same journalists in (80b) are a conceivable but unlikely scenario. And finally, in (80c) burning the same flag more than once is virtually impossible, hence the \*-mark.

What is significant about the difference between the forms in (79) and (80) is that the structure is sensitive to the nature of the internal argument DP. This strongly suggests, *pace* Alexiadou, Iordăchioia & Soare's (2010), that the construction operates on inner and outer aspect just as much as its non-pluralized counterpart, as originally argued in van Hout & Roeper (1998). Thus, it is reasonable to assume that pluralized nominal gerunds basically have the same structural make-up as their non-pluralized counterparts. The marginality of the forms in (80) and the ungrammaticality of the modifiers in (76) then can be explained naturally by following Alexiadou, Iordăchioia & Soare's (2010) in assuming that the *-ing* affix in the pluralized nominal gerunds is not an aspectual affix but rather a nominalizer, generated under *n*.<sup>42</sup> This is then the reason, why this affix, in contrast to the -

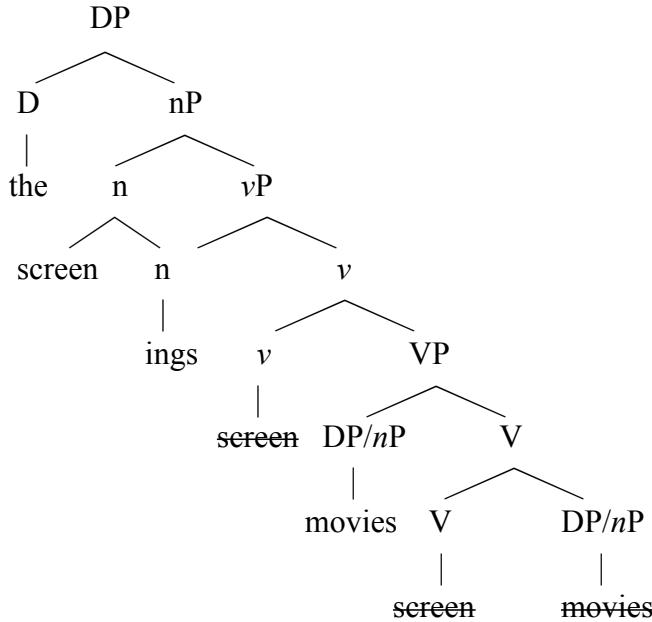
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<sup>41</sup> Cf. also Alexiadou, Iordăchioia & Soare (2010: 19) for virtually the same example, which they describe as 'surprisingly felicitous'.

<sup>42</sup> Cf. Heck, Müller & Trommer (2008: 229-230) for an analysis of so called *-ende* nouns in Swedish and Danish that is similar in spirit to the analysis suggested here.

*ing* affix in the non-pluralized incorporated and non-incorporated forms, can host the plural marker at all. Before looking at this in a little more detail, let us first take a look at the structure for the forms in (79), which is provided below:

(81)



(81) shows that the internal argument DP, which is first merged in the complement position of the rootP is remerged<sup>43</sup> in its specifier. Once again, this movement puts the DP into a position for  $\varphi$ -feature checking upon Merger of the Phase-head *v*. This Phase-head has verbalizing properties and is responsible for checking the aspectual properties. Thus, so far there are no differences discernible between the derivation of the form in (81) and the form in (46).

However, in (81) the *v* head does not host the *-ing* affix. This affix is generated in the higher Phase under the nominalizing head *n*. Two things follow from this quite naturally. First, as has been pointed out already, by virtue of its nominal nature, this affix can bear plural morphology. Secondly, the adverbial modifiers are not licit, because the lower Phase to which they apply is in the complement domain of the higher nominal Phase and thus spelled-out. This is completely in line with standard assumptions from Phase-theory that, once a Phase is complete, only the edge of the Phase remains active for further

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<sup>43</sup> I use the word *remerge* as a synonym for IM here and throughout this dissertation and I do not mean to imply that there is any difference between the two operations.

computation.<sup>44</sup> So, in essence the analysis of pluralized nominal gerunds is completely in line with the SMT and a Phase-theoretic approach to BPS.

Finally, let us briefly reconsider the status of the internal argument DP. As illustrated by the data in (79) and (80) these DPs are key to the aspectual properties of the nominal gerund. However, as the structure in (81) shows, these DPs, which are interpreted as THEMES, are not generated inside the same Phase as the *-ing* affix. This is somewhat unexpected, because the THEME argument should be accessible within the same phrase as the *-ing* affix.<sup>45</sup> Now, this can easily be accommodated for, when assuming that the DP moves to Spec, vP. Several consequences follow:

First, the DP then is in the same Phase as the *-ing* affix, because it is moved from within the complement domain of the lower Phase (i.e. the vP Phase) to the edge of that Phase (i.e. Spec, vP), which is still accessible in the higher *nP* Phase. Secondly, in a framework like the present one, where Merge over Move is not an issue (cf. Chomsky 2008) Remerger of the DP in Spec, vP automatically voids Merger of PRO (or some other element) in this position and explains the lack of control in the pluralized forms.<sup>46</sup> Finally *of*-insertion takes place in this position, which, as has been argued in Chapter 3.3.1, is realized at PF only as the Spell-Out of inherent Case and thus renders the DP inactive. Under this conception the correlation between inherent Case and theta-marking (cf. Chomsky & Lasnik (1995)) can be maintained and it is immediately obvious, why pluralized nominal gerunds are sensitive to aspectual marking but do not tolerate verbal modifiers, while, at the same time, the internal argument DP is interpreted as a THEME at C-I.

The last section of this subchapter now looks at pluralized nominal gerunds that are incorporated.

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<sup>44</sup> Notice, by the way, that this analysis is fully compatible with both versions of the PIC (cf. e.g. Chomsky 2000 vs. Chomsky 2001; Grewendorf & Kremers 2009 and Gallego 2010 for discussion).

<sup>45</sup> The importance of this structural configuration will become even more obvious for the incorporated pluralized nominal gerunds discussed in the next section.

<sup>46</sup> Notice that this is highly reminiscent of the observation in Alexiadou, Iordăchioaia & Soare (2010: 15) that internal argument DPs are interpreted as THEMES in pluralized nominal gerunds in English and pluralized infinitives in Romanian.

### **3.3.4 Incorporated Pluralized Nominal Gerunds**

In the preceding chapter it is shown that recent advancements in Phase-theory, when applied to nominal gerunds, can explain a classic conundrum. The variation between non-pluralized incorporated and non-incorporated nominal gerunds, which have an eventive character and can be modified by a number of verbal modifiers, on the one hand and non-incorporated pluralized nominal gerunds, which denote either a result or a plurality of individualized events, on the other hand can be directly attributed to the position in which the *-ing* affix is generated, i.e. whether it is an instantiation of the lower verbal Phase-head or whether it is an instantiation of the higher nominal Phase-head. In the latter case, modification by adverbial and aspectual modifiers is unavailable, because the higher nominal Phase blocks access to the lower verbal Phase. In the former case modification is perfectly natural, however, pluralization is out, because the *-ing* affix is not a nominal affix and thus cannot spell-out nominal morphology.

What remains to be seen is where pluralized incorporated nominal gerunds (henceforth: PINGs) fit into the pattern. First of all, it is to be noted that PINGs are (somewhat unexpectedly given Grimshaw's (1990) account) abundant and well attested:

- (82) 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-stopings, stove-heatings, inmate-beatings, gun-firings, book-readings, news-reportings, city-bombings...

As was the case for their non-incorporated but pluralized counterparts, none of the PINGs in (82) has the single-type event interpretation observed for non pluralized nominal gerunds; rather they are all interpreted either as results or as a plurality of individualized events just like their non-incorporated counterparts.

Further, even when stripped of their plural marker, many of the PINGs in (82) still

have a result<sup>47</sup> interpretation as their preferred interpretation, as is immediately evident from the forms in (83):

- (83) chair-stringing, pipe-sealing, stove-heating, picture-framing, road-crossing,  
forrest-clearing, ...

However, for the forms in (83) a single-type event reading that corresponds to the aspectual affix on INGs is still recoverable, as evidenced by the availability of the relevant set of modifiers on INGs, which is out for PINGs:

- (84a) The picture-framing carefully  
(84b) \*The picture-framings carefully  
(85a) The road-crossing by bike  
(85b) \*The road-crossings by bike  
(86a) The stove-heating with wood  
(86b) \*The stove-heatings with wood  
(87a) The chair-stringing for hours  
(87b) The chair-stringings for hours  
(88a) Jack's pipe-sealing and Bill's doing so too  
(88b) \*Jack's pipe-sealings and Bill's doing so too

This is reminiscent of the observation in chapter 2 that overt morphological marking makes a certain interpretation recoverable. Notice in this context that in the absence of overt morphological marking by *-ing* the event reading is not available. Instead, the only interpretation conceivable is one in which the incorporated forms are interpreted as results, which thus do not license any of the modifiers in (84a) - (88a) either:

- (89a) \*The movie screen for hours  
(89b) \*Dick's gun fire and George's doing so too

---

<sup>47</sup> Admittedly, this is a very broad usage of the term ‘result interpretation’. This is simply meant to indicate that the forms do not have either a single event nor a multiple but individualized event reading and comes close to identifying these forms as R-nominals (with an <R>-argument that is a leftover from lexicalist descriptions of these forms cf. e.g. Zwarts 1992).

- (89c) \*The stove heat with wood
- (89d) \*The lap time accurately
- (89e) \*The AFLD's blood test thoroughly

So, in essence the PINGs in (84b) - (88b) pattern with the forms in (89). However, it should also be noticed that there are two possible reasons for this behavior. Either PINGs, like the forms in (89), do not contain any verbal structure and thus are nominalized roots, or PINGs like their non-incorporated pluralized counterparts contain verbal functional structure that is blocked by a higher Phase.

One indication that the latter assumption is on the right track is that PINGs, in the absence of the plural marker, display an ambiguous behavior between an event and a result interpretation, as is illustrated by the (a)-examples in (84) - (88). Notice further that PINGs and their non-incorporated counterparts display the same variation that has already been observed for INGs and their non-incorporated counterparts, i.e. that the incorporated forms denote *kinds* while the non-incorporated forms display a *specific*-reading.

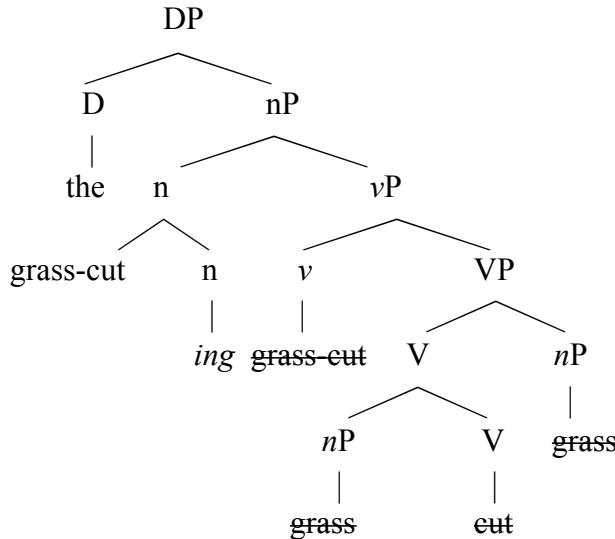
- (90a) grass-cuttings ---- *kind*
- (90b) cuttings of the grass ---- *specific*

Both these observations point into the direction of verbal functional structure being projected inside PINGs.

The *kind*- vs. *specific*-interpretations again result naturally from the incorporation site, which is low in the tree and which prevents the assignment of a *specific*-interpretation to the internal argument. In all subsequent movement steps, which are akin to the movement steps in (66) for INGS, the V+N complex moves as a unit. This has the effect that both the verbal root and the incorporated noun escape the lower verbal Phase, by moving into the higher nominal Phase where the *-ing* affix bearing plural morphology is merged.

So, the structure in (91) results:

(91)



In (91) the higher nominal Phase has the effect of allowing objects only when they are incorporated. In the non-incorporated structures, discussed in chapter 3.3.3, it has been argued that the object DP is accessible to the higher Phase head, because it has moved to the edge of the lower Phase, however, the object DP does not move into the edge of the higher Phase, in contrast to the incorporated object in the PING structure in (91).

In sum then, the two-Phase analysis, which is based on the SMT and the Phase-head Phase-complement distinction, provides a syntactic analysis with independent roots but which, as the discussion here shows, provides a semantic analysis of the subtle aspectual behavior in nominal gerunds.

### 3.4 Corroborating the Analysis: Data from German

The analysis of English *-ing* of gerunds in chapter 3.3 has shown that, as argued for in Alexiadou, Iordăchioia & Soare (2010), a distinction needs to be made between two types of *-ing* affix. One is a verbal affix that attaches in the lower verbal Phase and one is a nominal affix that is merged in the higher nominal Phase. The present chapter looks at the corresponding German constructions, which corroborate the analysis outlined above. German has two types of nominalizations that correspond to English *-ing* of nominals: nominalized infinitives illustrated in (92) and *-ung* nominals shown in (93). Both can be incorporated:

(92a) das Spalten des Holzes

German

- |       |                                                                                                |        |
|-------|------------------------------------------------------------------------------------------------|--------|
|       | the split-EN(inf) the.gen wood.gen<br>‘the splitting of the wood’                              |        |
| (92b) | das Holzspalten<br>the wood-split-EN(inf)<br>‘the wood-splitting’                              | German |
|       |                                                                                                |        |
| (93a) | die Spaltung des Holzes<br>the split-UNG(nmlz) the.gen wood.gen<br>‘the splitting of the wood’ | German |
| (93b) | die Holzspaltung<br>the wood-split-UNG(nmlz)<br>‘the splitting of the wood’                    | German |

Alexiadou, Iordăchioia & Soare (2010: 14-15) argue that the *-ung* nominals in (93) correspond to English nominal gerunds, while the nominalized infinitive corresponds to English verbal gerunds. Based on the analysis in the preceding chapter, I here digress from this analysis and argue that the nominalized infinitive corresponds to those nominal gerunds where the *-ing* affix is a verbal aspectual affix and the *-ung* nominals correspond to those nominal gerunds where the *-ing* affix is a nominalizer. Investigations into the parallel behavior of the properties of nominalized infinitives and verbal *-ing* forms, on the one hand, and *-ung* nominals and nominal *-ing* forms, on the other hand, further substantiates this assumption.

### 3.4.1 German Nominalized Infinitives

Nominalized infinitives instantiate the most unconstrained nominalization pattern in German, since virtually any verb can be nominalized regardless of whether it is transitive (94), intransitive (95), ditransitive (96) or reflexive (97):

- |      |                                                                                            |        |
|------|--------------------------------------------------------------------------------------------|--------|
| (94) | das Küsselfen der Frau<br>the kiss-EN(inf) the.gen woman.gen<br>‘the kissing of the woman’ | German |
| (95) | das Laufen                                                                                 | German |

- the run-EN(inf)  
‘the running’

(96) das Geben des Geschenks an den Jungen German  
the give-EN(inf) the.gen present.gen to the.dat boy.dat  
‘the giving of the present to the boy’

(97) das Rasieren German  
the shave-EN(inf)  
‘the shaving’

In this respect the German forms in (94) - (97) are similar to English nominal gerunds, which can be formed from virtually any verb as well.<sup>48</sup>

Furthermore, nominalized infinitives in German can be modified by the same adverbial, prepositional and aspectual modifiers that are attested for those English *-ing* of nominals, where the *-ing* affix is a verbal affix:

- (98a) das Mähen des Rasens für zwei Stunden German  
the mow-EN(inf) the.gen lawn.gen for two hours  
'the mowing of the lawn for two hours'

<sup>48</sup> In fact, Alexiadou, Iordăchioaia & Soare (2010: 16), basically following Borer (2005b: 239-245), argue that in English nominal gerunds cannot be formed from achievement verbs. The example they provide is the following (cf. *ibid*):

- (i) \*the arriving of the train

However, it is to be noted that Alexiadou, Iordăchioia & Soare (2010: 18-19) as well as Borer (2005) argue that this is not a settled pattern, because in some cases nominal gerunds of achievement verbs can be coerced into a process reading, while in other cases even achievements with *-ing of* nominals are licit (cf. Alexiadou, Iordăchioia & Soare 2010: 18):

- (iia) the arriving of the yuan  
 (iib) the killing of the journalists

This, of course, begs the question how the achievement characteristics of the underlying verbs can be accounted for in the absence of verbal functional structure in Alexiadou, Iordăchioia & Soare's (2010) analysis. Crucially, Borer (2005: 240-241) argues *pace* Alexiadou, Iordăchioia & Soare that the seemingly atelic character of *-ing* of nominals derived from achievement verbs cannot be taken as an indication that nominalizer *-ing* and progressive *-ing* is the same affix - despite apparent similarities between both types of *-ing* affix - thus corroborating the present analysis. Furthermore, the alleged ungrammaticality of (iiia) (cf. Borer 2005b, Alexiadou, Iordăchioia & Soare 2010) is strongly undermined by the infamous McCarthy quote in (iiib):

- (iii) \*The exploding of the balloon
  - (iiib) The exploding of the bomb

- (98b) das Rasenmähen für zwei Stunden German  
 the lawn-mow-EN(inf) for two hours  
 ‘the lawn-mowing for two hours’
- (99a) das Mähen des Rasens in zwei Stunden German  
 the mow-EN(inf) the.gen lawn.gen in two hours  
 ‘the mowing of the lawn in two hours’
- (99b) \*das Rasenmähen in zwei Stunden German  
 the lawn-mow-EN(inf) in two hours  
 ‘the lawn-mowing in two hours’
- (100a) das Mähen des Rasens mit einer Sense German  
 the mow-EN(inf) the.gen lawn.gen with a scythe  
 ‘the mowing of the lawn with a scythe’
- (100b) das Rasenmähen mit einer Sense German  
 the lawn-mow-EN(inf) with a scythe  
 ‘the lawn-mowing with a scythe’
- (101a) das Mähen des Rasens gestern/heute abend German  
 the mow-EN(inf) the.gen lawn.gen yesterday/this evening  
 ‘the mowing of the lawn yesterday/this evening’
- (101b) das Rasenmähen gestern/heute abend German  
 the lawn-mow-EN(inf) yesterday/this evening  
 ‘the lawn-mowing yesterday/this evening’
- (102a) Ted<sub>i</sub> bevorzugt das PRO<sub>i</sub> Mähen des Rasens German  
 Ted prefers the mow-EN(inf) the.gen lawn.gen  
 ‘Ted prefers the mowing of the lawn’
- (102a) Ted<sub>i</sub> bevorzugt das PRO<sub>i</sub> Rasenmähen German  
 Ted prefers the lawn-mow-EN(inf)  
 ‘Ted prefers the lawn-mowing’

The examples in (98) - (102) illustrate that German nominalized infinitives license atelic aspectual modifiers in their incorporated and their non-incorporated versions (98). Telic modifiers are licit only in non-incorporated nominalized infinitives (cf. 99a). This is again in line with the English structures discussed in 3.3.1 and 3.3.2, where the ungrammaticality of telic modifiers in incorporated forms is attributed to the non-quantized status of the incorporated bare noun. The same analysis is feasible for the forms here. Furthermore, prepositional modifiers (100) and non-sentential adverbial modifiers (101) are licensed in incorporated and non-incorporated nominalized infinitives and finally nominalized infinitives also allow for control structures as is shown in (102). Thus, it can be concluded that German nominalized infinitives, which exist in incorporated and in non-incorporated versions pattern quite closely with English INGs and their non-incorporated counterparts.

Adverbial modification is somewhat (more) marginal in German nominalized infinitives than in the English counterparts discussed before:<sup>49</sup>

(103a) (?)Teds Mähen des Rasens ganz vorsichtig/sofort German

Ted.gen mow-EN(inf) the.gen lawn.gen very carefully/immediately

‘Ted’s mowing of the lawn very carefully/immediately’

(103b) Teds Rasenmähen ganz vorsichtig/sofort German

Ted.gen lawn-mow-EN(inf) very carefully/immediately

‘Ted’s lawn-mowing very carefully/immediately’

However, when comparing the forms in (103) to those that are modified by sentential adverbial modifiers, as in (104), on the one hand, and to compound nominals, as in (105), on the other hand, which are both illicit, the parallelism between the forms in (103) and their English counterparts is again immediately evident:

(104a) \*Teds Mähen des Rasens bedauerlicherweise German

Ted.gen mow-EN(inf) the.gen lawn.gen unfortunately

‘Ted’s mowing of the lawn unfortunately’

(104b) \*Teds Rasenmähen bedauerlicherweise German

---

<sup>49</sup> Cf. also Grosz (2008: 16) for further examples of nominalized infinitives in German that allow non-sentential adverbial modification.

Ted.gen lawn-mow-EN(inf) unfortunately

‘Ted’s lawn-mowing unfortunately’

- (105a) \*der Verschnitt des Rasens sofort/vorsichtig German  
the cut the.gen lawn.gen immediately/carefully  
‘the cutting of the lawn immediately/carefully’
- (105b) \*der Rasenverschnitt sofort/vorsichtig German  
the lawn-cutting immediately/carefully  
‘the lawn-cutting immediately/carefully’

Thus, it can be safely concluded that there is ample evidence that German nominalized infinitives contain verbal functional structure and that the *-en* affix is the equivalent of verbal *-ing* in English nominal gerunds.

Another interesting fact about German nominalized infinitives is that progressive forms in German display the same *-en* suffix that also marks the (nominalized) infinitive (cf. e.g. Barrie 2006: 3-4; Grosz 2008; Barrie & Speng 2009):

- (106a) beim Mähen des Rasens German  
at.prog. mow-EN(prog) the.gen lawn.gen  
‘while mowing the lawn’
- (106b) beim Rasenmähen German  
at.prog. lawn-mow-EN(prog)  
‘while lawn-mowing’

This can be seen as further indication that German nominal infinitives project verbal functional structure below the nominalizing node. In particular the forms in (106) indicate that the verbal functional structure is sensitive not only to the telicity of the direct internal argument but also to the progressive vs. non-progressive aspect of the construction, which, as argued originally in van Hout & Roeper (1998), is reflected in a single node, i.e. *v* in our cases here.

Yet another indication for the verbal character of the *-en* affix is that nominalized infinitives do not pluralize. In this respect German nominalized infinitives pattern with the

Romanian supine, which is what ultimately leads Alexiadou, Iordăchioia & Soare (2010: 14) to classifying German nominalized infinitives as the counterpart of English verbal gerunds. However, as the discussion in sections 3.3.1-3.3.4 has shown, this rather suggests that the nominalized infinitive patterns with English nominal gerunds with a verbal *-ing* affix. Additionally, it is to be noted that the German nominalized infinitive clearly deviates from the Romanian supine form in that it does not show the properties associated with a pluractional operator that is attributed to the supine in the latter language. Alexiadou, Iordăchioia & Soare (2010: 8) argue that in Romanian the supine has a habitual or iterative interpretation. They provide the following example (cf. ibid: 7):

- (107) Clipitul Mariei în acest moment e enervant. Romanian  
blink.sup-the Mary.gen in this moment is irritating  
'Mary's blinking in this moment is irritating.'

The corresponding German nominalized infinitive is possible with an iterative reading (108), however, a habitual interpretation is blocked (109) and the most straightforward interpretation is one that is neither iterative nor habitual (110):

- |       |                                                                                                                                                                                            |        |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| (108) | Marias wiederholtes Blinzeln in diesem Moment war irritierend<br>Mary.gen repeated blink-EN(inf) in this moment was irritating<br>'Mary's repeated blinking in this moment was irritating' | German |
| (109) | *Marias übliches Blinzeln in diesem Moment war irritierend<br>Mary.gen usual blink-EN(inf) in this moment was irritating<br>'Mary's usual blinking in this moment was irritating'          | German |
| (110) | Marias einmaliges Blinzeln in diesem Moment war irritierend<br>Mary.gen once blink-EN(inf) in this moment was irritating<br>'Mary's blinking once in this moment was irritating'           | German |

Alexiadou, Iordăchioaia & Soare (2010: 8-9) further argue that the supine lacks multiplicity effects with indefinites, shows distributional effects with plurals and is

incompatible with *once only* frequency adjuncts. The relevant examples are provided in (111) - (113) respectively (cf. ibid: 8):

- |       |                                                                                                                                                            |          |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| (111) | *ucisul unui jurnalist de către mafia politică<br>kill.sup-the a.gen journalist by mafia political                                                         | Romanian |
| (112) | ucisul jurnaliștilor de către mafia politică<br>kill.sup-the journalists-the.gen by mafia political<br>'the killing of journalists by the political mafia' | Romanian |
| (113) | cititul romanului (*dintr-o răsuflare)<br>read.sup-the novel.gen in one breath<br>'the reading of the novel in one sitting'                                | Romanian |

Alexiadou, Iordăchioaia & Soare argue that the form in (111) is ungrammatical because “the supine of the one-time event *kill* is incompatible with a singular theme, since the P[luractional] O[perator] in the supine suggests a plurality of killing events with the same theme” (ibid: 8). What the pluractional operator cannot trigger, though, is a set of killing events that involves a different journalist each time, unless the THEME argument is in the plural, as in (112). In this latter case a distributive reading emerges, which thus means that (112) is interpreted as several events in which one or more journalists were killed.

When comparing the above forms to German nominalized infinitives, it is immediately obvious that these do not pattern with the Romanian supine in this respect:

- |       |                                                                                                                                                                      |        |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| (114) | das Töten eines Zivilisten durch Gaddafis Schläger<br>the kill-EN(inf) a.gen civilian.gen by Gaddafi.gen thugs<br>'the killing of a civilian by Gaddafi's thugs'     | German |
| (115) | das Töten der Zivilisten durch Gaddafis Schläger<br>the kill-EN(inf) the.gen civilians.gen by Gaddafi.gen thugs<br>'the killing of the civilians by Gaddafi's thugs' | German |

- (116) das Besprechen des Romans in nur einer Sitzung German  
the discuss-EN(inf) the.gen novel.gen in just one sitting  
'the discussing of the novel in just one sitting'

The nominalized infinitive in German does not have a pluractional operator that bars indefinite THEME DPs, as shown in (114). Nor is the form in (115) interpreted as one in which the killing event is interpreted distributively and the form in (116) is licit under a *once only* interpretation, just as much as the form in (117):

- (117) das Töten der Zivilisten mit nur einer Bombe German  
the kill-EN(inf) the.gen civilians.gen with just one bomb  
'the killing of the civilians with just one bomb'

Alexiadou, Iordăchioaia & Soare (2010: 9) conclude from the properties of the Romanian supine forms discussed in (111) - (113) that it is the pluractional operator that is responsible for the unboundedness of the supine. Thus, the pluractional operator is responsible for turning a telic verb into an atelic one and the characteristics described above can be regarded as epiphenomena.

In German, however, these characteristics do not apply to the nominalized infinitive as the example in (114) - (117) show. This can be taken as further indication that the projection of verbal functional structure, at least in the German forms, is indeed sensitive to inner and outer aspect, as argued for by van Hout & Roeper (1998).

Finally, let us consider the incorporated structures of German nominalized infinitives in a bit more detail. As in English, only the (accusative marked) direct internal argument can be incorporated in German. External arguments, for instance, cannot be incorporated:

- (118a) Der Mann läuft. German  
The man runs.

(118b) das Laufen des Mannes German  
the run-EN(inf) the.gen man.gen  
'the running by the man'

- (118c) \*das Mannlaufen  
the man-run-EN(inf)

German

(118c) shows that the external argument cannot be incorporated into the nominalized infinitive. This is what is expected from the fact that incorporation is low in the tree and is triggered by the verbal root once it has inherited the  $\varphi$ -features from  $v$ . When the intransitive verb *laufen* is transitivized<sup>50</sup>, the internal argument of the transitive structure is available for incorporation:

- (119a) Der Mann läuft einen Marathon.

German

The man runs a marathon.

- (119b) das Laufen des Marathons (von dem Mann)<sup>51</sup>

German

the run-EN(inf) the gen marathon.gen (by the man)

‘the running of the marathon by the man’

- (119c) das Marathonlaufen des Mannes

German

the marathon-run-EN(inf) the.gen man.gen

‘the running of the marathon by the man’

This is again in line with the analysis of INGs in chapter 3.3.2. Only the internal argument can be incorporated, because the internal argument is merged with the (verbal) root and incorporates from there, once the rootP is verbalized and has its  $\varphi$ -features passed down from the Phase-head  $v$  via feature inheritance.

Barrie (2006) and Barrie & Spreng (2009) motivate incorporation in German progressives differently. In both accounts incorporation is motivated by considerations on antisymmetry (cf. Moro 2000, Kayne 1994). *Prima facie*, this seems feasible for the forms discussed here as well. Only the direct internal argument, which like its English counterpart in INGs is interpreted as a *kind*, is available for incorporation, because only

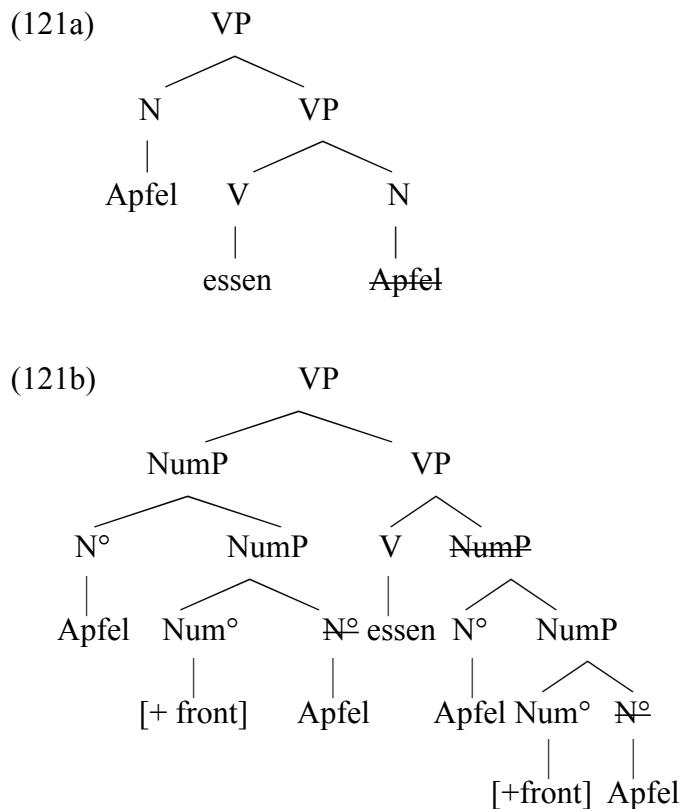
<sup>50</sup> Of course, the verb is not really transitivized. Rather the root *lauf* is either merged with a transitive  $v$  as in (119) or with an intransitive  $v$  as in (118).

<sup>51</sup> In German nominalized infinitives the external argument can be expressed either in a *von* or in a *durch* phrase. Grosz (2008) associates this with the ergative-absolutive pattern found in German nominalizations with fronted argument DPs (cf. however Alexiadou, Anagnostopoulou & Schäfer 2009 for an argument against this).

here the Merger of the noun and the root creates a PoS. Barrie (2006: 156-162) and Barrie & Spreng (2009: 10-12) argue that the PoS results for bare nouns just as much as for plural marked nouns. The latter are analyzed as projecting NumberP (cf. *ibid*):

- |                                                                                                                                                                                                                           |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <p>(120a) <i>beim Apfelessen</i><br/>           at apple-eat-EN(prog)<br/>           ‘at apple-eating’</p> <p>(120b) <i>beim Äpfelessen</i><br/>           at apple.pl-eat-EN(prog)<br/>           ‘at apples-eating’</p> | German<br>German |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|

The structures for the forms in (120) are provided in (121) (cf. again Barrie 2006: 160; Barrie & Spreng 2009: 384-385):<sup>52</sup>



Both structures violate the LCA and thus trigger the incorporation operations outlined in

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<sup>52</sup> Like Barrie (2006) and Barrie & Spreng (2009) I here abstract from complications induced by verb-final characteristics of German. Under a PBS analysis where Merge creates an unordered set, this should not play any role anyway.

(121) above. However, Barrie (2006) notes that there is an interpretational difference between (121a) and (121b). In (121a) the bare singular noun lacks NumP and thus is unspecified for the mass/count distinction (cf. also Barrie & Spreng 2009: 384). In (121b) NumP is projected and interpreted. Thus (121a) is interpreted as an event in which one apple, several apples or an unspecified mass of mashed apple is consumed (cf. ibid: 279). (121b) instead is interpreted as an event in which several apples are consumed.

This is highly reminiscent of the analysis for the ING form *glass-washing* discussed in (59) above. In this context Barrie argues that the absence of a NumP on *glass* in INGs leads to the fact that this form can be interpreted either as a mass or as a count term. This, however, means that in English the absence of NumP in INGs leads to the same interpretational results that is obtained from the projection of NumP in German progressives.<sup>53</sup> This is somewhat unlikely.

What casts further doubt on the validity of the analysis laid out in Barrie (2006) and Barrie & Spreng (2009) is that Barrie (2006: 160) argues that plural forms can only be incorporated in German progressives when the plural is formed derivationally instead of inflectionally. In the example in (120b/121b) the plural on *Apfel* is formed derivationally and thus this form is acceptable. Barrie (2006: 161) ties the distinction between derivational and inflectional plural to two different places for the projection of NumP, one below *nP* and one above *nP*. In consequence only derivational number, which is projected below *nP* is available for incorporation, while inflectional number is illicit. Barrie (cf. ibid) provides the following example:

(122) *beim Autoskaufen at car.pl-buy-EN(prog) ‘at cars-buying’	German
-----------------------------------------------------------------------	--------

However, it should be noted that this distinction does not hold up (if it exists at all). The form in (122) may be semantically odd, because it is somewhat unusual that anyone buys

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<sup>53</sup> In fact, Barrie (2006: 155) argues that the non-incorporated form *washing of glass* does not only project NumP but also DP and is interpreted as *mass* nevertheless. Both, assumptions are problematic in their own right. First of all, it is not likely that only under the projection of NumP a *mass*-interpretation can emerge (cf. Borer 2005a). Second, the projection of DP on top of NumP - which in effect prevents incorporation because no PoS ensues - is just as unlikely for the English forms as it is for the German forms (cf. also Barrie & Spreng 2009: 183 where the projection of DP in German progressives is explicitly ruled out).

more than one car at any given time, however, when conceiving of the buying event as one in which toy cars are the objects being bought (122) is perfectly natural, just as much as the form in (123) is:<sup>54</sup>

- (123) beim Autosgucken German  
at car.pl-look-EN(prog)  
‘at cars-looking’

The same holds for the forms listed in (124) - (128), which all alternate perfectly naturally between an (inflectional) plural and a bare singular form:

- |                                  |        |
|----------------------------------|--------|
| (124a) beim Kloputzen            | German |
| at toilet-clean-EN(prog)         |        |
| ‘at toilet-cleaning’             |        |
| (124b) beim Klosputzen           | German |
| at toilet.pl-clean-EN(prog)      |        |
| ‘at toilets-cleaning’            |        |
| (125a) beim Fotobetrachten       | German |
| at photo-view-EN(prog)           |        |
| ‘at photo-viewing’               |        |
| (125b) beim Fotosbetrachten      | German |
| at photos-view-EN(prog)          |        |
| ‘at photos-viewing’              |        |
| (126a) beim Radiozerlegen        | German |
| at radio-disassemble-EN(prog)    |        |
| ‘at radio-disassembling’         |        |
| (126b) beim Radioszerlegen       | German |
| at radio.pl-disassemble-EN(prog) |        |

<sup>54</sup> Looking at several cars before actually buying one is easily conceivable and the form is absolutely fine.

‘at radios-disassembling’

- |                                            |        |
|--------------------------------------------|--------|
| (127a) ?beim Logovergleichen <sup>55</sup> | German |
| at logo-compare-EN(prog)                   |        |
| ‘at logo-comparing’                        |        |
| (127b) beim Logosvergleichen               | German |
| at logo.pl-compare-EN(prog)                |        |
| ‘at logos-comparing’                       |        |
| <br>                                       |        |
| (128a) (?)beim Mottoaussuchen              | German |
| at motto-select-EN(prog)                   |        |
| ‘at motto-selecting’                       |        |
| (128b) beim Mottosaussuchen                | German |
| at motto.pl-select-EN(prog)                |        |
| ‘at mottos-selecting’                      |        |

What the examples from German progressives clearly illustrate is that singular and plural bare nouns can be incorporated and that an interpretational difference emerges depending on which form is incorporated. The same applies to nominalized infinitives:

- |                             |        |
|-----------------------------|--------|
| (129a) das Straßekreuzen    | German |
| the street-cross-EN(inf)    |        |
| ‘the street-crossing’       |        |
| (129b) das Straßenkreuzen   | German |
| the street.pl-cross-EN(inf) |        |
| ‘the streets-crossing’      |        |

The form in (129a) denotes an event of crossing one or more streets, while the form in (129b) clearly denotes an event of crossing more than one street or crossing one and the same street multiple times. This is perfectly in line with the analysis here, where the

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<sup>55</sup> The question mark on this form in all probability results from the semantics of *vergleichen* ('to compare'), which requires two objects - and hence a plural form - for the action to be performed.

incorporated (singular or plural) noun is interpreted as a Phase that has been sent to Spell-Out prior to incorporation (and even prior to Merger with the root). So, both bare singular and bare plural *nPs* are available for incorporation - as expected.

Now, it is still possible to argue that incorporation is triggered by antisymmetry. However, as argued in chapter 2 already, antisymmetry driven incorporation strongly suggests that this is an instance of a PF-operation rather than an operation within narrow syntax. Yet, unless unmotivated concepts like the First Sister Principle (cf. Roeper & Siegel 1978; Harley 2004) are revived, a PF account cannot be excluded - although the observed *kind* vs. *specific* distinction already discussed for the English structure, which also holds for German nominalized infinitives, of course, points into the direction of narrow syntax.

Evidence in favor of a narrow syntactic analysis comes from ditransitive structures. *Prima facie* the forms in (130) look like counter-evidence:

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <p>(130a) Der Mann gibt dem Jungen das Geschenk<br/>           The man.nom gives the boy.dat the present.acc<br/>           ‘The man gives the boy the present’</p> <p>(130b) das Geben des Geschenks an den Jungen (durch den Mann)<br/>           the give-EN(inf) the.gen present.gen to the boy (by the man)<br/>           ‘the giving of the present to the boy (by the man)’</p> <p>(130c) das Geschenkgeben an den Jungen (durch den Mann)<br/>           the present-give-EN(inf) to the boy (by the man)<br/>           ‘the giving of the present to the boy (by the man)’</p> <p>(130d) *das Jungegeben des Geschenks (durch den Mann)<br/>           the boy-give-EN(inf) the.gen present.gen (by the man)<br/>           ‘the boy-giving of the present (by the man)’</p> | German<br>German<br>German<br>German |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|

As the examples in (130) show, incorporated nominalized infinitives derived from the transitive verb *geben* are only licit when the direct internal argument, which is marked for accusative Case in the verbal structure in (130a) is incorporated. Incorporating the indirect internal argument is not possible (130d). English INGs display the same pattern:

- (131a) The man promised the boy a present.
- (131b) the promising of a present to the boy
- (131c) the present-promising to the boy
- (131d) \*the boy-promising of the present

Once again, it looks like only the argument that is merged in a symmetric c-command relation to the (verbal) root can be incorporated in both languages, which further supports a PF dynamic antisymmetry style analysis.

However, consider the following pairs in this context:

- |                                                                                                                                                                                                           |                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <ul style="list-style-type: none"> <li>(132a) Der See spiegelt den Berg<br/>‘the lake reflects the mountain’</li> <li>(132b) Der See reflektiert den Berg<br/>‘the lake reflects the mountain’</li> </ul> | German<br><br>German |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|

Only the form in (132a) can be reflexivized:

- |                                                                                                                                                                                                                                    |                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <ul style="list-style-type: none"> <li>(133a) Der Berg spiegelt sich im See<br/>‘the mountain reflects SELF in the lake’</li> <li>(133b) *Der Berg reflektiert sich im See<br/>‘the mountain reflects SELF in the lake’</li> </ul> | German<br><br>German |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|

Now, when forming the incorporated nominalized infinitive for the form in (133a) it is only possible to incorporate the reflexive and not the direct internal argument:

- |                                                                                                                                                                                                                                                                                                                                                  |                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <ul style="list-style-type: none"> <li>(134a) das Sich-spiegeln des Berges im See<br/>the SELF-reflect-EN(inf) the.gen mountain.gen in the lake<br/>‘the self-reflecting of the mountain in the lake’</li> <li>(134b) *das Bergspiegeln im See<br/>the mountain-reflect-EN(inf) in the lake<br/>‘the mountain-reflecting in the lake’</li> </ul> | German<br><br>German |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|

This pattern cannot be explained by a PF-incorporation analysis that is based on antisymmetry. Nor can the following pattern be accounted for under this analysis:

- |                                                                                                                             |        |
|-----------------------------------------------------------------------------------------------------------------------------|--------|
| (135a) Er führt die Touristen durch die Stadt<br>He.nom guides the tourists.acc through town                                | German |
| (135b) Das Stadtführen der Touristen<br>the town-guide-EN(inf) the.gen tourists.gen<br>‘the town-guiding of the tourists’   | German |
| (135c) *Das Touristenführen durch die Stadt<br>the tourist-guide-EN(inf) through town<br>‘the tourist-guiding through town’ | German |

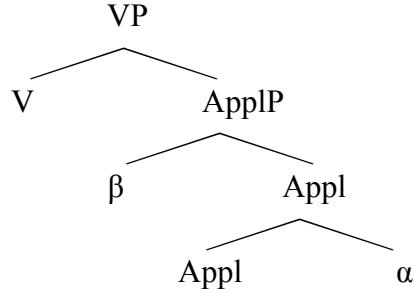
Thus, neither the reflexive incorporated nominalized infinitive in (134) nor the incorporated nominalized infinitive in (135) can be explained by PF-approaches to incorporation. In both cases the ‘wrong’ argument is incorporated. In (134) it is expected that the direct internal argument can be incorporated, instead, only the reflexive form is available for incorporation and in (135) it is not the accusative marked internal argument either that is incorporated. Rather the argument that is introduced in a prepositional phrase is available for incorporation.

This is less puzzling when considering how the arguments are introduced into the derivation. The reflexive in (134) is introduced as an additional coreferential argument - thus marking the causative-incohesive alternation. Coreferentiality is established between the internal argument and the reflexive. This is reminiscent of a low applicative head introduced below the root (cf. Pylkkänen 2000, 2002):<sup>56</sup>

---

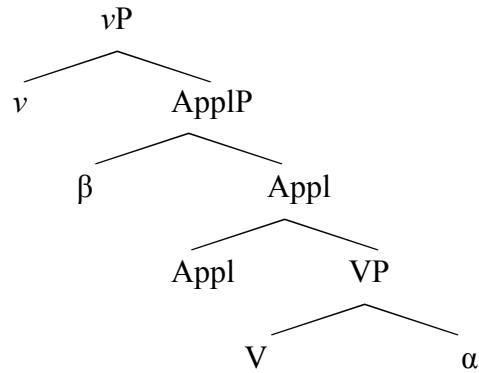
<sup>56</sup> Ideas similar in spirit can also be found e.g. in Hale & Keyser (2002) or in Ramchand (2008). Making use of Pylkkänen’s applicative heads here is not to be seen as indisputable. Any of the other analysis mentioned here should lead to the same results.

(136)



Now, when the root is verbalized and has its  $\varphi$ -features passed down from the Phase-head  $v$  it is perfectly natural that  $V$  probes the additional argument introduced in the specifier of the applicative head, i.e.  $\beta$  and thus incorporates this element. The incorporated argument in (135) is likewise introduced by an applicative head. However, this applicative head is a high applicative (cf. also Boeckx 2008a: 132-133):

(137)



This applicative head blocks feature inheritance from  $v$  to  $V$  and thus makes only the higher argument introduced in the specifier of the high applicative head available for incorporation. Thus, the data that are puzzling under an antisymmetry driven approach to incorporation can be explained under a syntactic analysis of incorporation in nominalized infinitives. So, in sum this does not only corroborate the incorporation analysis outlined in chapter 3.3.2, but it also provides further evidence for the existence of verbal functional

structure in the forms that are discussed here.<sup>57</sup> This is also an issue for the other type of nominalization found in German that corresponds to those English nominal gerunds where the *-ing* suffix is a nominalizer: *-ung* nominals. These are discussed in the next section.

### 3.4.2 German Nominalizations in *-ung*

The second type of nominalization to be discussed here are *-ung* nominals. These correspond to those nominal gerunds in English, where the *-ing* affix is a nominal affix that is attached in the higher Phase-cycle, i.e. PINGs and their non-incorporated counterparts. Just like in English, *-ung* nominals in German exist in incorporated and non-incorporated versions:

- |                                           |        |
|-------------------------------------------|--------|
| (138a) die Kreuzung der Straßen           | German |
| the cross-UNG(nmlz) the.gen streets.gen   |        |
| ‘the crossing of the street/intersection’ |        |
| (138b) die Straßenkreuzung                | German |
| the street-cross-UNG(nmlz)                |        |
| ‘the street-crossing/intersection’        |        |

What is striking about German *-ung* nominals though is that, like their English counterparts, they are much more restricted than the nominalized infinitives. Thus, by far not in every instance in which a nominalized infinitive can be formed is there an *-ung* nominal as well. For instance, none of the nominalized infinitives that are listed in (94) - (97) can be nominalized by the *-ung* form in German:

- |                                      |        |
|--------------------------------------|--------|
| (139a) *die Küssung der Frau         | German |
| the kiss-UNG(nmlz) the.gen woman.gen |        |

---

<sup>57</sup> Notice that there is one further bit of evidence that this is on the right track. In derived structures with particles in English incorporation of the THEME argument is likewise impossible if the particle is projected - although this does not have any impact on the theta-role of the incorporated argument:

- |                            |                                               |
|----------------------------|-----------------------------------------------|
| (i)      apple-picking     |                                               |
| (ii)     *apple-picking up | notice the grammaticality of [pick apples up] |

Cf. also chapter 4 for an analysis of verb-particle constructions and their nominalizations in the current framework.

	‘the kissing of the woman’	
(139b)	*die Laufung	German
	the run-UNG(nmlz)	
	‘the running’	
(139c)	*die Gebung	German
	the give-UNG(nmlz)	
	‘the giving’	
(139d)	*die Rasierung	German
	the shave-UNG(nmlz)	
	‘the shaving’	

Thus, despite the apparent ban of *-ung* attachment to intransitives (as in (139b), this does not seem to be a sufficient criterion, because not all transitive, ditransitive or reflexive verbs can be nominalized with *-ung* either, as the examples in (139), (139c) and (139d) respectively illustrate. The examples in (140) might suggest that blocking from zero-derived<sup>58</sup> nominals is what rules out *-ung* nominals:

(140a)	der Kuss	German
	the kiss	
	‘the kiss’	
(140b)	der Lauf <sup>59</sup>	German
	the run	
	‘the run’	

In both cases the bare root is merged with a nominalizing head, which leads to a result nominal and while blocking may potentially play a role here, it should be noted that there are a number of forms that cannot form *-ung* nominals, although there is no zero-derived

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<sup>58</sup> Of course, zero-derivation is an obvious misnomer here, since these forms are most certainly the product of Merger of a bare root with a nominalizing *n*-head, instead of being derived from a verb by attachment of a zero-affix. I just use the term for convenience, respecting the long and well-established research tradition that provided the name for these forms.

<sup>59</sup> This particular form here may of course be illicit because it is derived from an intransitive verb, as indicated above.

form that may serve as a candidate for blocking. The forms in (139c) and (139d) are a case in point and the forms in (141) are further examples:<sup>60</sup>

- (141) \*die Singung, die Schreibung, die Liebung, die Jagung, die Gehung, die Sehung, die Essung, die Kratzung, die Kommung, ....

When limiting *-ung* nominalization to transitive verbs, it turns out that this may well be a necessary criterion, but it is not a sufficient criterion either. Quite a number of transitive verbs resist *-ung* affixation, however, when these verbs are prefixed, *-ung* nominalization is licit:

(142)	schlagen	*die Schlagung	zerschlagen	die Zerschlagung
	spitzen	*die Spitzung	zuspitzen	die Zuspitzung
	schreiben	*die Schreibung	verschreiben	die Verschreibung
			abschreiben	die Abschreibung
			beschreiben	die Beschreibung
			ausschreiben	die Ausschreibung
	rufen	*die Rufung	berufen	die Berufung
			abrufen	die Abrufung
	gehen	*die Gehung	umgehen	die Umgehung
			begehen	die Begehung
	bauen	*die Bauung	bebauen	die Bebauung
	suchen	*die Suchung	untersuchen	die Untersuchung

Whether the prefix can be stranded or not does not seem to bear any consequences for the availability of *-ung*, since both types of prefixes can be found on *-ung* nominalization as can be seen from the examples in (143) - (145):

- (143a) er schreibt den Auftrag aus German

---

<sup>60</sup> Again, some of the forms in (141) may be out, because they are intransitive. However, all of these forms can also be used transitively and still they are out, which does not even change when the direct object of the transitive is projected.

	‘he bids on a contract’	
(143b)	*er ausschreibt den Auftrag	German
(144a)	er beschreibt den Weg	German
	‘he gives directions’	
(144b’)	*er schreibt den Weg be	German
(145a)	die Ausschreibung des Auftrags	German
	the bid-UNG(nmlz) the.gen contract.gen	
	‘the bidding of the contract’	
(145a’)	die Auftragsausschreibung	German
	the contract-bid.UNG(nmlz)	
	‘the contract-bidding’	
(145b)	die Beschreibung des Weges	German
	the give-UNG(nmlz) the.gen directions.gen	
	‘the giving of directions’	
(145b’)	die Wegbeschreibung	German
	the directions-give-UNG(nmlz)	
	‘the (giving of) directions’	

As the incorporated and non-incorporated *-ung* nominals in (145) illustrate, these can be formed from those transitive prefixed verbs that strand the prefix as well as from those that cannot strand the prefix.<sup>61</sup>

Prefixation is generally analyzed as inducing telicity (cf. e.g. Borer 2005b). However, it should be noted that some of the verbs in (142) (e.g. *bauen* ‘build’) are telic predicates even before prefixation. Additionally, Alexiadou, Iordăchioia & Soare (2010:14–15) argue that *-ung* affixation is possible with telic and atelic verbs. They further argue that atelic verbs in *-ung* cannot be pluralized, while telic verbs can (cf. *ibid*). The

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<sup>61</sup> Another way of putting this is, of course, to say that it does not matter whether these are particle verbs or prefixed verbs. However, at this point I do not want to commit to this distinction in German and therefore make use of the more neutral description provided above. A more fine-grained distinction is orthogonal to the point to be made here, since as (143) and (144) show, both patterns can be input to *-ung* nominalization.

relevant examples they provide are the following:

- |                                                                                                                                                                                                                                                                                             |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <p>(146a) die Beobachtung der Vögel<br/>           the observe-UNG(nmlz) the.gen birds.gen<br/>           ‘the observing of the birds’</p> <p>(146b) die Beobachtungen der Vögel<br/>           the observe-UNG(nmlz).pl the.gen birds.gen<br/>           ‘the observings of the birds’</p> | German<br>German |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|

Following Roodenburg (2006), Alexiadou, Iordăchioaia & Soare (2010) point out that in (146a) the argument DP can be interpreted as a THEME, while this is not possible for the pluralized form in (146b), due to the atelicity of the underlying verb. If the verb is telic, however, a THEME interpretation is still possible for the internal argument DP even when the *-ung* nominal is pluralized (cf. ibid: 15):

- |                                                                                                                                                                                                                                                                                                                 |                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <p>(147a) die Tötung der Protestierenden<br/>           the kill-UNG(nmlz) the.gen protesters.gen<br/>           ‘the killing of the protesters’</p> <p>(147b) die Tötungen der Protestierenden<br/>           the kill-UNG(nmlz).pl the.gen protesters.gen<br/>           ‘the killings of the protesters’</p> | German<br>German |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|

This alternation leads Alexiadou, Iordăchioaia & Soare (2010: 15) to the conclusion that verbal functional structure is not projected in *-ung* nominals. Instead, the alternation is accounted for in terms of boundedness in Alexiadou, Iordăchioaia & Soare (2010). However, this analysis has already been refined for the corresponding English forms in chapters 3.3.3 and 3.3.4. Further, consider the forms in (148) in this context:

- |                                                                                                                                                                               |                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <p>(148a) die Sichtung der Waale<br/>           the sight-UNG(nmlz) the.gen whales.gen<br/>           ‘the sighting of the whales’</p> <p>(148b) die Sichtungen der Waale</p> | German<br>German |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|

the sight-UNG(nmlz).pl the.gen whales.gen  
 ‘the sightings of the whales’

The examples in (148a) and (148b) illustrate that *-ung* nominals that are formed from atelic verbs can also be pluralized and maintain a THEME interpretation for the argument DP.<sup>62</sup> It is not clear, how this can be accounted for under an analysis in which verbal functional structure is not projected.

Thus, the examples in (148) can be taken as an indication that German nominalizations in *-ung* project verbal functional structure, just like their English counterparts (i.e. PINGs and their non-incorporated counterparts). Further paralleling their English counterparts, incorporated and non-incorporated *-ung* nominals in German do not license non-sentential adverbial modifiers, prepositional modifiers, or aspectual modifiers, as is illustrated by the forms in (149) and (150 respectively):<sup>63</sup>

- |                                                                                                                                                                      |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <p>(149a) *die Spaltungen des Holzes gestern</p> <p>the splitt-UNG(nmlz).pl the.gen wood.gen yesterday</p> <p>‘the splittings of the wood yesterday’</p>             | German |
| <p>(149b) *die Spaltungen des Holzes in zwei Tagen</p> <p>the splitt-UNG(nmlz).pl the.gen wood.gen in two days</p> <p>‘the splittings of the wood in two days’</p>   | German |
| <p>(149c) *die Spaltungen des Holzes für zwei Tage</p> <p>the splitt-UNG(nmlz).pl the.gen wood.gen for two days</p> <p>‘the splittings of the wood for two days’</p> | German |
| <p>(149d) *die Spaltungen des Holzes mit der Axt</p> <p>the splitt-UNG(nmlz).pl the.gen wood.gen with an axe</p> <p>‘the splittings of the wood with an axe’</p>     | German |

---

<sup>62</sup> Actually, I think that *pace* the analysis in Roodenburg (2006) and Alexiadou, Iordăchioia & Soare (2010) this is possible for the form in (146b) too. A - admittedly small scale and *ad hoc*-survey among native speakers of German confirms this observation.

<sup>63</sup> I here use the plural marker for expository purposes only, indicating that these are the forms that correspond to those nominal gerunds in English where the *-ing* affix is a nominalizer thus clearly dissociating them from instances of verbal *-ing* nominal gerunds.

(149e) *die Spaltungen des Holzes vorsichtig <sup>64</sup>	German
the splitt-UNG(nmlz).pl the.gen wood.gen carefully	
‘the splittings of the wood carefully’	
(150a) *die Holzspaltungen gestern	German
the wood-splitt-UNG(nmlz).pl yesterday	
‘the wood-splittings yesterday’	
(150b) *die Holzspaltungen in zwei Tagen <sup>65</sup>	German
the wood-splitt-UNG(nmlz).pl in two days	
‘the wood-splittings in two days’	
(150c) *die Holzspaltungen für zwei Tage	German
the wood-splitt-UNG(nmlz).pl for two days	
‘the wood-splittings for two days’	
(150d) *die Holzspaltungen mit der Axt	German
the wood-splitt-UNG(nmlz).pl with an axe	
‘the wood-splittings with an axe’	
(150e) *die Holzspaltungen vorsichtig	German
the wood-splitt UNG(nmlz).pl carefully	
‘the wood-splittings carefully’	

The inaccessibility of these modifiers need not be an indication for the lack of verbal functional structure in *-ung* nominals though. As noticed before for English PINGs and their non-incorporated counterparts this is perfectly natural when the *-ung* affix is a nominalizing affix that is merged under an *n*-node. This *n*-node instantiates a higher Phase-head and thus blocks access to lower Phases and modification is thus not possible.<sup>66</sup>

If this is on the right track, further evidence for the existence of verbal functional structure should be available. This is indeed the case. First of all, German *-ung* nominals

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<sup>64</sup> As discussed for nominalized infinitives in the preceding chapter adverbial modification in German is much more restricted than in English, hence (149e) and (150e) may not be relevant examples here. They are listed for completeness regardless.

<sup>65</sup> Just like in English PINGs the ungrammaticality of this form is expected, because incorporated forms should not be able to license telic modifiers anyway.

<sup>66</sup> Cf. also Pylkkänen (2002) for an argument that goes into a similar direction.

are sensitive to the properties of the internal argument. As indicated above, internal arguments are interpreted as THEMES and an interpretational difference emerges depending on whether the THEME is plural marked or not:

- |                                                 |        |
|-------------------------------------------------|--------|
| (151a) die Tötung des/eines Journalisten        | German |
| the kill-UNG(nmlz) the.gen/a.gen journalist.gen |        |
| ‘the killing of the/a journalist’               |        |
| (151b) die Tötung der Journalisten              | German |
| the kill-UNG(nmlz) the.gen journalists.gen      |        |
| ‘the killing of the journalists’                |        |

Furthermore, Alexiadou, Anagnostopoulou & Schäfer (2009: 42-43) point out that German *-ung* nominals behave like verbal passives in so far as they license AGENTS and CAUSERS as PP arguments:

- |                                                      |        |
|------------------------------------------------------|--------|
| (152a) die Öffnung der Tür durch den Wind            | German |
| the open-UNG(nmlz) the.gen door.gen through the wind |        |
| ‘the opening of the door through the wind’           |        |
| (152b) die Öffnung der Tür durch Peter               | German |
| the open-UNG(nmlz) the.gen door.gen through Peter    |        |
| ‘the opening of the door through Peter’              |        |

In particular the fact that these *-ung* nominals pattern with verbal passives and not with adjectival passives with respect to the licensing of external arguments strongly suggests that they contain verbal functional structure (cf. also Marantz 2007, Anagnostopoulou 2009). However, Alexiadou, Anagnostopoulou & Schäfer (2009: 49) argue against the projection of verbal functional structure (and in particular VoiceP) in *-ung* nominals, because these do not combine with a reflexive. Hence, *-ung* nominals can be interpreted reflexively and non-reflexively without the occurrence of a reflexive marker. In fact, the reflexive marker is ungrammatical in *-ung* nominals:

- |                                |        |
|--------------------------------|--------|
| (153a) die Anmeldung der Gäste | German |
|--------------------------------|--------|

- (153b) \*die Sich-Anmeldung der Gäste German

the SELF-register-UNG(nmlz) the.gen guests.gen  
‘the self-registering of the guests’

In this respect *-ung* nominals deviate from nominalized infinitives, which maintain the reflexive marker under nominalization:

- (154) das Sich-anmelden der Gäste German  
the SELF-register-EN(inf) the.gen guests.gen  
'the self-registering of the guests'

However, it should be noted that the non-reflexive nominalized infinitive allows for a reflexive reading as well:

- (155) das Anmelden der Gäste German  
the register-EN(inf) the.gen guests.gen  
'the registering of the guests'

The form in (155) can be interpreted reflexively in pretty much the same way that the form in (153a) can. For Alexiadou, Anagnostopoulou & Schäfer (2009) this would mean that nominalized infinitives in German, which behave like adjectival passives in this respect, cannot project verbal structure either. This is a problematic assumption though, since otherwise nominalized infinitives clearly display verbal characteristics.

An alternative comes from Sichel (2009) who argues that a PRO<sub>arb</sub> interpretation is what allows for a reflexive reading in *-ung* nominals. This comports with the analysis here. Under the assumption that both forms, i.e. nominalized infinitives and nominalizations in *-ung* contain verbal functional structure the reflexive interpretation can be explained by following the analysis discussed for English *-ing* of nominals where the *-ing* affix is a nominalizing affix. Assuming that the internal THEME argument moves into Spec, vP and thus into the edge of the verbal Phase is what makes it accessible in the higher nominal

Phase and thus allows for the reflexive interpretation. The absence of an overt reflexive marker in *-ung* nominals can easily be explained along these lines as well, because this would entail that the reflexive in the edge of vP can access the internal argument in the lower Phase. This however, is impossible, because the complement domain of vP is already spelled-out and thus no longer active in the derivation at the stage in which the nominalizing *-ung* suffix is merged. Under the assumption that verbal functional structure is not projected in (nominal) *-ing* or *-ung* nominals, this remains unexplained.

Additionally, German nominalizations in *-ung*, like their English counterparts, allow for a result interpretation as in (156) or for a distributed event interpretation, as in (157):

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <p>(156a) die Bespannung des Stuhls<br/>           the string-UNG(nmlz) the.gen chair.gen<br/>           ‘the stringing of the chair’</p> <p>(157a) die Tötungen der Journalisten<br/>           the kill-UNG(nmlz).pl the.gen journalists.gen<br/>           ‘the killings of the journalists’</p> <p>(157b) *die Tötungen des Journalisten<br/>           the kill-UNG(nmlz).pl the.gen journalists.gen<br/>           ‘the killings of the journalist’</p> | German<br>German<br>German |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|

The form in (157a) clearly illustrates the distribute event reading, since it is interpreted as several killing events in which one or more journalists are involved. The ungrammaticality of (157b) further corroborates this. Here the plural on the nominalized form indicates the multiple and distributed event reading which cannot be reconciled with a single journalist, thus ungrammaticality ensues.

Finally, some characteristics of the incorporated forms strongly suggest that verbal functional structure is involved. As expected, incorporated *-ung* nominals show a *kind*-rather than a *specific*-reading. *Prima facie* it seems that nominalizations in *-ung* can incorporate more freely than nominalized infinitives:

(158a) die Flussbiegung		German
the river-bend-UNG(nmlz)		
‘the river-bend’		
(158b) die Waldlichtung		German
the forrest-clear-UNG(nmlz)		
‘the forrest-clearing’		
(158c) die Türöffnung		German
the door-open-UNG(nmlz)		
‘the door-opening’		
(159a) der Fluss biegt sich		German
the river bends SELF		
‘the river bends’		
(159b) der Wald lichtet sich		German
the forrest clears SELF		
‘the forrest clears’		
(159c) die Tür öffnet sich		German
the door opens SELF		
‘the door opens’		

The examples in (159) may lead to the conclusion that the *-ung* nominals in (158) incorporate external arguments. However, it should be noted that the verbs in (159) alternate between the inchoative and causative variants:

(160a) der Mechaniker biegt das Metall		German
‘the mechanic bends the metal’		
(160b) der Gärtner lichtet das Dickicht		German
‘the gardener clears the coppice’		
(160c) der Hausmeister öffnet die Tür		German
‘the janitor opens the door’		

Given the unavailability of reflexive markers in *-ung* nominals (for reasons already

discussed above), the incorporations, which just as in the English PING-forms are low in the tree, are not external arguments.

What is a noticeable difference between incorporations in *-ung* nominalizations in contrast to nominalized infinitives though is that the form of the incorporated element is fixed. Recall from the discussion in the previous subchapter that the incorporated element can be either a plural or a bare noun and that incorporating either a bare noun or a plural form was shown to have a clear interpretational effect. This effect is absent in nominalizations in *-ung*, because these tolerate just one form:

- |                                                                                                 |        |
|-------------------------------------------------------------------------------------------------|--------|
| (161a) die Straßenkreuzung<br>the street-cross-UNG(nmlz)<br>‘the streets-crossing/intersection’ | German |
| (161b) *die Straßekreuzung<br>the street-cross-UNG(nmlz)<br>‘the street-crossing/intersection’  | German |

From the examples in (161) it should not be concluded though that only plural forms can be incorporated. In fact, in a number of cases it is just the bare stem that can be incorporated and plural forms are illicit:

- |                                                                                   |        |
|-----------------------------------------------------------------------------------|--------|
| (162a) die Holzspaltung<br>the wood-splitt-UNG(nmlz)<br>‘the wood-splitting’      | German |
| (162b) *die Hölzerspaltung<br>the woods-splitt-UNG(nmlz)<br>‘the woods-splitting’ | German |

Which form is available for incorporation is regulated by semantics. The verb *cross* in (161) automatically entails that at least two streets must be involved, hence the plural form is incorporated. In (162) it is the mass term that is incorporated, thus plural marking on this form is ruled out. Now, if the interpretation of the incorporated forms is regulated in the lower Phase upon the Merger of *v* which entails the inheritance of  $\varphi$ -features to *V* where

the incorporation operation is triggered, this is what is expected. In nominalized infinitives incorporation and *-en* suffixation are located within the same Phase. Hence both forms (i.e. bare nouns and plurals) can be incorporated. In *-ung* nominals, on the other hand, incorporation is in the lower Phase and affixation is in the higher Phase. Thus the form that is incorporated is fixed in the lower verbal Phase.

In summary it can then be said that there is a substantial amount of evidence that *-ung* nominals contain verbal functional structure in a lower Phase. Thus, it is safe to conclude that German incorporated and non-incorporated nominalizations in *-ung* pattern with English PINGs and their non-incorporated counterparts.

### 3.5 Conclusion

In this chapter another structure in which the Merger of two LIs creates a PoS has been analyzed: nominal gerunds. This PoS is resolved either by *of*-insertion, which is a reflex of inherent Case marking on the internal argument or by incorporation.

Further, it has been argued that two types of nominal *-ing* gerunds need to be distinguished in English. Those which project the *-ing* affix under a verbal node and those which project it under a nominal node. Both nodes are identified as Phase-nodes that trigger Spell-Out and render the complement domain of the relevant Phase-head inert for further computations. A number of consequences automatically follow. The verbal *-ing* head licenses aspectual modifiers, non-sentential adverbial modifiers, prepositional modifiers and the relevant form of the anaphor *do-so*, as well as a PRO-element. Sentential modifiers are not licensed, which is immediately obvious from the absence of TP or any other higher functional projection that would license such a modifier. Nor can the nominal gerund be pluralized, which is also immediately obvious from the fact that the *-ing* affix is a verbal affix, which never hosts nominal inflectional morphology.

When the *-ing* affix is a nominal affix instead, plural morphology is well-attested. However, this does by no means exclude the projection of verbal functional structure below the nominalizing affix. In fact, a substantial number of properties of pluralized incorporated and non-incorporated nominal gerunds rather suggests that verbal functional structure is projected below the nominalizing node. Among these are 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.

The unavailability of aspectual modifiers, non-sentential adverbial modifiers, prepositional modifiers, a PRO-reading and the *do-so* anaphor is an immediate consequence of a Phase-theoretic approach to the structures under discussion. The verbalizing *v*-head that can host these modifiers is not accessible after Merger of the nominalizing *n*-head that hosts the *-ing* affix, because the verbal head is in the complement domain of the *n*-Phase and thus already spelled-out and consequently rendered inert upon Merger of *-ing*. Thus, in essence the nominal head constitutes a Phase-boundary whose edge property blocks the accessibility of lower (functional and all other) projections in the complement domain of the Phase-head.

Both types of nominal gerunds can incorporate the internal argument, which ultimately rests on the availability or absence of inherent Case-marking on this argument. In the absence of Case-marking incorporation ensues, because the  $\varphi$ -features on the internal argument are a proper subset of the  $\varphi$ -features on the incorporating V, which has inherited its  $\varphi$ -feature specification from *v*. The incorporated forms can only be a bare form and cannot be a fully specified DP due to the *kind*-interpretation that is associated with incorporation.

Corroborating data for this analysis comes from German and (at least to some extent) from Romanian, where the two *-ing* affixes are two separate morphemes, i.e. *-en* marking the nominalized infinitive in German and nominalizations in *-ung* and the supine and the nominalized infinitive in Romanian.

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

## 4 Small Clauses (and Verb-particle Constructions)

### 4.1 The data

In the preceding chapters two types of structure in which Merge leads to a PoS are examined: nominal root compounds and nominal gerunds. In both cases an analysis that is in line with the SMT is devised under which the PoS is dissolved. In order to achieve this goal, a Phase-theoretic approach to BPS proved vital in both instances. Thus, so far the present study has offered a syntactic account on PoS dissolution for adjunction structures as exhibited in nominal root compounds as well as for argument structures as exhibited by nominal gerunds. In both cases the PoS resulted from the Merger of two LIs, i.e. two heads.

This chapter looks at yet another potential PoS that results from the Merger of two non-heads, i.e. XPs. This is the situation that arises from e.g. small clauses (cf. Moro 2000, 2007 and others). Based on the analysis presented in Narita (2011) the analysis presented here shows how the PoS in SCs can be dissolved. Additionally the analysis provided deals with a number heretofore unaccounted data in small clause (henceforth SC) constructions and argues for a uniform account for all these data. The analysis is based on the H- $\alpha$  schema of Narita (2011) and a derivational constraint - *\*Enter Phase* - that is derived from the SMT and finds a sister constraint in *Vacate Phase* (cf. Roeper *in preparation*). This is what makes the analysis leaner and more elegant than existing analyses of SCs and at the same time it can cover more of the SC data.

SCs are usually considered neither as plain adjunction structures nor as pure argument structures. In fact, they are ascribed an in-between status that is reflected in their characterization as predication structures (cf. e.g. Moro 2000, 2007, den Dikken 2006, 2007a,b); although the predication status of SCs requires further clarification (cf. e.g. Gallego 2010: 97), a point we will come to in due course in this chapter. Also, it is to be noted that although the result is the same, i.e. a PoS that arises from the Merger of two SOs, this PoS potentially behaves differently with respect to the LCA (cf. Kayne 1994, Moro 2000). This difference results from the fact that two XPs, which both constitute an SO, are merged instead of two LIs. Merger of two heads leads to a symmetric c-command relation and therefore the set of terminals to be ordered for LCA-compliance (cf. Kayne 1994) is empty. This is not the case here. Since the PoS is not constituted by two heads but by two XPs the ordering of the terminals is contradictory rather than an empty set. Hence,

even under the aspect of LCA considerations the situation in SCs seems to be different from the situation of the constructions discussed so far.

However, the deeper question is whether LCA considerations are even relevant in this context. After all, also *Kayne* (2010) seems to reconsider the question of the existence of directionality parameters, which can be regarded as the principle motivation for the LCA in *Kayne* (1994), without making recourse to the LCA. This is a very interesting observation for several reasons. First of all, it is to be noted that the PoSs discussed in the preceding chapters were all dissolved for reasons other than the LCA. In fact, the discussion in the previous chapters has shown that PoS dissolution is hard-wired in narrow syntactic requirements that are completely dissociated from a purely PF-oriented LCA. Thus, it is reasonable to be suspicious of the LCA based motivation for PoS dissolution in SCs too. This is even more relevant when looking at *Kayne*'s (2010: 12-20) account of directionality in natural languages, where he argues that the unique Specifier-Head-Complement (S - H - C) order is derivable from the properties of Merge and the interactions of the Probe-Goal mechanism operative in BPS. In order to be able to state that S - H - C is the unique ordering in syntax and in particular that the specifier is universally merged to the left of the head, *Kayne* (2010:16) argues that Merger of two XPs is universally unavailable. *Narita* (2011) arrives at the same conclusion from a very different perspective. Now, if Merger of two XPs is generally excluded from narrow syntax, the question is how SCs , which arguably are the result of Merger of two XPs are alternatively analyzed then. The abstract and theoretical answer provided in *Narita* (2011) is substantiated with empirical data from the domain of SCs. This leads to pushing the original analysis one step further.

Specifically, the question that arises in this context and that has not been addressed anywhere in the literature so far emerges from the following data-set:

- (1a) He made the cake beautifully.
- (1b) He made the cake beautiful.
- (2) He is a cake-maker.
- (3) This is a beautifully made cake.
- (4a) What/How did he make the cake what/how?              Beautifully.
- (4b) What did he make [sc the cake what]?              Beautiful.

- |       |                                                                     |           |
|-------|---------------------------------------------------------------------|-----------|
| (4c)  | What did he make [SC <del>what</del> beautiful]?                    | The cake. |
| (5a)  | He beautifully made the cake <del>beautifully</del> .               |           |
| (5b)  | *He beautiful made the cake <del>beautiful</del> .                  |           |
| (5c)  | *He cake-made beautiful <del>eake</del> .                           |           |
| (6a)  | *He is a cake-maker <del>eake</del> beautiful.                      |           |
| (6b)  | *The cake was beautiful-made <del>eake</del> <del>beautiful</del> . |           |
| (7)   | The cake; was made <del>eake</del> beautiful.                       |           |
| (8)   | He made [the cake beautiful] beautifully                            |           |
| (9a)  | Jack made Bobby angry.                                              |           |
| (9b)  | What did Jack make Bobby <del>what</del> ?                          | Angry.    |
| (9c)  | Who did Jack make <del>wh</del> angry?                              | Bobby.    |
| (10a) | Jack made Teddy laugh.                                              |           |
| (10b) | Who did Jack make <del>wh</del> laugh?                              | Teddy.    |
| (10c) | *What did Jack make Teddy <del>what</del> ?                         |           |
| (10d) | What did Jack make Teddy do <del>what</del> ?                       | Laugh.    |

In (1a) the VP [made the cake] is modified by the adverb [beautifully]. This is a case of XP - XP Merger. In (1b) the SC [the cake beautiful] is also an instantiation of XP - XP Merger and the whole SC is selected by the verb [made], which is yet another example of XP - XP Merger. The direct object, which is immediately dominated by the verb in (1a) can be incorporated without any complications (cf. (2)). The same holds for the modifier that is attached high in the VP (cf. (3)). The examples in (4a) - (4c) and in (9a) - (9c) illustrate that long-distance *wh*-extraction is possible for the modification structures just as much as for the SC structures.

The examples in (5a) and (2) further illustrate that incorporation is possible with the modification structures. However, the SC structures cannot be incorporated, as (5b) and (5c) show. Indeed, not even noun-incorporation (6a) or incorporation into a passive (6b), which would satisfy the First Sister Principle, is possible. So under incorporation SCs behave like islands to extractions, but not in the *wh*-cases in (4) and also not in regular passives as in (7). However, the picture is not uniform, since the SC in (10) requires *do*-insertion when the SC-predicate is extracted, which is not the case in e.g. (5) and (9).

Of course, a number of very different solutions to some of these problems exist (cf.

e.g. den Dikken 2006 for a fairly comprehensive overview), but none of them is without problems and none of them can account for the whole set of data. It is the aim of this chapter, on the basis of the framework established in Narita (2011) to seek an analysis of SC constructions that is in line with the SMT and that provides a syntactic answer to PoS dissolution and the data in (1) - (10). Once again, considerations from Phase-theory will prove vital in this context and a constraint that can be derived from the SMT will be discussed that lends support to and specifies one version of the PIC discussed in e.g. Chomsky (2001) vs. Chomsky (2000). This constraint generates a sister constraint put forward most recently in Roeper (*in preparation*), which receives ample support from considerations on language acquisition (cf. *ibid*).

The analysis in this chapter proceeds as follows. In a first step I will approach the definition of SCs and reconcile them with considerations on XP - XP Merger. In this context the internal structure of SCs is discussed on the basis of various approaches suggested in the literature. Shortcomings of these approaches with respect to a BPS analysis that is guided by the SMT are discussed and an analysis, based on the theoretical framework laid out in Narita (2011), that fully respects SMT demands is presented. In a second step the analysis suggested here is briefly extended and transferred to verb-particle constructions and their nominalizations, which are shown to lend further support to the novel account of SCs put forward here.

## 4.2 Towards a Definition of SCs

### 4.2.1 The General Picture: Two Interfaces - Two Paths?

SCs are typically characterized as predication structures (cf. e.g. Moro 2000; den Dikken 2006; 2007a). However, as Gallego (2010: 96-97) correctly points out, it is not clear how this semantic characterization translates into syntactic structural representation. It could, of course, be argued that a predication relation translates into a syntactic structure that is established between two phrases possibly mediated by some predicative head that hosts these phrases in complement and specifier positions. This comes close to the approach taken in den Dikken (2006, 2007a; 2007b). At the same time, however, it should not be overlooked that such an interface-driven approach to the identification of SCs as predication structures equals reverse-engineering the SMT, since in this case interface demands would dictate structural make-up. Additionally, it is not always clear how the

predication relation is to be established for the numerous different constructions that are analyzed as SCs in the literature. Moro (2000), for instance suggests a distinction between SCs of *believe*-type verbs (11a) and copular verbs (11b):<sup>1</sup>

- (11a) Jack considers *his youngest brother* fat.
- (11b) Jack is *Jack* the president.

Presumably, further distinctions are in order for SCs in double object constructions (cf. e.g. Kayne 1984):

- (12) Jack sent *Bobby* a cake.

as well as for adjunct and absolute constructions (cf. Chomsky 1981; Moro 1995; Rothstein 2000):

- (13) Ted left the Cape *PRO refreshed*.
- (14) The debate is no fun *with the Speaker of the House mute*.

And it is not clear whether verb-particle constructions (cf. e.g. Johnson 1991; Aarts 1992) pattern with any of the above or whether they constitute yet another type of structure:

- (15a) Bobby called *up the vote*.
- (15b) Bobby called *the vote up*.

Moro (2000: 33-34) additionally lists existential constructions (16), colloquial expressions (17), reduced relatives (18) and unaccusative constructions (19) as further examples for SCs:

- (16) There is *a fool in the compound*.
- (17) *Jack a fool?* Never!

---

<sup>1</sup> SCs are indicated in italics here. This is done to avoid any commitment to SC internal structure at this point of the discussion.

- (18) *The man in charge*
- (19) *There is a problem there.*

The standard definition of SCs that is applicable to all of the examples in (11) - (19) and that circumvents the problem of specifying the nature of the predication relation any further is the characterization provided e.g. in den Dikken (2006: 60):

- (20) A SC is a subject-predicate structure lacking tense.

This definition is not very helpful though, as it suffers from the aforementioned imprecision in the characterization of the so termed *subject-predicate structure*.<sup>2</sup> Granted that it is not tense mediating the relation between the subject and the predicate, it is not clear what mediates this relation, nor is clear, whether whatever it is that mediates actually is the same ‘thing’ in all the examples in (11) - (19). Additionally, it is not even clear whether subject and predicate are unambiguously identifiable in all instances. In particular in so called equative constructions (cf. also Heycock & Kroch 1999), which (21) is an example of, it remains unclear, which of the DPs functions as subject and which as predicate - if any:

- (21) Jack is JFK.

Thus, in order to arrive at a more precise characterization that does not suffer from the problem of revoking the SMT a more precise definition needs to be found. In order to do this, in a first step, I focus on the SC constructions in (11), (13) and (14). Double object constructions and verb-particle constructions are included in the discussion in a second step and the structures in (17) - (19) are largely abstracted away from, however, the analysis to be discussed here for the other forms should also be compatible with these.

Before dealing with each of the structures in turn, however, some more general considerations are in order. It has been pointed out in the introduction already that SCs are

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<sup>2</sup> Additionally, Al-Horais (2007) argues that SCs though untensed do not necessarily lack tense features. In fact, it is the hallmark of Al-Horais analysis that SCs are specified for a tense feature that provides the head of the SC construction (cf. also Aarts (1992) for an analysis along similar lines).

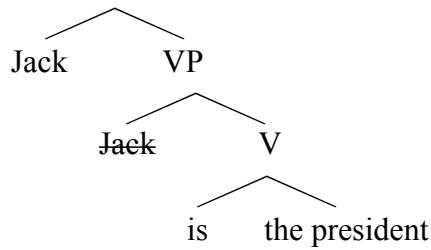
characterized as inducing a PoS that results from XP - XP Merger. *Prima facie* all of the structures in (11) - (19) can be conceived of as instances of XP - XP Merger. Den Dikken (2006: 58) argues that under the assumption that all SC in (11) - (19) are instances of the same syntactic structure, at least three options for the specifics of this structure arise. These are schematically illustrated in (22):

- (22a) [VP V Subj Pred]
- (22b) [VP[V V Pred] Subj]
- (22c) [VP V [Subj Pred]]

[adapted from den Dikken 2005: 59]

The structure in (22a), though initially argued for in Williams (1980), is not compatible with current BPS approaches to syntactic structure that follow the principle of binary branching (cf. Kayne 1984). Thus, despite the fact that this is an instance of X - XP - XP Merger we can rule it out here on the basis of considerations of economy and learnability (cf. also den Dikken 2006: 59; Kayne 2010). For the structure in (22b), which is championed e.g. in Johnson (1991), it is not so clear whether this is an instance of XP - XP Merger. It rather looks like a standard case of Merge of a head with an XP complement, i.e. the secondary predicate *Pred*, and an XP specifier, i.e. the subject *Subj*. As den Dikken (2006: 59) correctly points out, this structure is straightforwardly applicable to verb-particle structures in which the particle immediately follows the verb, as in (15a), but it is unclear how the alternative order exemplified in (15b) is derived. This problem is even more pressing in light of the fact that several of the examples in (11) - (19) exhibit this ordering. Of course, the mechanics of generating the observed surface order can be accounted for by movement operations, and, indeed, in examples like (11b) and (19) this seems a reasonable solution. Here the subject merged in Spec, VP is targeted by a higher Probe, probably instantiated by the EPP-feature on T, and then moves out of Spec, VP. Schematically the structure is as follows:

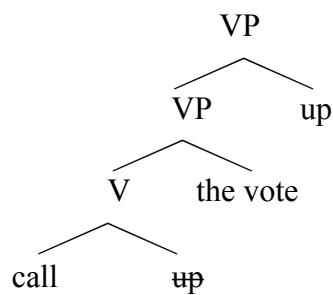
(23)



However, the structure in (23) is problematic in its own right. First of all, it is not clear that the copula is an instance of V that enters into a predicative relation with the DP *the president*. Secondly, it is not at all clear how the subject-predicate relation between *Jack* and *the president* is established. This is puzzling especially in light of the fact that V is universally considered as unfit for introducing subjects (cf. e.g. Kratzer 1996; Pylkkänen 2002).

Additionally, the other examples in (11) - (19) do not fare any better under this analysis either. First of all, the question of how the relation between the V + Pred complex and the subject is established is left unanswered. Secondly, although the two ordering possibilities e.g. for (15a) and (15b), can again be accounted for by movement roughly of the sort illustrated in (24), a number of questions remain. One of these questions extremely relevant for the current context is why the PoS that results from the movement operation is unproblematic, or how it is resolved for that matter. Another valid question is what the status of the particle is (cf. e.g. Zeller 2001 for discussion and e.g. Svenonius 2003 for some critical remarks):

(24)



It is in principle possible to argue that the particle, which is standardly identified as the predicate in (24) (cf. e.g. Johnson 1991; Aarts 1992), moves past the subject DP *the vote* to a higher position. However, it is totally unclear how this movement is motivated, why the

subject is not targeted by the movement operation and whether this movement operation is also applicable to the other examples in (11) - (19). Hence, the question that emerges in this context is why e.g. in (12) the reverse ordering requires the presence of *to*:

- (25) Jack gave *a cake to Bobby*.

Or why reverse ordering is sometimes even blocked as can be seen when comparing the example in (26) to the form in (11a) and the example in (27) to the example in (13)<sup>3</sup>:

- (26) Jack considers \*(as) *fat his youngest brother*.  
(27) Ted left refreshed \*(from) *PRO the Cape*.

All these questions remain open under the structural representation in (22b). Thus, although this structure has the merits that it is reconcilable with the characterization in (20)<sup>4</sup> and that it apparently avoids the problem of XP - XP Merger<sup>5</sup>, it is far from unproblematic and will therefore be set aside here.

For the record: we will also set aside the other logical possibility, which is not included in (22):

- (28) [vp[v V Subj] Pred]

This structure, though theoretically possible, certainly is not any more plausible than the structure in (22b). Analogously, the questions of how alternative surface orders are

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<sup>3</sup> As Günther Grewendorf points out, these questions, of course, only arise, when all of these constructions are regarded as examples for the same underlying SC construction. And there are a number of empirical differences in particular between the double object construction and the examples in (26) - (27) that give rise to some doubt of the validity of an analysis that treats all of these constructions *a par*. This is one of the reasons why they are excluded from the general discussion in the remainder of this chapter (cf. also comments above).

<sup>4</sup> Notice that the structure in (22b) is only reconcilable with the characterization in (20) when ignoring the question how the subject-predicate relation is established.

<sup>5</sup> The problem of XP - XP Merger is also avoided only apparently here, as we will see later on the discussion. Suffice it to say at this point that merging the subject XP in Spec, VP (or some other position equivalent to this) is definitely not a case of X - YP, i.e. head + phrase Merger. Provided that the prerequisite for Merge is that at least one of the SOs bears an EF (cf. Chomsky 2008), this automatically entails that one of the SOs participating in Merge be an LI.

generated, how antisymmetry violations are accounted for, how the subject-predicate relation is established, how XP - XP Merger is avoided etc. do not receive a more straightforward answer here either.

Thus, let us now turn to the third alternative presented in (22c). As it stands, this is most obviously a case of XP - XP Merger that is then merged to the verb. This XP - XP structure is what, according to den Dikken (2006: 59-60), is most standardly identified as a SC. At least the following two questions immediately emerge in this context as well:

1. What is the head of the XP - XP structure and what drives Merge here?
2. How is the predication relation established here?

Let us start by looking at the last question first. Several answers seem feasible here. First, it could be argued that no predication relation is established between the two XPs at all. This is roughly the answer that is pursued in Kayne (1984). Moro (2000) and Pereltsvaig (2001) also seem to follow this line, at least for the copular constructions in (11b), Matushansky (2007a) suggests it for naming constructions and Heycock & Kroch (1999) consider it for equative constructions, exemplified here in (21). So, pursuing this line of analysis basically spares an answer to the second question. This is not a bad move altogether, since it is not clear how the predication relation is defined correctly and how this semantic relation translates into syntactic structure. However, it comes at the cost of rendering the first question even more relevant.

An alternative answer is provided in den Dikken (2006). Here, den Dikken argues against symmetric cases of XP - XP Merger. In a nutshell, he suggests an analysis in which apparent cases of XP - XP Merger are always mediated by an abstract functional head, which he identifies as a Relator head. This Relator head always establishes a predication relation and in cases of equative constructions and copular constructions involves the additional operation of predicate inversion. Thus, den Dikken avoids an answer to the first question by embracing a predication analysis. This predication analysis differs from the complex predicate analysis in Johnson (1991) in so far as the predication relation is not established between the higher verb and one of the small clause constituents but rather between the two small clause constituents and an abstract functional head termed Relator. So, in fact den Dikken's analysis only avoids the first half of the first question and still

needs to devise an answer to the second half, i.e. what motivates Merge of the two XPs that constitute the SC in complement and specifier position of the abstract functional head. Additionally, the second question remains to be answered, which still hinges on a precise definition of the predication relation.

So the situation we are facing is that we can either buy into an analysis that faces the problem of XP - XP Merger and the PoS resulting from this operation needs to be dissolved somehow, or we can avoid this problem by subscribing to an analysis that comes at the cost of maintaining a syntactically problematic characterization of predication, which involves reverse-engineering the SMT. In order to be in a better position to judge between these two options and to see where potential problems arise and how they can be overcome let us look at the two alternatives in more detail.

#### **4.2.2 Pursuing a S-M Based Analysis: Moro (2000)**

As already indicated above, Moro (2000) distinguishes between two types of SCs: SCs of *believe*-type verbs and bare-copular SCs. Examples of both are provided in (11) repeated here as (29):

- (29a) Jack considers *his youngest brother* *fat*.
- (29b) *Jack* is *Jack* the president.

It has also been pointed out already that the order of the SC constituents in (29a) cannot be reversed:

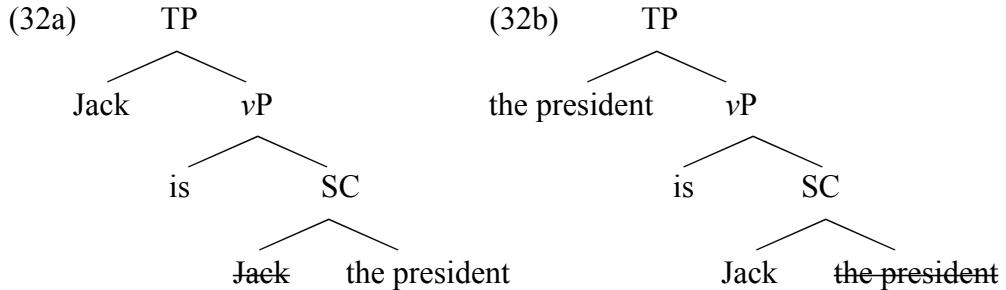
- (30) \*Jack considers *fat* *his youngest brother*.

This is not the case in (29b), where reverse ordering is perfectly licit:

- (31) *The president* is *Jack* the president.

Moro (2000) refers to the bare copular SC in (29b) as the regular or canonical SC and to (31) as the inverse SC. Both are instances of XP - XP Merger inside the SC. In the canonical order the SC subject is remerged in Spec, TP, while it is the predicate that is

remerged in this position in the inverse SC. Hence the structures for (29b) and (31) are the following:<sup>6</sup>



[adapted from Moro 2000: 42 & 106-107]

(32a) is, of course the structure for the canonical SC and (32b) the representation for the inverse SC. Both structures involve a PoS inside the SC that is dissolved by moving either constituent to a higher specifier position.<sup>7</sup> Again a prominent question here is whether movement to Spec, TP is a viable solution<sup>8</sup>. Here a lot hinges on the properties associated with Spec, TP. If this is interpreted as the subject position, it is to be noted that this is incompatible with the facts, since the SC constituent in Spec, TP is not necessarily the subject, as the following examples illustrate:

(32a') The senators are the problem

(32b') The problem are the senators.

As (32b') shows, the DP *the senators* agrees with the copular and is interpreted as the subject of the SC, although it remains lower in the tree than the DP *the problem*, which is

<sup>6</sup> Again, it is highly debatable whether this analysis is licit. Following Rizzi (1997) it could simply be assumed that the moved constituents in (29b) and (31) occupy different positions in the left periphery, which lead to a different focus structure. This, however, is not the path taken in Moro (2000), where movement motivated by PoS-dissolution is modeled to Spec, TP (cf. also (32)). Still, the question whether the respective constituents move to Spec, TP in an initial step and from there onwards to different positions in the CP yielding the different interpretive effects, is not completely off the table. On the other hand, the motivation for a split CP is neither, which as Chomsky (2011) discusses is incompatible with current BPS conceptions that factor in Phases. I will abstract away from these difficulties here, since they are orthogonal to the analysis suggested below.

<sup>7</sup> Notice that although moving one of the SC constituents to Spec, TP gets us around the PoS problem, but it does not provide a solution to the deeper problem of how XP - XP Merger is dealt with. This latter problem remains completely unresolved.

<sup>8</sup> Moro (2000) models it as movement to Spec, IP (cf. ibid: 42) or an unspecified Spec, S (cf. ibid: 106-107) respectively.

the SC predicate (cf. also Moro 1997, 2000 for further illustration). So, the remaining question then is what the properties of the landing position of the moved DPs really are.

By way of an indirect answer to the above question, Moro further points out that the reason for movement of either one of the two SC constituents cannot be Case. In order to illustrate this, Moro (2000: 42) provides the following example:

- (33) La causa della rivolta sono io ~~la causa della rivolta~~ Italian  
the cause of the riot am I.NOM  
'The cause of the riot am I'  
[adapted from Moro 2000: 42]

The nominative Case on *io*, which is the subject that remains inside the SC according to Moro, is an indication that movement is not motivated by an unvalued Case feature. If Case Valuation were the reason for movement there would be no way in which the nominative marked pronoun can stay inside the SC where Case Valuation is impossible. Moro (2000:43) further argues that Case cannot be licensed via Agree when the subject DP stays inside the small clause as in (33), because this would entail that the subject should never move out of the SC. However, this is clearly false for the canonical version:

- (34) Io sono ~~io~~ la causa della rivolta Italian  
I.NOM am the cause of the riot  
'I am the cause of the riot'

This is reason enough for Moro to conclude that the sole motivation for movement here is the dissolution of the PoS inside the SC.

Regarding the other type of SC in (29a), Moro (2000: 43-44) argues that this does not constitute a counterexample to his approach, because SCs that are complements of *believe*-type verbs are structurally more complex. Actually, Moro is not entirely clear here. On the one hand the analysis presented in Moro (2000) draws heavily on the fact that SCs of *believe*-type verbs can be modified by an adverbial modifier. The relevant example in Moro (2000: 44) is the following:

- (35) Gianni non ritiene queste foto in alcun modo la causa della rivolta    Italian  
 John not considers these photos in any way the cause of-the riot  
 ‘John does not consider these photos in any way the cause of the riot’

The presence of the adverbial modifier *in alcun modo* inside the SC leads Moro to the conclusion that this SC must contain a functional projection to which the adverbial modifier can be merged. This, as Moro (2000: 44-45) argues, is not possible in bare SCs. Here, in particular the inverse structure of the SC is taken to be the corroborating piece of evidence. The modifier cannot occur inside the SC when the predicate is remerged outside the SC:

- (36) \*La causa della rivolta non è [Gianni in alcun modo ~~la causa~~ ...]    Italian  
 The cause of-the riot not is John in any way  
 ‘The cause of the riot isn’t John in any way’

While perfectly plausible, this is not the only conclusion that can be drawn from the data that Moro discusses. First, it is to be noted that the example in (36) only illustrates that the adverbial modifier cannot occur in a position lower than modifying the matrix verb. It is not clear from the example whether the modifier cannot be merged to the SC predicate either. Unfortunately, Moro does not provide any examples that allow for conclusions on this question.

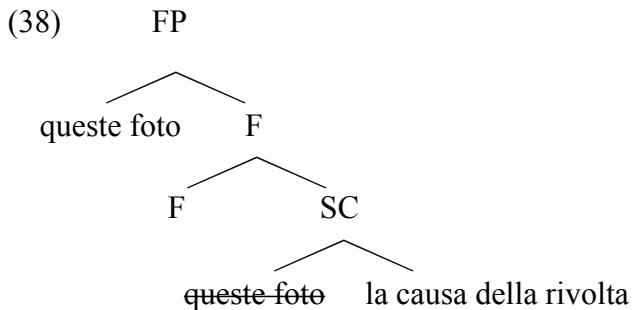
However, even if this question can be answered satisfactorily, it is not clear whether the conclusions can be transferred to those SCs that are complements of *believe*-type verbs. Moro, in his analysis focuses on bare copular SCs, since these are of the type in which the PoS ensues. What is not clear though is in how far exactly the functional head that Moro (2000: 43-44) postulates for SCs that are complements of *believe*-type verbs contributes to the prevention of a PoS. In fact, the structure that is presented (cf. ibid: 45) is very unclear here:

- (37) Gianni non ritienne [<sub>FP</sub> queste foto F<sup>0</sup> ...in alcun modo F<sup>0</sup> ....]    Italian  
 John not consider these photos in any way  
 ‘John does not consider these photos in any way’

[sc la causa...  
the cause ...  
the cause ...']

Several things remain unclear here. First, it is not at all clear what is inside the small clause. In the representation in (37) it looks like the SC subject is first-merged in Spec, FP and the SC predicate is merged as the complement of FP. If correct, the question that emerges is what the properties of the SC are. In light of the fact that the subject is merged outside of the SC, the definition in (20) seems unfit here. Also, it is not clear whether the subject and the predicate can be inverted in this type of SC just as much as in the bare SC, and what guarantees or prevents this option.

It is particularly important to note here that despite the presence of a FP - to which the adverbial modifier can be merged - a PoS is not *a priori* excluded. It is absolutely feasible that the subject and the predicate of the SC are merged and that this Merger leads to a PoS. The role of the functional projection could then simply be to dissolve the PoS by remerging one of the SC constituents in its specifier position. This is schematically presented in (38):



Nothing in the analysis pursued in Moro (2000) prevents such a move. Neither the fact that the functional head can be spelled-out as *come* ('as') in SCs of the *believe*-type verbs nor the fact that the SC predicate cannot be cliticized in this type of SC is a compelling reason against an analysis along the lines outlined in (38).

In fact, postulating a functional head F and its projection that can attract one of the SC constituents to its specifier comes remarkably close to PoS-dissolving movement operation that Moro himself assumes (cf. the examples in (32a) & (32b) for exposition).

Although other alternatives are also conceivable. One could, for instance, be motivating the movement operation via an EPP-feature in Spec, FP.<sup>9</sup>

In any case, the question that remains of course is what the properties of the functional head are. Here Moro (2000: 35) is somewhat inconclusive too. On the one hand, it has already been pointed out above that the PoS based account of bare SCs preempts a feature based motivation for movement in this particular type of SC. At the same time though, Moro leaves open, how the Case of the subject that remains inside the SC under predicate inversion is eventually valued in bare SCs (cf. the example in (34)). What seems clear is that a functional projection like the one in SCs that are complements of *believe*-type verbs is not readily available (but cf. den Dikken (2006, 2007a,b) and the discussion in the following subchapter for a discussion of arguments against this view).

In the same vein, Moro (2000: 34-35) argues against Kayne's (1984) original assumption that an agreement head mediates between the subject and the predicate of the bare SC on the basis of the following data from Italian:

(39)	Gianni ritiene	[SC [DP questi libri]	Italian
	John considers	this.masc.pl book.masc.pl	
	'John considers these books		
	[DP la causa della rivolta]]		
	the.fem.sg cause.fem.sg of-the riot		
	the cause of the riot'		
		[adapted from Moro 2000: 35]	

The subject and the predicate of the SC do not agree neither in number nor in gender contrary to what would be expected from an agreement head of the type suggested in Chomsky (1991). This is what leads Moro (2000) to follow the arguments in Chomsky (1995a) against the postulation of Agr-heads in general and in SCs in particular.

Three comments are in order here. First, it is to be noted that agreement between the SC subject and predicate is not what is *a priori* expected, even under the projection of an agreement phrase, because in standard cases of AgrP the subject in Spec, AgrP does not

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<sup>9</sup> For an alternative solution cf. chapter 4.6 though.

agree with the complement of AgrP either. This is only achieved when, e.g. the complement incorporates into the agreement head. Yet, such an analysis brings along an additional host of questions and it seems unsuitable for the analysis here, because the SC predicate in (39) is a full DP. Incorporation, however, could proceed only via head-incorporation of the N into Agr. This could proceed possibly via D or, where languages allow for it, as a clitic (cf. Moro 2000: 105ff for a rough sketch and more recently Roberts 2010 for a very detailed study of clitic incorporation in Romance languages).

Moreover, it is to be noted that the SC that Moro here provides is not of the bare type. Instead it is a SC that is the complement of a *believe*-type verb and thus a SC that hosts a functional projection, of which AgrP could just be one possible instantiation. However, this functional projection, regardless of whether it is AgrP or something else, does not seem to have an impact on agreement properties inside the SC. Of course the question that immediately arises then is what else the function of the functional head is, if it is neither effective in Case Valuation nor in agreement, i.e. Valuation of φ-features. Unfortunately Moro (2000) remains silent on this very pertinent question.

What Moro (2000: 35) points out though is that instances in which agreement inside SCs (that are complements of *believe*-type verbs) is obligatory exist in Italian:

- |       |                                 |                          |         |
|-------|---------------------------------|--------------------------|---------|
| (40a) | Gianni ritiene                  | [SC [DP queste ragazze]] | Italian |
|       | John considers                  | this.pl girl.pl          |         |
|       | ‘John considers these girls     |                          |         |
|       | [DP le sue migliori amiche]]    |                          |         |
|       | the.pl his.pl best.pl friend.pl |                          |         |
|       | his best friends’               |                          |         |
| (40b) | *Gianni ritiene                 | [SC [DP queste ragazze]] | Italian |
|       | John considers                  | this.pl girl.pl          |         |
|       | ‘John considers these girls     |                          |         |
|       | [DP la sua migliore amica]]     |                          |         |
|       | the.sg his.sg best.sg friend.sg |                          |         |
|       | his best friend’                |                          |         |

Unfortunately, Moro (2000, 2007) does not comment on what makes agreement obligatory

in (40)<sup>10</sup> and why it can be ignored in (39). This is particularly puzzling, since both SCs are complements of the *believe*-type verb *ritenere* and thus likely candidates for the projection of a functional head whose properties are unclear. It could, of course, be argued that (39) and (40) are two entirely different constructions. This, however, does not seem to be in line with the account that Moro pursues where both structures are treated on a *par*. Rather it seems that the distinction that Moro acknowledges between these two constructions hinges on the lexical properties of the SC constituents involved. In (39) the SC constituents denote a *reason* or *origin* relation, whereas in (40) this relation is absent. In fact the relation between the SC subject and the SC predicate seems to be some kind of an *equation*. This, however, would need to be made precise, were one to follow Moro's account here.<sup>11</sup>

Al-Horais (2007: 101) mentions similar examples from French and Arabic where SC-internal agreement is obligatory. These are somewhat indicative in this context:

(41a)	Jean considère	[SC[DP la fille] [APintelligente]]	French
	John considers	the.fem.sg girl.fem.sg intelligent.fem.sg	
‘John considers the girl intelligent’			
(41b)	Jean considère	[SC[DP les filles] [APintelligentes]]	French
	John considers	the.fem.pl girl.fem.pl intelligent.fem.sg	
‘John considers the girls intelligent’			
(41c)	Jean considère	[SC[DP les enfants] [APintelligents]]	French
	John considers	the.masc.pl kid.masc.pl intelligent.masc.pl	
‘John considers the kids intelligent’			
(42a)	'aadad:tu	Mariam-a	Arabic
	consider1.sg	Mary.3sg.fem.acc	
‘I consider Mary intelligent’			
(42b)	hasibtu	alfatayat-i	Arabic
		mu'aallimat-in	

<sup>10</sup> Notice that the agreement is really obligatory here, i.e. it is not the case that the SC in (40b) has just another meaning than the one in (40a). It is strictly ungrammatical.

<sup>11</sup> One possible way of making this relation precise would be to analyze this construction as some kind of equative SC in the sense of den Dikken (2006; 2007a,b). This is an option that we will discuss in some detail in the next subchapter. Suffice it to say here that this is not without complications either, since the questions on the properties of the head that mediates this equation relation remain. Again, this is something that would require thorough investigation - if this is actually what Moro (2000) hints at.

thought1.sg the.girl.3pl.fem.acc teacher.3pl.fem.acc

‘I thought the girls are teachers’

[adapted from Al-Horais 2007: 101]

Once again, SCs that are complements of *believe*-type verbs obligatorily display SC internal agreement between the subject and the predicate. Interestingly, however, Al-Horais does not argue for a functional head inside the SC that regulates the Agree relation. Instead he argues that φ-feature agreement between the subject and the predicate takes place immediately upon Merge, i.e. inside the SC (cf. *ibid*: 103-106).<sup>12</sup> This analysis is immediately transferrable to bare copular SCs:

- (43a) La fille est [SC[DP ~~la fille~~] [AP intellegente]] French  
The girls are the.fem.sg girl.fem.sg intelligent.fem.sg  
‘The girl is intelligent’
- (43b) Les filles sont [SC[DP ~~les filles~~] [AP intellegentes]] French  
The girls are the.fem.pl girl.fem.pl intelligent.fem.pl  
‘The girls are intelligent’
- (43c) Les enfants sont [SC[DP ~~les enfants~~] [AP intellegents]] French  
The kids are the.masc.pl girl.masc.pl intelligent.masc.pl  
‘The kids are intelligent’

In (43) agreement inside the SC is just as obligatory as in the examples in (40) - (42). Now, given that Moro does not assume a functional projection that could mediate the agreement between the SC subject and predicate in bare copular SCs and that Al-Horais does not argue for a functional projection inside SCs that are complements of *believe*-type verbs in the first place, the questions of what corroborates the assumption of a functional projection inside the latter type of SC and of what the properties of this functional projection are,

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<sup>12</sup> In effect Al-Horais account then comes close to the analysis suggested in (38). Especially so, since he assumes that Case on the SC internal constituents is valued by a functional head that is merged on top of the SC. This head is a non-finite anaphoric tense head that enters into a Multiple-Agree relation with the SC internal subject and predicate. However, two differences remain. For one, Al-Horais eventually argues for an analysis in which it is the predicate inside the SC that provides the label for the SC, thus no PoS ensues here. Secondly, for reasons that are extensively discussed in the literature (cf. e.g. Boeckx 2008a for a comprehensive overview) I will refrain from adopting a Multiple-Agree analysis for SCs.

remain. Just as much as the question of whether the dissolution of a PoS can be motivated syntactically instead of by making recourse to the post Spell-Out mechanisms induced by the LCA.

In this context the analysis provided in den Dikken (2006; 2007a,b) is worth looking at in greater detail, because it provides interesting answers at least to some aspects of the questions mentioned above. This is what is done in the next section.

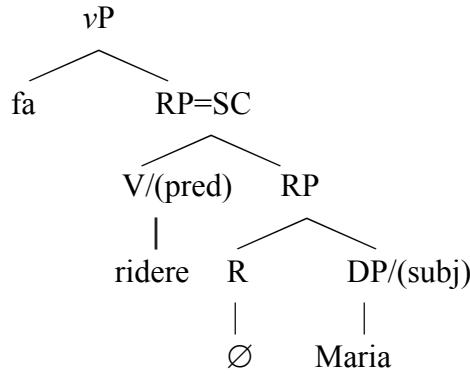
#### **4.2.3 Pursuing a C-I Based Analysis: Den Dikken (2006; 2007a;b)**

As indicated already, den Dikken (2006) argues that symmetric SCs, i.e. those that instantiate a PoS resulting from XP - XP Merger, like the bare copular SCs in Moro (2000) or the SCs in Al-Horais (2007), do not exist. In his analysis den Dikken (2006) focuses on copular constructions, i.e. bare and equative SCs. This is a plausible approach, since only these are assigned a symmetric structure, involving a PoS in Moro (2000). All other SCs are asymmetric and involve some sort of a functional projection anyway. I will follow den Dikken in this for the moment, keeping in mind however that the postulation of a functional projection in order to derive an asymmetric structure does not answer the question on what the syntactic properties of this projection are - a question I will come back to in due course.

Based on the definition of SCs as subject-predicate structures lacking tense (cf. also (21)), den Dikken (2006: 60) argues that complements of causative verbs in Italian *faire*-infinitive causative constructions are SCs too. Den Dikken (2006: 62) further assumes that SCs - like all predication structures - are projections of a functional head. This functional head is termed Relator in den Dikken (2006, 2007a, 2007b). What is special about those SCs that are complements of Italian *faire*-infinitive causative constructions is that the predicate of the SC is projected in the specifier of the functional projection that makes up the SC, while the subject is in the complement position. The examples den Dikken (2006: 60) provides are the following:

- |                              |         |
|------------------------------|---------|
| (44a) Gianni fa ridere Maria | Italian |
| John makes laugh Mary        |         |
| ‘John makes Mary laugh’      |         |

(44b)



[adapted from den Dikken 2006: 60]

The Relator head here is not realized phonologically. However, there are instances where the Relator head is overt. The relevant example from den Dikken (*ibid*) is given in (45):

- (45) Gianni fa [SC/RP mangiare le mele [R a [DP Maria]]] Italian  
 John makes eat the apples Mary  
 ‘John makes Mary eat the apples’

[adapted from den Dikken 2006: 60]

Evidence for the fact that the V(P)s in Spec, RP in (44) and (45) are predicates of the predication is derived from the observation that these secondary predication can be turned into primary predicates along the same lines that other subject-predicate structures in secondary predicates can (cf. den Dikken 2006: 61):

- (46a) ha riso Maria Italian  
 has laughed Mary  
 ‘Mary has laughed’
- (46b) sono mangiate le mele da Maria Italian  
 are eaten the apples by Mary  
 ‘The apples are eaten by Mary’

Den Dikken (2006) derives from this that all SCs are tenseless Relator phrases. In this respect den Dikken’s analysis is reminiscent of that of non-bare SCs in Moro (2000: 46). Here the non-bare SCs are likewise analyzed as containing a functional projection that can

optionally be realized as *come* ('as'):

- (47) Maria considera [Gianni come il colpevole]. Italian  
Mary considers John as the the culprit  
'Mary considers John (as) the culprit'

A similar case in point can be made for the following example:

- (48) Gianni ritiene queste foto per la causa della rivolta Italian  
John considers this photo for the cause of the riot  
'John considers this photo as the cause of the riot'

It could be argued that the functional head that Moro (2000) postulates for this type of SC is equivalent to den Dikken's Relator head and is spelled-out as *per* here. Interestingly, though, the following is also perfectly fine in Italian:

- (49) Gianni ritiene per la causa della rivolta queste foto Italian  
John considers for the cause of the riot this photo  
'John considers as the cause of the riot this photo'

(49) is an instance of predicate inversion akin to the inversion that Moro (2000) observes in bare SCs, discussed here in (31) and (32). It is worth noticing that despite apparent similarities, the example in (49) is not akin to the structures (44) and (45), since these are examples where subject and predicate of the SC are inverted. This is evidenced by the fact that the LI that realizes the functional head (or Relator head for that matter) in (49) is likewise inverted. This however, begs the question how this inversion can be motivated and what distinguishes it from e.g. the example in (46b). Neither the analysis in den Dikken (2006) nor the one in Moro (2000) provides a conclusive answer here and I will come back to this issue below in the context of the English examples in (67), which exemplify the same structural make-up as (49).

What additionally complicates the account in den Dikken (2006) is that, maintaining the premise that all SCs are Relator phrases, bare copular constructions are

analyzed along these same lines. Here it is the copula itself that is analyzed as an instantiation of the Relator head (cf. ibid: 62-64). When viewed in this light, how does (46b) fit in here? According to den Dikken (2006:61) it is the LI *da* that is realized as the Relator head when the secondary predication in (45) is turned into a primary predicate in (46b). However, *sono* is likewise analyzed as a Relator head (cf. ibid: 63). So, either *sono* needs to be accounted for differently, because the instantiation of the Relator head is the LI *da*, or two Relators need to be assumed, one spelled-out as *da* and one as *sono*. Yet, this comes at considerable cost. First of all, it is not clear what eventually leads to the ordering observed in (36b). Secondly, if two Relators are involved this amounts to reintroducing a second predication relation into the structure (cf. den Dikken 2006: 63), which is an undesirable result, because it was the principal motivation of getting rid of a secondary predication structure what lead den Dikken to postulate (46b).

However, regardless of how these complications can be accounted for, this, of course, does not necessarily lead to the conclusion that a predication analysis involving a Relator head is on the wrong track. In fact, den Dikken (2006: 64-76) provides a number of further arguments that strengthen the assumption of a Relator head even in structures that are analyzed as bare SCs elsewhere. These structures are specifical and equative copular constructions. Both are problematic for a predication analysis and for basically the same reason. To see this more clearly let us look at two examples for equative constructions here:

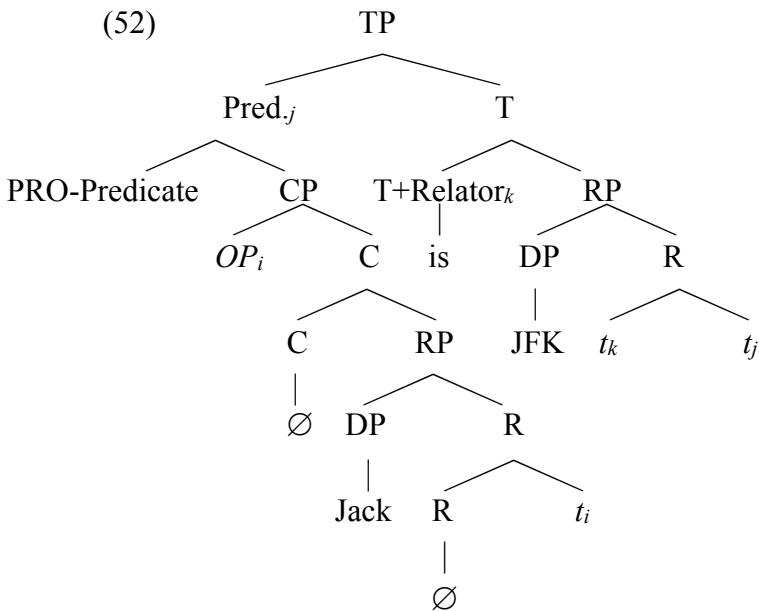
- (50a) Jack is the president.
- (50b) Jack is JFK.

In both cases a predication analysis is problematic, because neither the definite DP *the president* in (50a) nor any of the two DPs in (50b) is a likely candidate for a predicate, since they are both definite descriptions which are of referential type  $\langle e \rangle$  and as such unfit for being used in predicative relations, which require elements of type  $\langle e, t \rangle$  (cf. also Heycock & Kroch 1999 for a similar argument). Den Dikken acknowledges this fact and argues for (50a) that definite noun phrases in English, unlike in other languages, need not be full DPs, thus the constituent *the president* can still be interpreted predicatively, i.e. of type  $\langle e, t \rangle$ . This is impossible in (50b), though, since both noun phrases in equative copular

SCs are referential, i.e. of type  $\langle e \rangle$  as Heycock & Kroch (1999: 374-375) illustrate with the following example:

- (51) Your opinion of Edinburgh, which you learned from your parents, is my opinion of Philadelphia, which I learned from mine.

Both DPs in the equative structure in (51) can be modified by a non-restrictive relative clause, which can be taken as a good indication of their referential status. In consequence this preempts them from being predicates in the SC. Here den Dikken (2006: 73) argues for an analysis along the lines in (52) for the equative construction in (50b):



[adapted from den Dikken (2006: 73)]

In (52) the predicate of the small clause that is a complement to T is what den Dikken (ibid) identifies as a *pro-predicate* that is associated with a reduced relative, i.e. the CP in the complement position of the *pro-predicate*. Thus, the referential NP *Jack* can function as a predicate here, by virtue of being embedded as the subject in a reduced relative hosting a second RP. Evidence that this analysis is on the right track is adduced from the fact that equative SCs behave just like specificalional pseudoclefts, in so far as they both can be inverted freely:

- (53a) What Ted said is that he likes Vicki.
- (53b) That he likes Vicki is what Ted said.
- (54a) Jack is JFK
- (54b) JFK is Jack

[adapted from den Dikken 2006: 73]

One immediately apparent difference between specificational pseudoclefts<sup>13</sup> and equative copular SCs of the type discussed here, which den Dikken acknowledges, is, of course, that the pseudoclefts in (53) do not contain a reduced but rather a full-fledged free relative. Still, den Dikken (2006: 74) argues that the specificational pseudoclefts share the structure in (52) with equative SCs. This in turn is associated with the fact that in equative SCs the reduced relative must invert with its subject, while this is not necessarily so in specificational pseudoclefts (cf. *ibid*). Evidence for this line of reasoning comes from the fact that equative SCs ban all kinds of A'-extraction, while the precopular NP can be extracted from the specificational pseudocleft:

- (55a) \*Whose opinion of Jack would you say your opinion of JFK is *t*?
- (55b) \*Whose opinion of JFK would you say *t* is my opinion of Jack?
- (56a) What Teddy said is that he likes Vicki.
- (56b) \*Which of these things do you think what Teddy said is *t*?

This is what leads den Dikken (2006) to the conclusion that symmetric SCs, i.e. those that constitute a PoS as argued for e.g. in Moro (2000), Pereltsvaig (2001) and Matushansky (2007a), do not exist - not even for equative constructions, which cannot be analyzed predicatively.

This conclusion is a bit premature, however. While it is perfectly licit to argue for a

<sup>13</sup> In fact, den Dikken (2006: 73) does not only distinguish between predicative and specificational pseudoclefts, both of which are illustrated in (i) and (ii) respectively:

- (i)     What John is is important to him
- (ii)    What John is is important to himself

rather he distinguishes specificational pseudoclefts further into two types. This distinction is mainly drawn along the lines of connectivity distinctions (cf. den Dikken, Meinunger & Wilder 2000 for detailed discussion). I here follow den Dikken in making this distinction but will refrain from further elaboration on this for ease of exposition.

parallel between extraction possibilities in equative SCs and pseudoclefts, it is not clear what blocks the extraction in these cases. Nor is clear, why the SCs that are complements of *believe*-type verbs are available for extraction or why the inverted subject of the SC and the subject of the *pro*-predicate can both undergo long-distance *wh*-extraction equally well:

(57a) What/Who is Jack?

(57b) What/Who is JFK?

What is also not really clear is why the *pro*-predicate must invert nor why it is not the SC subject that is embedded in the *pro*-predicate.<sup>14</sup>

In den Dikken (2007a,b) the ideas outlined in den Dikken (2006) are developed further and at least a partial answer that addresses some of the aspects mentioned above is provided. The key assumption in den Dikken (2007a) is that predication relations of the kind expressed in Relator phrases are inherent Phases<sup>15</sup>, which are defined as follows (cf. *ibid.*: 1):

(58) Inherent Phase

an *inherent* phase is a *predication* (subject-predicate structure)<sup>16</sup>

Classifying predication relations as inherent Phases has the effect of rendering the head of the predication relation, i.e. R in den Dikken's (2006, 2007) analysis, as a Phase-head. According to standard assumptions on Phase-impenetrability (cf. Chomsky 2000), which den Dikken (2007: 1) subscribes to, this means that only the Phase-head and the edge of the Phase are accessible for either Move or Agree operations. This means that the SC

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<sup>14</sup> Of course, under den Dikken's analysis it is totally clear why it cannot be the SC subject that is embedded in the *pro*-predicate. This is simply because then the SC predicate would still be a referential DP and the problem of a referential predicate still ensues. But as long as it is not clear how the predication relation is defined, this possibility cannot be ruled out and the argument for the structural representation in (52) remains weak. Why for instance cannot both the SC subject and predicate be embedded in a *pro*-predicate. Here the analogy to pseudoclefts would be absolutely feasible:

(i) What Jack is is what JFK is.

<sup>15</sup> Whether this is a licit assumption is a question that I will discuss in detail below. For the time being, I will outline key aspects of den Dikken's (2007a) analysis first.

<sup>16</sup> Emphasis is in the original version.

predicate, by virtue of being merged in the complement domain of the Phase-head, should *per se* not be available for extraction.<sup>17</sup> This assumption, however, quite obviously flies in the face of predicate inversion structures, where it is precisely the predicate of the SC that moves across the subject of the SC, which is in the edge of the inherent SC Phase:

(59a) The radiation level is a major reason for the scientists' concern.

(59b) A major reason for the scientists' concern is the radiation level.

In (59a) it is the subject of the SC that has moved to a higher specifier in the matrix clause. In (59b), however the SC predicate obviously must have moved past the subject - and past the Relator head - to a higher position. This, den Dikken (2007: 1ff) argues, follows from an operation that is termed Phase extension. Phase extension is defined as follows (cf. *ibid*):

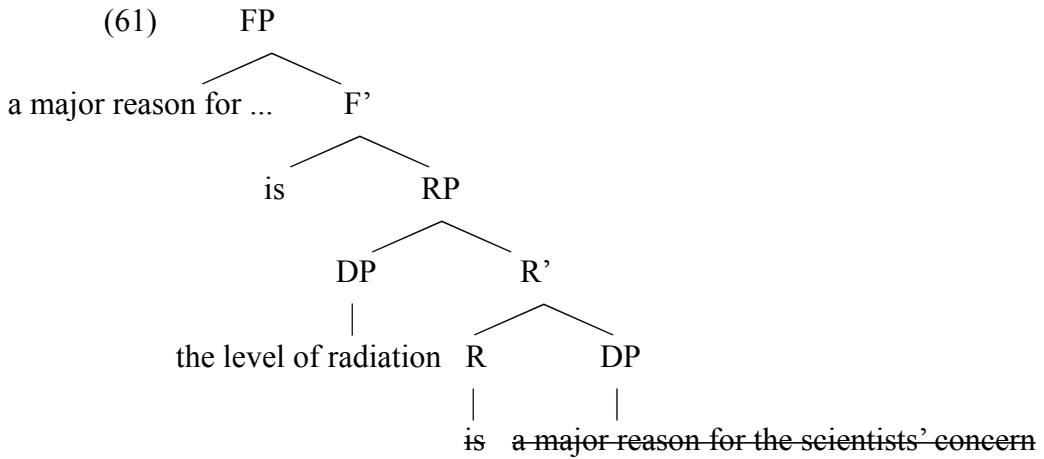
(60) Phase Extension

syntactic movement of the head H of a phase  $\alpha$  up to the head X of the node  $\beta$  dominating  $\alpha$  extends the phase up from  $\alpha$  to  $\beta$ ;  $\alpha$  loses its phasehood in the process and any constituent on the edge of  $\alpha$  ends up in the domain of the derived phase  $\beta$  as a result of Phase Extension

Thus, by moving the head of the Relator phrase to the head of a higher functional projection, which following den Dikken (2007) we may simply call FP for convenience, extends the inherent Phase of the SC to this higher Phase. Additionally, this movement operation has the effect of rendering the two DPs in the SC, i.e. the subject and the predicate DP, equidistant to the newly derived (i.e. extended) Phase-head F. Thus, both DPs are now equally available for movement to Spec, FP, i.e. the edge of the Phase:

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<sup>17</sup> Unless, of course, the complement of the Phase-head is remerged in the outer specifier of the Phase-projection. This would make it accessible for extraction, however, it seems somewhat incompatible with the single-specifier system that den Dikken (2007a) designs, as will become obvious from the discussion below.



In (61) it is the SC predicate DP that is remerged in Spec, FP. Thus the SC subject, the DP *the level of radiation*, is no longer in the edge of the Phase and thus inert for the remainder of the derivation. The question that immediately arises is why, provided the SC subject and predicate DPs are equidistant for the derived Phase-head F, the subject does not also move to Spec, FP. In order to prevent this operation, den Dikken (2007: 9) further assumes that adjunction to meaningless categories is disallowed. In effect, then, den Dikken postulates a functional category that has the sole purpose of providing a landing site for the head-movement of the Phase-head that has the additional characteristic of mediating the predication relation.

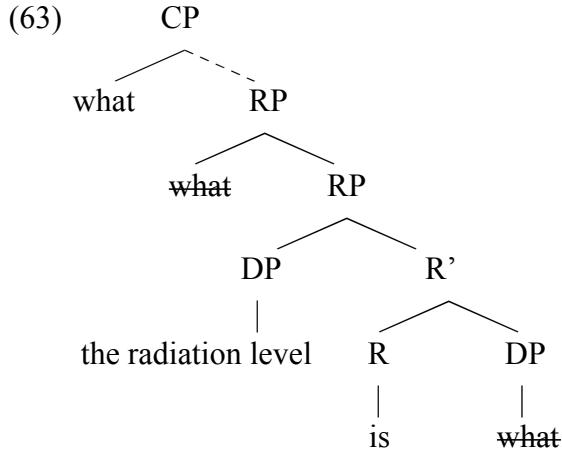
Several consequences follow from this analysis, most of which are discussed in the very same issue of *Theoretical Linguistics* that den Dikken's (2007) paper is published in. Some of them are irrelevant for our purposes here and will therefore be ignored in the remainder of the discussion, but there are at least two points that directly relate to our investigation above and will therefore receive further consideration. First, den Dikken (2007: 28) argues that the possibility of Phase extension goes directly against the static aspect of Phases in Chomsky (2001 and subsequent literature). In fact it restores and invigorates the dynamic aspect inherent to the earlier approaches on extraction sketched in Chomsky (1986a). Second, by relating the predication property to Phasehood, a novel and heretofore unacknowledged criterion for the determination of Phases is identified. Phases are intimately and inherently related to predication. From this perspective SCs, which as discussed in (20) already are also tied to the predication property, are a natural candidate for Phasehood. Before fully embracing this idea, however, let us step back a little and see

how it plays out in the context of the analysis provided in den Dikken (2007a,b).

First, it is to be noted that identifying SCs as Phases helps only so much, when Phases and/or SCs are characterized as predication relations between a subject and a predicate that is mediated by a functional head. The question already addressed above needs to be iterated in this context: What are the properties of the Phase-head that allows for the establishment of the predication relation? It is not quite clear what the properties of the Relator head are. In den Dikken (2006: 55) the Relator is described as a functional head that can host a number of very different categories, ranging from light *v* over T and Topic to a whole variety of often phonologically null functional heads in adverbial and adjectival modification relations. So, unlike Moro (2000), den Dikken (2006, 2007a) argues that a direct relation between the SC subject and predicate is impossible in all contexts. However, the exact properties of the mediating head, which after all is a Phase-head, are largely left unclear. Thus, like Moro (2000), den Dikken (2006, 2007a) identifies the Relator head as a by and large meaningless category that cannot be involved in e.g. theta-role assignment to the subject (cf. den Dikken 2006: 35 & 71). Nor does it seem to play a role in feature Valuation (cf. den Dikken 2007a: 27-28). In short, the ontological status of this category is left unexplained. Matushansky (2007b: 96), however, remarks that R must have some semantics and cannot be meaningless, due to the dictum in den Dikken (2007a: 9) that meaningless categories cannot be adjoined to. The following examples illustrate this:

- (62a) What do you think the radiation level is *what*?
- (62b) What do you think the scientists are afraid of *what*?

In (62a) the predicate of the copular SC is *wh*-extracted and in (62b) extraction from inside the SC predicate has taken place. Both operations should be illicit, if the Relator head were a meaningless category, because for extraction to be possible in these cases, it is necessary that the SC predicate be adjoined to the RP in a first step, before extraction to a higher projection can take place (cf. also Matushansky 2007b: 95-96 for similar observations).



Since the SC subject precedes the copular, an analysis in which the copular, which is an instantiation of R, has moved to a higher functional F-head and in which the *wh*-phrase is then moved to this position is unavailable. Thus adjunction of the *wh*-phrase to RP is the only option available here. This automatically entails though, that RP cannot be a meaningless category, because adjunction to those categories must be ruled out in order to maintain the impossibility of extraction from SC subjects under predicate inversion.<sup>18</sup>

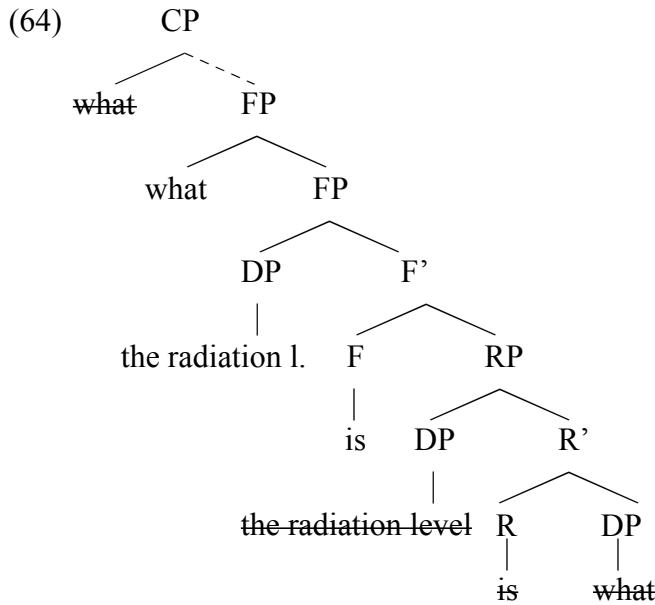
In fact, the problems do not stop there though. When assuming, as den Dikken (2007a) does that Merger of a functional head on top of the SC is optional and that Remerger of the R-head in F renders the SC subject and predicate equidistant, it is not so clear, how this can be ruled out for the example in (62a)/(63). So provided that the copular moves from R to F and then the subject moves from Spec, RP to Spec, FP, we are facing the same problem as before:

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<sup>18</sup> It is worth noticing that these observations here are not limited to copular or bare SCs in the sense of Moro (2000). Instead they extend to SCs that are complements of *believe*-type verbs:

- (i)     What do they consider the radiation level *what*?

So, even in those clauses that have a functional head mediating between the SC subject and predicate under Moro's analysis, the problem of how predicate extraction is accounted for arises. Moro (2000: 107-108) argues that the unavailability of extraction from and of the subject in inverse copula sentences is related to the absence of L-marking and ECP-reasons respectively. However, this only holds for the bare SCs and tells us nothing about the other type of SC either.



For extraction of the SC predicate to be possible, it must adjoin to FP. This, however is explicitly ruled out in den Dikken (2007a: 9), because FP is a meaningless category. So, although undesirable, movement of this kind is not *a priori* impossible. And, we are already looking at two categories here, F and R, whose ontological status and properties are far from clear.

Matushansky (2007b: 96-97) points out an additional complication for predicate inversion structures. Provided that, as den Dikken (2007a) argues, the SC subject in predicate inversion structures is unavailable for extraction, because it is trapped in the complement domain of the Phase, i.e. unaccessible *qua* PIC, then it should also be impossible for the SC subject to enter into an agreement relation with the SC head that has moved past the subject to the higher F-head position. This is however not what is borne out:<sup>19</sup>

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<sup>19</sup> Notice that, as Matushansky (2007b: 96-97) shows, it is not an option to argue that the copular in this cases raises all the way up to T. This has the effect of making T a derived Phase and should allow for adjunction to it. Thus, we are facing the same problem as before at an even higher level.

Furthermore, two additional points can be made against a raising-to-T analysis. First, auxiliaries in T would block the raising of the copular, but still, agreement between SC subject and the auxiliary is possible and in fact obligatory, as (i) shows. Second, it is not only the copula, which may raise to T unmolested, that participates in predicate inversion structures of SCs. Rather, lexical verbs, which certainly do not raise to T in English are found in the same position and must thus be able to establish the Agree relation with the SC subject from a position below T. This is illustrated by (ii).

- (i)     Also a problem have/\*has been green house gases, fracking and phthalates
- (ii)    The best strategy remains the prevention of the disaster in the first place.

[adapted from Matushansky 2007b: 96]

- (65) Radioactivity is a problem for the planet's environment. Also a problem  
are/\*is green-house gases, fracking and phthalates.

[adapted from Matushansky 2007b: 96]

The SC subject in (65) quite obviously agrees with the copular in F, although the subject is trapped inside the Phase complement after Phase extension and should therefore be inaccessible for any agreement operations.

What else Phase extension is incapable of explaining is what has been pointed out as problematic in the context of Moro's (2000) analysis of a functional head in SCs of *believe*-type verbs already. Provided that den Dikken's (2006; 2007a;b) Relator head is a functional head that can be spelled-out in various ways and that has among its options being spelled-out as e.g. *like*, *for* or *as* in (66), the question is how the predicate inversion structures in (67) can be accounted for in these cases:

- (66a) Jack considers his youngest brother as fat
- (66b) The public takes the CEO for a criminal
- (66c) Ted treats his sister like a fool

[adapted from den Dikken 2006: 64]

- (67a) Jack considers as fat his youngest brother<sup>20</sup>
- (67b) The public takes for a criminal the CEO
- (67c) Ted treats like a fool his sister

The predicate inversion here is hard to account for under the analysis devised in den Dikken (2006, 2007a, b), because the Relator, which presumably moves to a higher functional projection, in order to render the SC predicate equidistant and thus accessible for inversion, must move past the raised SC predicate in a later step of the derivation.

One possible solution to this conundrum would be to argue that the structures in

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<sup>20</sup> Notice that these structures are highly reminiscent of the structures discussed above in the context of Moro's analysis:

- (49) Gianni ritiene per la causa della rivolta queste foto  
John considers for the cause of the riot this photo  
'John considers as the cause of the riot this photo'

Italian

(66) differ from predicate inversion in copular constructions in so far as they do not result from Phase extension of the kind observed in copular constructions. Instead, a movement analysis could be assumed, according to which the SC predicate is first adjoined to the SC Phase and extracted from there to a higher position, somewhere in the left periphery.<sup>21</sup> The SC head is then moved past the SC subject and the inverted predicate. However, this type of analysis is faced with a number of complications. Among these are the questions of what triggers the movement of the SC predicate to a higher position in the left periphery and how this is to be distinguished from ‘ordinary’ Phase extension movement, as well as what triggers movement of the SC head, which after all is a Phase-head, to a position still higher than the SC predicate?<sup>22</sup>

Additionally, it is far from clear why this analysis should not also be available for copular SCs, as in (68):

- (68a) Jack is the president.
- (68b) The president is Jack.

The inverted construction in (68b) is suspiciously close to other cases of extraction to the left periphery that are analyzed as cases of topicalization. However, in these cases the SC head moves only to a position below the inverted predicate, for reasons that are far from clear. This question is even more pressing, when taking into account that the Relator head must be overt in cases of predicate inversion in SCs that are complements of *believe*-type verbs:

- (69) \*/?Jack considers fat his youngest brother

Even if not outright ungrammatical, the form in (69) is notably worse than the one in

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<sup>21</sup> And even if an analysis along these lines may seem viable, it is not compatible with the approach to BPS taken in this paper, where an extended left periphery has been regarded with as much skepticism as an inflation of functional categories in other places of the derivation (cf. e.g. the analysis of the verbal domain in chapter 3). In this light the postulation of any functional category, including a Relator or a F category as suggested in den Dikken (2006, 2007a,b) should be regarded with skepticism. A point I will come to in more detail below.

<sup>22</sup> In fact, this latter point is an additional complication that should not be underestimated. For all intents and purposes, moving the Phase-head (by whatever mechanism, be it remnant movement or head-movement) brings back in all the questions discussed above already.

(67a), where the Relator head precedes the inverted SC predicate.<sup>23</sup>

From these observations here it can be concluded that there is sufficient reason for questioning the availability of a functional projection FP on top of the Relator phrase that has the purpose of providing an escape hatch for the SC predicate in some predicate inversion structures, while at the same time trapping the SC subject inside the SC Phase (cf. also Matushansky 2007b: 102-103 for a similar conclusion).

Keeping this in mind, let us now turn to underlying theoretical assumptions that are postulated in den Dikken (2006, 2007a,b) and evaluate these against the background of standard minimalist assumptions. As Gallego (2010: 96-100) points out, one aspect that is problematic about the Phase-based approach taken in den Dikken (2007a,b) is that the definition of predication relations and thus, by analogy, SCs as Phases is somewhat problematic. Identifying predication relations as Phases comes closest to the conception of Phase in Chomsky (2000). Here the relevant criterion for Phasehood is that of propositionality. What den Dikken (2007a,b) remains silent about though is what the correspondence between predication and propositionality may be. Additionally, both propositionality and predication are semantic notions and thus have the effect of reverse-engineering the SMT just as much as the Phaseless but also predication based approach of den Dikken (2006) has.

Additionally, even when abstracting away from the semantic basis for the definition of Phases, which may be matched with corresponding syntactic counterparts (cf. Gallego 2010: 97), it should not be overlooked that this definition will still be a relational definition. Thus, the Relator head is a Phase-head, not by virtue of the properties of R, but rather by virtue of the relation that is established between the complement and the specifier of R. This makes it rather easy to integrate the flexibility of Phase-heads that ensues from Phase extension. But it goes directly against the criteria for Phasehood identified in Chomsky (2001, 2004, 2005, 2008), i.e. unvalued  $\phi$ -features. Moreover, as Gallego (2010: 98) also remarks, a Phase extension approach raises certain questions on the timing of

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<sup>23</sup> This has nothing to do with pragmatic factors, such as e.g. weight. In the sentences in (i) and (ii) the SC predicate is much heavier than the SC subject and still the inverted form requires as:

- (ia) Vicki considers Columbia Point the best place for the EMK Institute
- (ib) Vicki considers Columbia Point as the best place for the EMK Institute
- (iia) ?/\*Vicki considers the best place for the EMK Institute Columbia Point
- (iia) Vicki considers as the best place for the EMK Institute Columbia Point

Transfer. Den Dikken (2007a: 1) is not explicit, which version of the PIC he subscribes to:

(70) Phase Impenetrability

Syntactic relationships (Agree) and processes (Move) are constrained by the Phase Impenetrability Condition (PIC) of Chomsky (2000 et passim): in a phase  $\alpha$  with head H, the domain is not accessible to operations outside  $\alpha$ , only H and its edge are accessible to such operations.

Nothing in (70) tells us whether the domain of H becomes inaccessible immediately upon Merger of the Phase-head H, which is what the so called stronger version of the PIC would imply, or whether inaccessibility only occurs upon Merger of a higher Phase-head X, which is what the so called weaker version of the PIC suggests (cf. Grewendorf & Kremers 2009: 389 for a sound comparison between the two versions). Both scenarios are rather implausible, yet for different reasons. Consider first the stronger version of the PIC. Under this version, Transfer should apply immediately (cf. in particular Chomsky 2008) and thus, Phase extension would never be an option, because it is virtually impossible to move the Phase-head to a higher head and not transfer the Phase-complement at the same time.

Under the weaker version of the PIC Transfer does not apply until the next higher Phase-head is merged.<sup>24</sup> This calls into question the relevance of Phase extension. If the domain of the Phase-head is accessible right until a higher Phase-head is merged, why should the lower Phase-head move to a higher functional projection with the effect of Phase extension? The only reason that den Dikken (2007a) adduces for Phase extension is not that the domain of a Phase remains accessible - although this is the primary effect of head-moving the Phase-head to a higher functional head, thus rendering the SC subject and predicate equidistant and therefore accessible for extraction - but rather that the constituent that sits in the edge of the original Phase, i.e. the SC subject in Spec, RP, is trapped in this position after Phase extension. Hence it is precisely not for reasons of equidistance and

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<sup>24</sup> Notice that this version of the PIC is incompatible with the assumptions made in chapter 1-3 and could therefore be excluded here without further mentioning. However, we will briefly discuss it and discard it on principled grounds.

circumvention of the Minimal Link Condition<sup>25</sup>, but rather the direct opposite - i.e. trapping of a constituent that used to sit in the edge of a Phase inside the complement domain of an extended Phase - that den Dikken (2007a) makes recourse to the mechanism of Phase extension. Most notably, though, this does not follow from the Phase Impenetrability condition in (70) and requires den Dikken (2007a) to stipulate that adjunction to meaningless categories is prohibited. Only then can, for instance, the SC subject, which is generated in the edge of the inherent SC-predication Phase, be trapped in the complement domain of the extended Phase (cf. e.g. (61) for illustration).

Notice, however, that this raises a number of questions on the nature of F. As Gallego (2010: 99) points out, it is not clear how the characterization of F as meaningless is to be understood. Gallego lists several options for what a meaningless category could be. Either it could be void of any features or maybe just void of interpretable features (cf. *ibid*). None of these options can be motivated independently. Why should a category that has the sole purpose of introducing uninterpretable features into the derivation be capable of hosting a Phase-head that is moved into this position via head-movement? Or, alternatively, why should a category that does not bear any features at all even exist. Not only does this come disconcertingly close to reintroducing agreement phrases, which were abandoned for this very same reason in the first place (cf. also Gallego 2010:99), it also is in clear violation of the principle of Full Interpretation (FI) (cf. Chomsky 1995a: 27; Narita 2009: 240; 2011):

(71) Full Interpretation

Every syntactic operation correlates with a corresponding interpretation  
at C-I (or at S-M).

[adapted from Narita 2009: 247]

FI is a direct consequence of the SMT and thus, the failure of den Dikken's (2007a) functional head F to comply with it is a clear violation of the SMT.

In summary then, neither den Dikken's (2006, 2007a,b) predication analysis of SCs

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<sup>25</sup> In and of itself this is not a bad consequence, since equidistance and the MLC are dispensable notions in a Phase-theoretic account of BPS (cf. e.g. Chomsky 2001, Hiraiwa 2005, Gallego 2010), but it comes at a considerable cost here, as is illustrated below, that should be reason enough to abandon Phase extension as a viable solution.

nor Moro's (2000, 2009) PoS analysis of SCs provides us with a viable approach to the analysis of SCs, i.e. one that does not violate the SMT. However, both approaches contain valuable insights into what a SMT compatible analysis of SCs should look like. Two main characteristics are clearly discernible. First, the analysis should provide a syntactic answer to PoS dissolution that arises from XP - XP Merger and second the analysis should provide a syntactic account of what the predication relation based analysis tries to capture. In particular the status of SCs as Phases should receive a coherent explanation. This is what the discussion in the next sections will turn to.

#### **4.3 Reconsidering XP - XP Merger: Insights from the H- $\alpha$ schema**

Interestingly, Gallego (2010: 99-100) in his critique of den Dikken (2007a) suggests going back to the analysis originally provided in Moro (2000, 2007). What is most interesting about this proposal is that Gallego makes it in the context of explaining why in predicate-inversion structures the SC subject cannot be *wh*-extracted. Hence, Gallego refers exactly to those cases that led den Dikken to the Phase extension analysis in the first place. The relevant examples in this context are the following (cf. den Dikken 2007a: 8; Gallego 2010: 100):

- (72a) \*Which book do you think that [<sub>FP</sub> the #1 bestseller in the country [<sub>F</sub> is  
[sc ~~which book is the #1 bestseller in the country~~]]]]
  - (72b) \*Which book do you think that [<sub>FP</sub> on the president's desk [<sub>F</sub> lay  
[sc ~~which book lay on the president's desk~~]]]]
- [adapted from den Dikken 2007a: 8]

Both, (72a) and (72b) are predicate inversion structures of SCs and in both cases it is impossible to *wh*-extract the SC subject over the inverted predicate. This, Gallego (2010: 99-100) argues, is not due to the fact that the SC subject is trapped in the domain of the extended SC Phase, as den Dikken (2007) would argue, but rather results from DP - DP Merger that fails to produce a label. This, of course, is the classic PoS configuration, discussed in detail in section 4.2.2. This PoS is resolved by merging either one of the two SC internal DPs in the specifier of the other. This has the consequence that a label can now be identified and - when adopting the generalization of Chinque (1980) that DPs with

filled specifiers have no escape hatch - it explains why extraction is impossible. The following schematic representations from Gallego (2010: 100) illustrate this:

- (73a) [v [DP DP]]
- (73b) [v [DP [DP DP]]]
- (73c) \*[v DP<sub>2</sub> [DP DP [DP<sub>2</sub> DP]]]

The questions that arise here are of course not hard to come by. First, it is not at all clear, why DPs are unable to host multiple specifiers. Second, it is unclear how it can be guaranteed that in principle any of the two DPs can undergo internal Merge, while this is not possible in other cases of XP - XP Merger, say DP - AP or DP - PP Merger, where it has to be the AP or PP respectively that is merged in Spec, DP. Also, the question what induces the internal Merger of (either) one of the SC constituents is unanswered. Moreover, the structure in (74) is puzzling:

- (74) \*Which bestseller do you think is this book?

Provided that the predicate inverted SC predicate has moved across the SC subject, it is not clear why it resists *wh*-extraction regardless. Thus, a more principled analysis that can account for the empirical and theoretical challenges is called for.

In the linguistic literature there are two very recent independent analyses that address the topic of XP - XP Merger from a perspective completely unrelated to SCs (cf. Kayne 2010, Narita 2011). Still, applying the insights of these analyses to SCs, which, after all are one of the principle cases of XP - XP Merger seems to be a promising path to follow - at least with respect to finding some of the answers to the questions mentioned above and in the preceding sections of this chapter. Both, Kayne (2010) and Narita (2011) converge on the same conclusion regarding the analysis of XP - XP Merger, yet from different perspectives. This conclusion is summarized in (75):

- (75) Case of XP - XP Merger do not exist.

(75) is a somewhat surprising statement that, of course, needs to be motivated. Especially

in light of the fact that it *a priori* seems to exclude an analysis of SC along the lines of Moro (2000) or any other PoS based analysis. If cases of XP - XP Merger do not exist, a PoS, which arises from these cases and which leads to the labeling problems addressed by Moro (2000) and reiterated in Gallego 2010), also does not exist.<sup>26</sup>

So a closer look at the two analyses that deal with other cases of XP - XP Merger seems warranted under the perspective how these are treated there and what can be derived from the analyses for instances of apparent XP - XP Merger in SCs. I intend to start the discussion with Kayne (2010), because it was the analysis of Kayne (1994), which lead Moro to his account of dynamic antisymmetry in SCs and other constructions, where temporary violations of the LCA are dissolved via movement. The guiding light in Kayne (2010), which was also the principle motivation for the analysis in Kayne (1994), is the question how directionality parameters can be accounted for. Kayne (1994) argues on the basis of the LCA, which derives the core principles of X-bar theory, that the universal order of Merge is the one in (76):

$$(76) \quad S(\text{pecifier}) - H(\text{ead}) - C(\text{omplement})$$

This order leads straightforwardly to the constituent order in (77):

$$(77) \quad S - V - O$$

All other constituent orders are derived orders, which need to be motivated by movement. The analysis in Kayne (2010) basically follows the same tenor but it does so without the focus on deriving X-bar theoretic assumptions and also without making recourse to the LCA. This is interesting, because it begs the question for the analysis in Moro (2000) of how the PoS in SCs is dealt with provided that the LCA does not hold.

Kayne (2009) already remarks that the original P&P based analysis of the LCA cannot stand unrefined under a BPS approach. In particular, referring to non-terminal nodes is identified as problematic under a BPS compatible approach to the LCA. Thereby Kayne (2009) reechoes criticism raised earlier (cf. e.g. Chomsky 1995a, Uriagereka 1999

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<sup>26</sup> At least a PoS that results from an unordered set does not arise (cf. also the discussion in chapter 4.1 as well as in Moro (2000)).

and subsequent literature). Kayne (2010) goes one step further and derives the directionality described in (76) and (77) from independent properties of the grammar that bear no relation to the LCA. This is done in two steps.

First, Kayne (2010: 17) argues that the only option that is available for Merge is Pair-Merge. Pair-Merge is distinguished from Set-Merge, of course, by the fact that the former produces an ordered pair, while the latter does not. This is somewhat reminiscent of the discussion in Boeckx (2008a; and cf. also chapter 1.2 of this dissertation for further discussion), who argues in favor of a reversal of Set-Merge and Pair-Merge, i.e. taking the latter to be the operation that derives argument structures and the former to be the operation that derives adjunction structures. The analysis in Kayne (2010) can thus be viewed as the stronger claim in so far as it identifies Pair-Merge as the only operation that is available to narrow syntax. In so doing, it is also an operation that automatically creates an ordered pair as the result of its application. This does not necessarily give us the required S - H - C order of (76) though. In principle the ordered pair that is created by p-merge (which is what Kayne (2010) calls the operation) could create the order in (78a) or the order in (78b):

(78a) ⟨H, C⟩

(78b) ⟨C, H⟩

So the two logical possibilities for ordering are the order in which the complement precedes<sup>27</sup> the head, which is the standard order found e.g. in Japanese (cf. e.g. Narita 2011) or the order in which the head precedes the complement, which is the order standardly assumed for e.g. English. However, despite abandoning the LCA, Kayne (2010) does not deny the relevance of directionality parameters in narrow syntax.<sup>28</sup> Based on a considerable amount of cross-linguistic data and on the more general observation that there exist no two languages that are exact mirror-images of one another, Kayne (2010: 1-11)

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<sup>27</sup> In fact, Kayne (2010: 17) takes precedence to be immediate precedence (*i-precedence* in his terms). This is important in so far as it delimits the number of complements and specifiers that any given head can have to one. For our purposes here this is not particularly relevant, because we do not subscribe to a conception of syntax that has precedence as one of its integral parts (cf. also next footnote and comments below), however, we return to this assumption below when discussing how specifiers are merged.

<sup>28</sup> I will come to the question of the relevance of such a parameter for narrow syntax in due course and will deny its relevance for any computations relevant to FLN. For more detailed discussion, cf. below.

argues that directionality is an integral part of narrow syntax and that the asymmetry that is entailed in the non-existence of a directionality parameter is a left-to-right asymmetry. Thus, the only universally available order is a left-to-right order in which the head precedes its complement, i.e. the order in (78a). *Kayne* (2010: 13) derives this order from aligning Probe-Goal search with parsing and production in the following way:

- (79) Probe-Goal search shares the directionality of parsing and production.
- (80) Probe-Goal search proceeds from left to right.

[adapted from *Kayne* 2010: 13]

This is sufficient for universally deriving the order of  $\langle H, C \rangle$  under the assumption that all Merge is Pair-Merge that creates an ordered set.

So, (79) and (80) paired with a special conception of how Merge operates is enough to derive the first part of the order in (76). The second part, i.e. that the specifier always precedes the head and the complement is derived from the assumption already mentioned in (75), which *Kayne* (2010: 16) terms as follows:

- (81) The merger of two phrases is unavailable.

Traditionally, Merger of a specifier to a head-complement complex is identified as a typical case of XP - XP Merger, i.e. as Merger of two phrases. This then is clearly in violation of (81). *Kayne* (2010) gets around this problem by assuming that S does not Merge with  $\langle H, C \rangle$  but only with H. So, what p-merge derives is the order in (71):

- (82)  $\langle S, H \rangle, \langle H, C \rangle$

[adapted from *Kayne* 2010: 17]

(82) has the effect that the S - H - C order is not derived by forming a single and uniform constituent. Instead, two discontinuous phrases of the sort illustrated in (82) are formed. The remaining question of why the specifier is merged in a position preceding the head is answered by *Kayne* (2010) in two ways. First, the specifier is not probed by the head, hence it is not subject to the directionality requirements in (79) and (80). Secondly, this

follows naturally from the total ordering that p-merge creates. If p-merge creates ordered sets and if the complement follows the head, then the specifier that is merged with that same head can only precede the head. This is what *Kayne* (2010: 17) expresses by the principle in (83):

- (83) H can be p-merged with at most two elements.<sup>29</sup>

Thus, *Kayne* derives the universal order of S - H - C basically from the assumption that directionality is universal, i.e. non-parameterized, that the directionality derived from p-merge follows the directionality of parsing and production and that Merger of two XPs is generally unavailable.

Now, if on the right track, *Kayne*'s analysis has certain implications on the SC structures that are under discussion in the present chapter. Broadly speaking, *Kayne*'s assumptions are challenging to either of the two major approaches discussed in the preceding sections. For the predication analysis of *den Dikken* (2006, 2007) the directionality that is hardwired in p-merge means that the head that mediates the predication relation, i.e. the Relator head must establish a clear Probe-Goal relation with the SC predicate. Otherwise the SC predicate could not be merged to the right of the Relator head. Additionally, the directionality that is inherently expressed in S - H - C orders creates a clear asymmetry between the two SC constituents. This is particularly relevant for predicate inversion structures in specificational SCs and for equative SCs where something needs to be said about what allows for reversing the asymmetry.

For *Moro* (2000) the problem is immediately related to the question of XP - XP Merger. How can SC structures that rely on symmetry breaking be derived under the assumption that two XPs cannot ever be merged? So, in a sense, the underlying problem remains the same. It is still the question how SCs can be linearized. What has changed is the perspective. *Moro* (2000) following *Kayne* (1994) addressed the linearization question in the context of a PoS analysis, where the PoS arose from Merger of two XPs. Under *Kayne* (2010) the question shifts to a microlevel. Having established that XP - XP Merger

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<sup>29</sup> With this principle *Kayne* (2010) sticks to the assumption already laid out in *Kayne* (1994) that multiple specifier structures do not exist. Incidentally, this is done here in a way that does not make recourse to the category vs. segment distinction of *May* (1985) and that is in line with BPS.

is unavailable, the question now is how the SC constituents can be ordered at all. The directionality of S - H - C cannot be derived when there is no clearly discernible head, so SCs that are identified as creating a PoS in Moro (2000) should not be linearizable at all.

So, the more fine-grained directionality based analysis in Kayne (2010) does not fall victim to a reverse-engineering of the SMT. This is avoided by deriving linear order without recourse to the LCA. This, however, comes at the cost of integrating directional order into narrow syntax and at the cost of rendering an analysis of SCs impossible.

This first aspect is worrisome from a general perspective, the second aspect is problematic in particular against a SC perspective. So let us start with the first aspect first. The question that needs to be answered here is whether directionality really is (or should be) part of narrow syntax. In chapter 1.2 of this dissertation a great emphasis is put on the order independence of Merge. This aspect of order independence (cf. e.g. Boeckx 2008a; Hornstein 2009) is one of the ingredients that makes the operation of Merge so cost-free and basic. Chomsky (2008) and Berwick & Chomsky (2011) likewise argue against the integration of linear order into the narrow syntactic computational system. Berwick & Chomsky (2011) even point out that BPS is a major step in liberating narrow syntax from labeling and directionality in the form of precedence information that is inherently encoded in e.g. the phrase structure rules of earlier generative models (cf. also Narita (2011: 94) for comments along similar lines).

So, in light of these observations let us briefly recapitulate the evidence that Kayne (2010) adduces in favor of directionality in narrow syntax. Kayne's main motivation is twofold. For one, Kayne adduces some evidence from the fact that there is not a single language that is the exact mirror image of another existing language. The second piece of evidence is derived from the fact that a number of linguistic phenomena show a clear left-to-right asymmetry. Among those that are listed in Kayne (2010: 5-11) are: hanging topics which are exclusively dislocated to the left, clitic left dislocation which is far more frequent than clitic right dislocation, the dislocation of pronominal clitics which is further to the left than that of lexical objects, number agreement between verb and NP which is arguably established in a structural configuration in which the NP precedes the verb, prenominal relatives (as opposed to postnominal ones) which tend to lack overt complementizers and tend to be non-finite, serial verbs which despite different orderings between verbs and complements uniformly pattern in such a way that the highest verb

precedes the lower ones, coordination which (when the coordinator occurs only once) occurs always between the two conjuncts and finally forward pronominalization which is much more frequent than backward pronominalization.

It is hard to see how the absence of a directionality parameter is immediately derivable from the absence of a language that has another language as its exact mirror image. With respect to the empirical observations that *Kayne* (2010) provides as further corroborating evidence, *Narita* (2011: 94) remarks that it is hard to see how certain typological gaps seem fit for making a statement over deep facts of narrow syntax. Although interesting in their own right, *Narita* reminds us that it is important to keep in mind that *Kayne*'s typological observations can best be described along the following lines:

[...] are all complicated phenomena involving not only syntax but also numerous other factors pertaining to the use of linguistic capacity, including pragmatics, language-specific morpho-phonology, memory-limitations, principles and pseudo-principles of parsing and production, and so on. [...] Certainly, then, such observations alone do not reasonably warrant the re-incorporation of precedence into syntax [...].

*Narita* (2011: 94)

So, unless we find hard evidence that precedence is really an integral part of narrow syntactic computation, we digress from *Kayne* (2010) in assuming that linear order is irrelevant for FLN. This, however, helps only so much with the question how SC constituents are to be ordered, when the assumption that this is not regulated by the LCA, which has no place in narrow syntax either, still holds.

*Narita* (2011) presents an analysis that builds on an assumption quite similar to the one in *Kayne* (2010) in that Merger of two XPs is likewise ruled out. However, *Narita* (2011) deviates from *Kayne* (2010) in how this assumption is motivated. By strictly adhering to the SMT, which leads to a BPS conception of grammar, *Narita* assumes (standardly) that Merge is the only structure building operation that is available in narrow syntax. Unlike *Kayne* (2010), *Narita* (2011: 40-43), basically following *Chomsky* (2008), takes this operation to apply freely and to form binary sets. This entails when taking the Inclusiveness Condition (84), the No-Tampering Condition (85) and Full Interpretation (86) seriously, which are all principles of computational efficiency that satisfy the SMT

(cf. *ibid*: 39)<sup>30</sup>, that labeling and projection are unmotivated deviations from the SMT:

- (84) Inclusiveness Condition (IC)  
No new features are introduced in the course of the derivation.
- (85) No-Tampering Condition (NTC)  
No elements introduced by syntax are deleted or modified in the course of the linguistic derivation.
- (86) Full Interpretation (FI)<sup>31</sup>  
Every constituent of SEM and PHON contributes to interpretation

[adapted from Natita 2011: 38]

Thus, there is no room for precedence information in narrow syntax in Narita's analysis and even labeling is identified as an unwarranted deviation from the NTC and by extension from the SMT (cf. *ibid*: 41; but also Collins 2002, Chomsky 2000, 2007, 2008 for arguments that go into the same direction). So what syntax boils down to here is the iterative application of the operation Merge, which is totally blind to LCA requirements or any other measures that can be adduced for integrating precedence information into pre-Spell-Out structure building computation. What is not clear yet, though is how the dictum that XP - XP Merger is generally unavailable is catered for in this account.

This Narita (2011: 43-45) derives from basic assumptions on the operation of Merge in the following way: It is standardly assumed that Merge is the operation that builds (larger) SOs by applying iteratively to (smaller) SOs. The relevant definition of SO that Narita (2011: 40) assumes is given in (87):

- (87) A linguistic representation  $\alpha$  is an SO iff
  - a.  $\alpha$  is an LI, or
  - b.  $\alpha$  is a set  $\{\beta, \gamma\}$  where  $\beta$  and  $\gamma$  are SOs

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<sup>30</sup> And not only are they straightforward consequences of the SMT, they also play an integral part in the representation of a conception of syntax that is in line with descriptive, explanatory and beyond that biological adequacy (cf. Narita 2011: 38).

<sup>31</sup> Notice that this principle alone suffices to make the assumption of a Relator head in the sense of den Dikken (2006, 2007) a very daunting enterprise.

So, what (87) gives us is a definition of the output of Merge. It says little about the input though. Hence, the question that needs to be addressed is what sets off the operation of Merge in the first place, or differently put, what are likely candidates for Merge to operate on. In chapter 1.2 the problem of First-Merge is already discussed at some length. Thus there is no reason to reiterate this discussion here. However, one of the essential insights from this discussion merits closer attention. Basically, this is one of the assumptions which we have been running with in the preceding chapters of this dissertation without any problems, namely that the building blocks that set off the operation of Merge are LIs specified for EFs. So, following Chomsky (2008), I agree with Narita (2011: 43) in that LIs bearing EFs can be identified as the smallest building blocks for Merge to operate on. Hence, EFs can be regarded as the trigger that starts the iterative process of Merge. Additionally EFs are relevant in so far as they permit the elements that bear this feature to be subjected to Merger to some SO.

Interestingly, Narita (2011: 44), again following Chomsky, further suggests the following hypothesis:

(88) The EF is a property only of LIs.

This is a rather strong hypothesis and it entails the hypothesis in (89) as a logical consequence:

(89) Non-LIs do not have EFs

Part of the hypothesis in (88) is already implied in Chomsky's (2008: 139) conception of EFs, according to which LIs that for some reason do not bear an EF can only be integrated into the structure as a full expression, e.g. as an interjection.<sup>32</sup> The other part of the hypothesis that is expressed in (89) can be derived from the assumption that a BPS account of syntax that is strictly in line with the SMT does not make use of feature percolation (cf. Collins 2002; Chomsky 2000, 2007, 2008 and many others). When viewed from this

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<sup>32</sup> In fact, almost the whole line of reasoning is already implied in Chomsky (2008) when arguing that EFs on LIs are a prerequisite for the unlimited iteration of Merge and that no other elements than LIs have this property. So it is not a property of SOs in general, but only of those SOs identified in (87a) that Chomsky seems to characterize here.

perspective, LIs bearing an EF cannot project this EF to a higher node of a SO they are part of.

So, for illustration, let us consider a standard derivation in abstract terms here. The first step in any derivation is that at least one and most likely two LIs, which both bear EFs are merged. *Qua* (87a) both of these LIs are SOs and the product of the Merge operation is likewise an SO, *qua* (87b). However, the SO that is the output of Merge is not an LI and thus does not bear an EF. In consequence, any further element that is merged to the already existing SO must be an LI bearing an EF - regardless of whether this Merge operation is an instance of IM or EM, which are of equal cost (cf. Chomsky 2008).

Narita (2011: 45) summarizes this in the following way:

- (90) Only LIs are permitted to be merged with some SO.

and derives the H- $\alpha$  schema from this, which is what all instances of Merge are subject to:

- (91) The H- $\alpha$  schema:  $\text{Merge} (H, \alpha) \rightarrow \{H, \alpha\}$   
Merge must take at least one LI as its input

This, of course preempts all cases of XP - XP Merger and thus arrives at the same conclusion that Kayne (2010) advocates, yet on the basis of a radically different set of assumptions. And above all assumptions that are strictly in line with the SMT and a BPS conception of narrow syntax.

Now, how does this formal and rather abstract<sup>33</sup> analysis play out in the context of SCs? Well, so far the results are just as unsettling as those derivable from Kayne (2010). Let us consider the approach in den Dikken (2006; 2007a) first. For ease of exposition let us assume the following abstract representation of a SC:

- (92) [SC/RP  $\alpha$ (= SC subject) [<sub>R</sub> Relator head  $\beta$ (= SC predicate)]]

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<sup>33</sup> Despite some empirical data, Narita's argument is presented in rather abstract terms. It is the explicit goal here and specifically in the next subchapter to fill it with empirical content and show that the H- $\alpha$  schema is directly applicable to SC structures.

So, the SC predicate  $\beta$  is a SO that is constructed at an earlier stage of the derivation. This SO does not bear an EF.<sup>34</sup> This is not much of a problem though, because according to (90)/(91) it is enough if one of the Merge-partners is a SO that bears an EF, i.e. a LI. By all standard accounts the Relator head R is such an LI. Thus the derivation can proceed with Merger of  $\beta$  and R rendering another SO that does not bear an EF. What is problematic is the next step in the derivation. Merger of the SO  $\alpha$ , which does not bear an EF, with the SO created by Merger of  $\beta$  and R, which, alas, is also EF-less. This, of course, is the standard problem that emerges not only in SCs but in all cases that involve Merger of a specifier. An observation that I will come back to immediately.

But before doing that, let me just briefly digress and take into account Moro's (2000) SC analysis here. Of course, a PoS based analysis, of which XP - XP Merger is a hallmark, is preempted by (90)/(91). The only PoS that can ever arise is one that results from Merger of two heads, which both bear EFs. A PoS that results from Merger of two phrases is banned in a principled way. This is, sort of, what is expected from an analysis that excludes all precedence information and LCA considerations from narrow syntax.

So let us now turn to the question of how the problem of Merger of a specifier can be solved in a system like the one sketched here and let us see whether the answer to this problem bears any insights on any of the two SC analyses discussed in the preceding sections of this chapter.<sup>35</sup>

Narita (2011) makes an interesting suggestion in this context. The XP - XP Merger problem is circumvented here by integrating Phase-theory into the analysis. Similar to the approach taken in this dissertation, Narita (2011) subscribes to the standard assumption

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<sup>34</sup> Actually, this is not a must. Depending on the conception of LI, it may well be that  $\beta$  is just an LI, e.g. an adjective in the SC construction *They made [sc him angry]*. On the other hand, this is not a must either. The SC predicate may well be a complex phrase as in *They made [sc him the youngest senate member ever to give a speech at the convention]*, which is most certainly not just an LI and thus most certainly does not bear an EF. Note further that, according to our use of EFs and of syntactic composition discussed at length in chapter 2, an adjective that is a minimax projection, as in the example above, is not an LI containing an EF either. It rather is a SO that is the result of Merger of a little *a*-node with a root, which both contain an EF and thus are both susceptible to Merge.

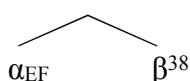
<sup>35</sup> Of course, one very easy answer would be to simply assume that heads project their EFs. This is the analysis explicitly pursued in Chomsky (2007, 2008) and also discussed in Narita (2011). However, it comes at the cost of reintegrating labeling and projection into BPS and of loosing some explanatory force for certain CED phenomena (cf. Narita 2011 and discussion below for further discussion).

that Transfer of the Phase-complement applies simultaneously to both interfaces<sup>36</sup> (cf. discussion in chapter 1.2). Strictly in line with the stronger version of the PIC (cf. Chomsky 2001, 2004), Narita (2011) further assumes that spelled-out pieces of structure are inaccessible for further computational steps. Following Chomsky (2008: 142) this leads to a conception under which spelled-out structural chunks are not only inaccessible in the remainder of the derivation, they are ‘forgotten’ (cf. *ibid*).<sup>37</sup> What is crucial in this context is that Narita (2011: 46-47) argues that this does not only apply to the complement domain or the Phase-interior, but strictly includes the relations that pertain to the Phase-head and the Phase-interior complement domain. In particular it applies to the constitute relation in (93) (cf. *ibid*):

- (93)  $\alpha$  and  $\beta$  constitute  $\gamma$  (or conversely,  $\gamma$  consists of  $\alpha$  and  $\beta$ ) iff  $\gamma$  is the output of Merge ( $\alpha, \beta$ ).

So provided that either  $\alpha$  or  $\beta$  is a Phase-head that is merged to the already existing SO (either  $\alpha$  or  $\beta$ ), the result of this Merge operation is the SO  $\gamma$ . Upon Transfer, which coincides with the Merger of the Phase-head, however, the complement domain of the Phase-head is subjected to Spell-Out and thus rendered inert for the remainder of the derivation and along with that also the relation that holds between the Phase-head and the spelled-out complement is forgotten. This in essence means that Merger of a Phase-head has the effect of canceling the relation of the Phase-head to its complement immediately upon Transfer. Schematically, this can be represented as follows:

- (94a) Merge of  $\alpha$  and  $\beta$ ,  $\alpha$  being a Phase-head:




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<sup>36</sup> In fact, Narita (2011: 38 & 46) identifies Transfer as the composite Interpret, which maps to C-I and Spell-Out, which maps to S-M. This has no impact on the simultaneity of the operation though. In this chapter, I will stick to simultaneous mapping to C-I and S-M too, however, I will not distinguish between the two in the terms that Narita does. Instead, I will make use of the more traditional terminology, which was also used in the preceding chapters, and use Spell-Out as the cover term for the mapping operations at both interfaces.

<sup>37</sup> Again, Chomsky (2008: 142) is quick to add that this conception of cyclicity is the only one that is strictly in line with the SMT.

<sup>38</sup> The EF on  $\alpha$  is an uncontested fact that results from the simple fact that  $\alpha$  is a LI. Whether  $\beta$  bears an EF too, is a matter of debate. In all likelihood  $\beta$  is a SO that is a maximal projection and thus does not bear an EF. This is unproblematic though, because according to (91) the EF on  $\alpha$  is sufficient for the derivation to proceed.

(94b) Transfer and Spell-Out applies to the Phase-complement:

$\alpha_{\text{EF}}$

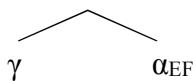
[adapted from Narita 2011: 46]

What (94) clearly shows is that what is left after the application of Transfer is just the Phase-head. All relations that pertain to the Phase-head and its complement domain are discharged upon Spell-Out as well.

It is this very simple assumption that provides the key to the solution of the XP - XP Merger problem, which is eventually also applicable to the analysis of SCs. To see how, remember that Chomsky (2008) argues that EFs on LIs never delete. This, of course does not mean that these features are accessible in the derivation at all times. As soon as LIs that contain those EFs are embedded within a (complex)<sup>39</sup> SO, their EFs are inert, because these do not percolate. Yet, as soon as the complement domain of a Phase-head is transferred, as described in (94), the EF on the remaining Phase-head is accessible again, because this Phase-head is just an LI. This is indicated in (94b).

In this vein, then, specifiers, which are apparent cases of XP - XP Merger, are entirely unproblematic - at least when they are merged to Phase-heads. It is the EF on the Phase-head that satisfies the H- $\alpha$  schema here and makes Merger of a SO - that does not bear an EF - in specifier position possible (cf. Narita 2011: 47).<sup>40</sup> So, the Phase-head  $\alpha$  in (94b) is available for a further Merge operation with a SO  $\gamma$ , (which again may or may not bear an EF itself)<sup>41</sup>, in its specifier:

(95) Merge of  $\alpha$  and  $\gamma$ ,  $\alpha$  being a Phase-head whose complement domain has been discharged:



<sup>39</sup> Complexity is a relative notion here. In principle Merger of two LIs bearing EFs each is enough to create such a SO, because neither LI will project its EF (cf. discussion above and Narita (2011: 46-52)).

<sup>40</sup> Notice, that this has the not unwelcome side-effect of making some sense of the First-Merge and later/Second-Merge distinction between complements and specifiers. This distinction is almost irrelevant to syntax under this approach, because every Merger of the Phase-head is an instance of First-Merge in the relevant stage of the derivation.

<sup>41</sup> Again, it is most likely that  $\gamma$  corresponds to a maximal projection, i.e. a SO that does not bear an EF, but there is at least a very real possibility that  $\gamma$  is an LI, i.e. a SO with an EF. For elaboration on this latter option cf. the discussion below and Narita (2011).

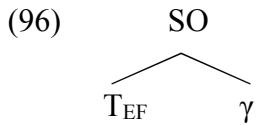
[adapted from Narita 2011: 47]

So apparent Merger of two XPs emerges as unproblematic in those cases where at least one of the two XPs can be reduced to a Phase-head with a spelled-out complement domain. This immediately begs two questions though:

1. How are cases of IM dealt with?
2. How is it possible to Merge a specifier to a Non-Phase-head?

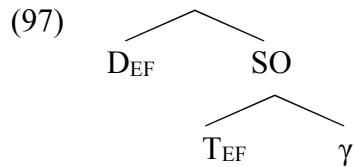
Both questions are related in so far, as they receive a uniform answer. IM is traditionally identified as (Re-)Merger from a complement position to a higher specifier position. If, however, the complement domain of a Phase-head is spelled-out, the material inside this domain should not be accessible to any further operations. So IM should be generally unavailable, which is, of course, contrary to all standard observations.

Similarly, a Non-Phase-head should never be able to merge a specifier. Such a head, of course, cannot Spell-Out its complement and thus is stuck in a SO without an EF. The phrase that is to be merged as a specifier is also a SO without an EF and thus Non-Phase-heads should not accept specifiers, which is, again, contrary to all standard observations. The answer that Narita (2011) provides is that the SO that is merged in the specifier position is itself a spelled-out Phase-head. So, let us assume for ease of exposition that  $\alpha$  corresponds to T, i.e. a Non-Phase-head. T is merged to a previously constructed SO  $\gamma$  by virtue of its EF. The result is a SO without an EF:



In the next step the SO that is merged to the complex in (96) must be one bearing an EF according to the H- $\alpha$  schema. The standard case for Merger in what is traditionally called Spec, TP is a DP. Let us follow the (more or less) standard assumption that DPs are Phases (cf. e.g. Svenonius 2004; Bošković 2005; Hiraiwa 2005; Matushansky 2005; Müller & Heck 2008; Ott 2008; Samuels 2008, Richards 2012). Under this assumption the D-head

is a Phase-head whose complement domain has been subjected to Spell-Out along the lines discussed in (96). Thus, what is merged in Spec, TP is basically a Phase-head with an EF (cf. also Narita 2011: 49-52)<sup>42</sup>:

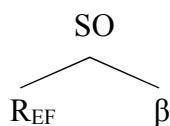


So, after having laid out the general mechanism of the H- $\alpha$  schema as a viable analysis that provides a reasonable solution to the problem of XP - XP Merger - without making recourse to precedence information within narrow syntax - let us now turn to the question of how this can be accommodated to the analysis of SCs.

#### 4.4. SCs and the H- $\alpha$ schema

The insights from the H- $\alpha$  schema discussed in the preceding section provide for a straightforward analysis for SCs. So let us finally see what can be gained from applying the H- $\alpha$  schema to the two broad analyses of SCs discussed in chapter 4.2 and let us start with the predication analysis of den Dikken (2006, 2007a,b). Under this analysis a Relator head mediates the predication relation between the two SC constituents. This Relator head is identified as a Phase-head. So Merger of one of the SC constituents in Spec, R should not constitute a problem, because the spelled-out Phase-head R will have its EF available for Merger with another SO that need not have an EF itself. Hence the derivation proceeds as follows:

(98a) Merger of the Phase-head R with SO  $\beta$



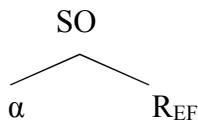

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<sup>42</sup> Of course, this DP is most likely one that is merged in Spec, vP first. From there it dislocates to Spec, TP by IM. What is crucial is that this dislocation operation is only possible, when the DP is a spelled-out Phase. The same can be derived for all instances of IM (cf. Narita 2011: 49). In principle, however, nothing speaks against EM in such a position. So that EM in Spec, TP needs to be ruled out by other principles or it needs to be accepted as a general possibility (and surely nothing speaks against this procedure in other cases of merging a specifier to any other Non-Phase-head either).

- (98b) Transfer of Phase-interior (including relations pertaining to the Phase-head and its complement)

$R_{EF}$

- (98c) Merger of Phase-head R with SO  $\alpha$

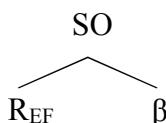


So far, this is totally unproblematic and den Dikken's analysis seems to be perfectly compatible with the H- $\alpha$  schema. Recall, however, that under predicate inversion the SC subject cannot be extracted from under any circumstances (cf. den Dikken 2006: 71-72):

- (99a) Brian's arrest was the biggest upset. (uninverted SC)  
 (99b) The biggest upset was Brian's arrest. (inverted SC)  
 (99c) \*Whose arrest do you think the biggest upset was  $t^{43}$ ? (extraction)

Recall also that predicate inversion involved an additional functional head F and Phase extension. So, the question that immediately emerges is how the Merger of the SC subject in Spec, RP can be accounted for when F instead of R is the relevant Phase-head. This can, according to the discussion towards the end of the preceding sub-chapter, be achieved, when the SC subject is merged as a Phase-head with a spelled-out complement domain. In this case, it is, of course, the EF on the subject Phase-head that allows Merge to apply. Thus, when the Phase of the F-head is transferred the SC subject is no longer in the edge of the Phase and its own interior is already spelled-out anyway. Again, the derivation for this structure is schematically sketched in (100):

- (100a) Merger of R-head with SC predicate:

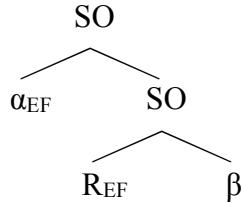



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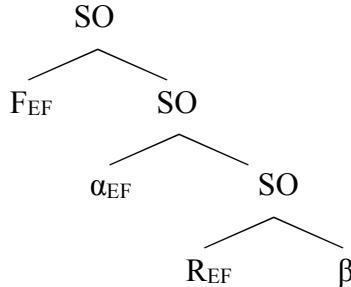
<sup>43</sup> The trace notation is, of course, den Dikken's and will be regarded as equivalent to the copy-notation here.

(100b) Merger of SO  $\alpha$  as a Phase-head with spelled-out complement domain, i.e.

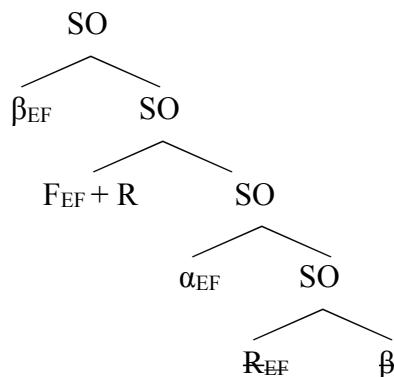
Merger via the EF on  $\alpha$ :



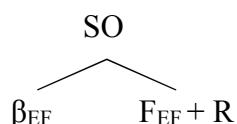
(100c) Merger of Phase-head F:



(100d) IM of R in F and of  $\beta$  in Spec, FP:<sup>44</sup>



(100e) Transfer of Phase-complement:



Hence, when integrating the insights from the H- $\alpha$  schema into the account of den Dikken (2006; 2007a;b), the extraction behavior of SC subjects in predicate inversion contexts falls out as a natural consequence. In effect, the stipulations involved in Phase extension are obsolete under this approach and can be done away with. However, many of the problematic aspects highlighted in chapter 4.2 remain. It is still unclear what the properties of either the R-head or the F-head are, whether predication can play a role in narrow

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<sup>44</sup> For this to actually work out,  $\beta$  must of course be merged as a Phase-head with a spelled-out complement domain, because otherwise the EF on  $\beta$  would not be available.

syntax, what the relevant definition of Phase may be, how head-movement is accounted for etc.

This latter point is one I will come back to in due course and which, it will turn out, can be a greater reason for concern than is immediately obvious at first sight. Before dealing with this aspect, however, let us reflect on the analysis laid out in Moro (2000) and see how this plays out under the H- $\alpha$  schema. As has been outlined in the preceding subchapter and illustrated above for SCs, the H- $\alpha$  schema provides a means to get to grips with apparent cases of XP - XP Merger. This is done by merging XP constituents as Phase-heads with spelled-out complement domains via the EF on the Phase-head. This seems to be a natural strategy for the cases of XP - XP Merger that Moro identifies too. All that is needed for merging the SC subject and predicate without a mediating head is that at least one of these constituents is merged as a Phase-head.

Consider first in this context those SCs that consist of a DP - AP structure, an example of which is repeated below:

- (101) Les filles sont intelligentes

Nothing prevents us from assuming that the DP *les filles* is *de facto* merged as a Phase-head with a spelled-out complement domain.<sup>45</sup> Actually, this is what is needed for independent reasons anyway, in order to get to grips with a structure in which the AP has a modifying function over the DP as in the following example:

- (102) les filles intellegentes

Under all standard analyses the AP is merged in Spec, NP in (102) and thus again, either the AP itself or the DP must be merged as a spelled-out Phase-head with an accessible EF. Otherwise Narita's (2011) H- $\alpha$  schema in (91) or Kayne's (2010) ban on XP - XP Merger would be violated.

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<sup>45</sup> Alternatively, we could assume that the AP is a Phase, however, as we will see below (cf. discussion of the examples in (114) & (115)) there is good indication to assume that APs are not Phases. One way around this could be to assume that the AP is really just *a* without any further functional projections on top (e.g. no DegP, Grade P oder anything like it), which then makes *a* a categorizing *x*-head with phasal properties, just like *n* or *v*. However, I will put these matters aside here and assume that APs are not Phases (cf. also discussion of example (102) above).

Now, it could be argued that which of the two constituents is the one that is merged as a Phase-head is dictated by the  $\varphi$ -features of the SOs involved. However,  $\varphi$ -feature assignment in DP - AP structures could just as well be a case of simple congruence<sup>46</sup> and thus an entirely phonological matter. So, if we pursue this analysis, we are in danger of drifting in the same PF-driven direction that we are trying to get around here by abandoning Moro's (2000) LCA based analysis.

Further reason to be suspicious about the workings of an analysis based on  $\varphi$ -feature assignment and checking is that in other instances of SCs which are not cases of NP - AP structures but rather say of DP - DP structures  $\varphi$ -feature agreement plays no role either:

- (103) Jack is the president

So, in order to maintain a uniform analysis of all SCs that are potential instances of XP - XP Merger there is reason enough to be careful about an analysis such as the one briefly sketched above. However, there is no reason for giving up an analysis that is based on the H- $\alpha$  schema. To see how, consider the following possibility: both SC constituents, i.e. both XPs are merged as spelled-out Phase-heads. According to the H- $\alpha$  schema at least one of the two SOs that partake in Merge must be an LI with an EF, but nothing prevents both SOs being LIs with EFs. This is the standard case in First-Merge scenarios (cf. discussion in chapter 2) but it may well apply in other places in the derivation as well. And SCs may just be one such case. For ease of exposition let us again look at an example here. The structure for the abstract SC in (104) is provided in (105):

- (104) DP<sub>1</sub> is [sc [DP<sub>1</sub>] [DP<sub>2</sub>]]

- (105a) Merger of DP<sub>1</sub> and Merger of DP<sub>2</sub><sup>47</sup>




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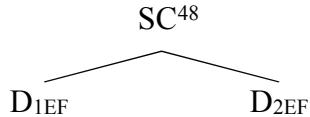
<sup>46</sup> Many thanks to Thilo Tapppe (p.c.) for pointing this out to me.

<sup>47</sup> Indices on DPs are used simply to keep them apart. They are not meant to encode any type of temporal (or other) precedence, so Merger of the two DPs may well proceed in parallel.

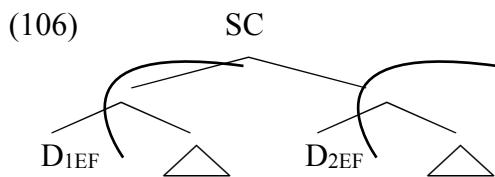
(105b) Transfer of the complement domain of DP<sub>1</sub> and of DP<sub>2</sub>

D<sub>1EF</sub> D<sub>2EF</sub>

(105c) Merger of DP<sub>1</sub> and DP<sub>2</sub> by virtue of the EFs on Phase-heads D<sub>1</sub> and D<sub>2</sub>



(106) summarizes (105a) - (105c):



So, the H- $\alpha$  schema is also compatible with Moro's (2000) analysis of SCs. Cases of apparent XP - XP Merger are reduced to cases of X - X Merger and a PoS motivated analysis plays no role in the absence of the LCA or other means of encoding of directionality in narrow syntax.<sup>49</sup> In fact, the analysis for Moro's structures is virtually indistinguishable from the structures that the H- $\alpha$  schema derives for den Dikken's (2006 ; 2007a;b) analysis, since at least for the predicate inversion analysis in den Dikken, both the SC subject and the SC predicate must be a Phase-head with a spelled-out complement domain. Otherwise the SC subject could not be merged in Spec, RP and the SC predicate could not be internally merged in Spec, FP. The only thing that is absent here is the Relator head, which was of unclear status in den Dikken's (2006; 2007a;b) account anyway.

Actually, the lack of interpretive force on the part of the Relator head was deemed reason enough to be suspicious about its status. As it stands, it looks like this head violates

<sup>48</sup> The label SC is again used solely for expository purposes here. This SC is a SO just like any other brought about by Merge in label-free BPS.

<sup>49</sup> One question that could be asked here is what drives movement of one of the SC constituents to a higher ‘specifier’ position then. If the PoS-dissolving motivation for movement is gone, as it apparently is, there is virtually none left under Moro's (2000, 2009) analysis.

This observation is certainly correct, but there are a number of possible motivations for movement left. The simplest probably being an EPP-feature that attracts any of the two SC constituents. These can, of course, be internally merged by virtue of the EF that does not delete and is never checked (cf. Chomsky 2008). So IM is virtually unbounded for Phase-heads with spelled-out complement domains. And the lack of extraction from these constituents follows naturally from their status as spelled-out elements (cf. Narita 2011 for a detailed analysis of when CEDs emerge under the H- $\alpha$  schema).

FI (cf. (86) above) and should be done away with.<sup>50</sup>

Additionally, as has been indicated above already, Narita refers to one more aspect that gives reason to be doubtful of the analysis of den Dikken (2006; 2007a;b). Let us look at the analysis for the predicate inversion structure once again. What is most striking about this analysis is that den Dikken (2006) argues that the Relator head moves to the higher F-head and that the SC predicate, which is initially merged as a complement to the Relator head, undergoes IM too and ends up in Spec, FP. Even when abstracting away from the problem of why it is not the SC subject that is being targeted by IM, a problem that can be accounted for either under den Dikken's (2007) analysis of Phase extension<sup>51</sup> or under more standard accounts of c-command and Phase-level evaluation of  $\varphi$ -features (cf. e.g. Hiraiwa 2005, Gallego 2010), the IM operations outlined by den Dikken are problematic. The problem hinges on the fact that both constituents that are initially merged (i.e. the R-head and the SC predicate) are displaced. Narita (2011: 124), following the P&P tradition of marking displaced elements refers to these as instances of  $\{t, t\}$ , which he argues to be illicit:

(107) \* $\{t, t\}$

C-I cannot assign a legitimate interpretation to a SO whose two members are both copies of some displaced, i.e. internally merged, elements.

[adapted from Narita 2011: 124]

The reason why Narita identifies  $\{t, t\}$  as illicit is that despite the fact that it is generated by the H- $\alpha$  schema it violates FI - i.e. it goes against the principle that has been giving rise to concern above already. Why this should be so is immediately obvious when taking into consideration how traces (or deleted copies for that matter) are interpreted at the interfaces. Narita (2011: 124-125) proposes the following characterization for the interpretation of an

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<sup>50</sup> As remarked earlier (cf. chapter 4.2) the Relator head should therefore be abandoned for the very same reason that Chomsky eventually abandoned Agr categories - for lack of interpretive content either at SEM or at PHON and thus for marking a departure from the SMT.

<sup>51</sup> Recall that den Dikken (2006; 2007a;b) adduces Phase extension as a mechanism to get around a violation of the MLC. This can, of course, be accounted for by other less stipulated means.

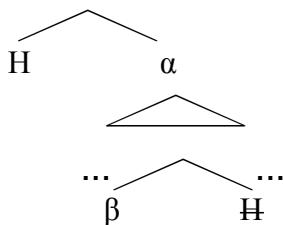
unpronounced copy at the C-I interface:<sup>52</sup>

(108) Endocentric interpretation for IM at SEM:

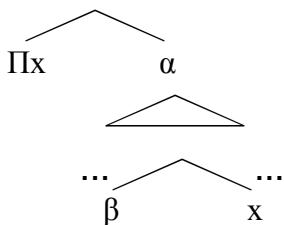
{H,  $\alpha$ } formed by IM contributes to an operator-variable formation where H scopes over  $\alpha$  and the copy of H introduced by EM is interpreted as a logical variable bound by H.

So, what (108) expresses is that the lower copy that is introduced into the derivation via EM is interpreted as a variable that is bound by the higher copy that is displaced by IM. Narita (2011: 125) pushes this one step further and argues that the semantic features of the displaced element (H in (108)) are interpreted not in the base-position, but in the position that H ends up in after the application of IM. This is again, for ease of exposition, schematically represented in (109):

(109a) IM of H



(109b) Spell-Out/Interpretation of H



[adapted from Narita 2011: 125]

As a result the externally merged copy of H in (109a) cannot be the head of the SO that results from Merger of  $\beta$  and H.<sup>53</sup>

Now, if we apply this line of reasoning to the SC structures discussed above, it is immediately obvious that, despite the fact that both SC constituents, i.e. the SC subject and the SC predicate, are merged as Phase-heads with spelled-out complement domains, it is

<sup>52</sup> Narita (2011) goes into great detail showing that (108) is derivable from the SMT and corroborates FI. Since we already arrived at a similar conclusion above, I will refrain from reiterating the nitty-gritty of Narita's analysis here. The interested reader is at this point referred to his work for further exposition.

<sup>53</sup> In standard cases, this automatically entails that  $\beta$  is an element that has predicative properties and that can theta-mark H. In Narita's system theta-roles are assigned under EM, which follows from the endocentric interpretation for EM at SEM that he offers. Again, this is derivable from the SMT, corroborating the assumptions expressed by FI. Again I will not go into the details here, as it is unlikely that theta-roles play a role in the SC structures we are looking at here.

impossible to subsequently subject both constituents to IM and displace them. At the same time a clear answer to the question of which of the two SC constituents is a likely candidate for the head of the construction falls out: the head of the SO that results from Merger of the SC subject and the SC predicate is the constituent that is not subjected to IM. Thus, the head of the construction will vary depending on whether we are looking at what Moro (2000) identifies as a regular SC or at an inverted SC, simply because either the SC subject has been displaced and is thus unavailable as head or, alternatively, the SC predicate has been displaced and is thus incapable of being the head of the construction.

The same account is transferrable to *believe*-type verbs. The only difference being that none of the two constituents that are merged as Phase-heads with spelled-out Phase-complements undergoes IM in a later stage of the derivation. Now, it could, of course, be asked how the derivation is ever to proceed from here on out and how the two SC constituents are ordered eventually. Before answering the second part of this question in a more roundabout way, let me briefly comment on the first part here by looking at a structure for this type of clause as well:

- (110) [<sub>v</sub> *believe* [sc [α][β]]]

As shown in (110) α and β are the SC constituents, which according to the analysis above have both been merged as Phase-heads with spelled-out complement domains. In a next step the *believe*-type *v* constituent is merged. This is done via the EF on *v*. What is not determined upon Merger of α and β is which of the two constituents is the head. Yet, this does not seem to cause a problem, because all that is needed for the derivation to proceed is that the next SO that is merged be an LI with an EF - a requirement that is fulfilled by *v*.<sup>54</sup> Taking into account that *v* is a Phase-head, that spells-out its complement domain at some point in the derivation, the problem that might arise from the failure of producing a label for the SO that results from Merger of α and β can possibly be dissolved at PF, similar to the solution offered in chapter 2 for nominal root compounds where a similar

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<sup>54</sup> Of course, this is by no means conclusive evidence that there is no need for head-determination at this stage of the derivation and, in fact, a number of possible scenarios can be likened here. One is the mechanism of Minimal Head Detection (cf. Narita 2009, 2011) that can perfectly sufficiently take care of the issue, but others can also be found. Since this, however, is not pertinent to the discussion here, I will refrain from going into the details here.

situation arises.<sup>55</sup>

However, if on the right track, these observations cast some doubt on the overall validity of  $*\{t, t\}$  and its implications as they have been described above. Why should  $*\{t, t\}$  provide a means for identifying the head of bare SC constructions, if it fails to do so in SCs that are complements of *believe*-type verbs? It has already been indicated above that IM of one of the SC constituents in a higher position in bare SCs can just as well be linked to e.g. EPP-feature requirements with basically the same consequences falling out as those attributed to  $*\{t, t\}$  above. Additionally, it is worth noticing that the establishment of a operator-variable relation, as described by Narita (2011) in the context of the  $*\{t, t\}$  constraint only makes sense when one of the constituents actually is one that has the capacity of establishing a relation that is accessible to an operator-variable pair. This is not necessarily the case for the two SC constituents. Recall that Heycock & Kroch (1999) already pointed out that both SC constituents may actually be referential DPs in equative constructions. For these it is virtually impossible to establish such a relation and they should thus both be available for displacement, defying  $*\{t, t\}$ .

So, the conclusion that I would like to draw at this point is that  $*\{t, t\}$  is of no relevance in SC constructions that are built according to the H- $\alpha$  schema.<sup>56</sup> Thus, the H- $\alpha$  schema provides a simple and unconstrained means to derive SC constructions without the need to make recourse neither to unmotivated PoS analyses that are susceptible to PF-requirements only, nor to stipulated LF-requirements that center around a questionable conception of predication.<sup>57</sup> With this much in place, I will in the last section of this chapter turn to one heretofore unacknowledged challenge for SC constructions and present

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<sup>55</sup> In fact, the spelled-out Phase-heads of the SC constituents resemble the uncategorized roots that are found in non-productive, non-recursive root compounds very much. This would also explain why incorporation (cf. also the discussion below) is not an option here. Another reason would probably be that the spelled-out complement domain of these Phase-heads, though ‘forgotten’ (cf. Chomsky 2008) is still hocked up to the Phase-head by a multiple dominance structure that allows for reassembling the spelled-out parts with the root (cf. Nunes 2004, Narita 2011 for further explanations).

<sup>56</sup> Whether the constraint is actually operative at some other place in FLN is a matter of debate - Narita (2011) himself remarks that this constraint is rather speculative. However, I do not *a priori* want to exclude the possibility that  $*\{t, t\}$  may be operative in some limited domain in narrow syntax and will leave the answer to this question open here. The only point that is of importance is that, as expressed above, the constraint is not operative on SC structures.

<sup>57</sup> Of course, it may well be that predication actually plays a role in these structures and that a predication relation can be read off the representation that is built in syntax and handed to C-I upon Spell-Out. This is, however, then a product not of FLN but rather of an interplay between FLN and what is often called the ‘third-factor’, i.e. language-external processing mechanisms. And in so far, this is well outside the research focus that this dissertation is grounded on, which is reason enough to leave it aside here.

a solution to overcome this challenge that is applicable to related domains, but before that, I will digress, for a more detailed exposition of the SC structures that emerge from the analysis presented so far.

#### 4.5 Basic Structures and Multiple *wh*-fronting Data

In this section the structures of SCs derived by the H- $\alpha$  schema are discussed in more detail. In a first step I will look at the basic structures of SCs and their derivation under the H- $\alpha$  schema. Here it will already become obvious that Transfer and IM are intimately related, in so far as the local application of Transfer has implications for the movement options of the already transferred items.

Building on this insight I will examine *wh*-extraction and *wh*-subextraction possibilities of SC constituents in multiple *wh*-fronting languages and show - following the H- $\alpha$  schema - that multiple *wh*-extraction, i.e. IM of already transferred SOs, which are then reduced to simple LIs, is unproblematic. Subextraction from one SC constituent combined with full extraction of the other SC constituent is also unproblematic, as long as the fully extracted constituent is remerged as an LI and the subextracted element corresponds to an LI as well. Both can, of course be remerged as LIs only if they are Phase-heads with spelled-out complement domains and the subextracted element must be extracted from a SO that has not been spelled-out yet, i.e. it must be from the base-position. The idea here is that once an item has undergone IM it must have been reduced to an LI, which automatically means that its domain should not be accessible for subextraction. This leads to the prediction that under the H- $\alpha$  schema it should not be possible to subextract from both SC constituents - since at least one of the SC constituents must be merged as an LI, thus automatically blocking subextraction. This prediction is shown to be supported by data from multiple *wh*-fronting languages.

So, let us start with a compilation of the possible structures that the H- $\alpha$  schema generates for the SC cases. From the discussion in the previous chapter it has already become clear that it is impossible to merge two XPs along a Moro (2000) style analysis. A den Dikken (2006; 2007a,b) style analysis in which a SC is a structure that is mediated by some abstract functional head is also impossible, because it does not only bring up a host of questions about the properties of the functional head but it also faces the additional problem of XP - XP Merger that emerges whenever an XP is merged in the specifier

position of some other projection.

The answer devised by the H- $\alpha$  schema is that Merger of two XPs is universally unavailable and that at least one of the maximal projections, which are really just SOs without EFs rather than dedicated projections of any functional or lexical head (cf. Narita 2011), is merged as a Phase-head with a spelled-out complement domain. This, as has been schematically illustrated in the preceding section, is also what is at work in SCs. However, a number of questions on the exact workings of the H- $\alpha$  schema remain open under the discussion in chapter 4.4 and these are addressed here.

Thus, as has been indicated already, it is possible under the H- $\alpha$  schema that the two SC constituents are both merged as Phase-heads. This is what is schematically illustrated in (105) - (106). In consequence, it should, in principle, be possible to remerge both of the SC constituents in later steps of the derivation. This is basically the situation that we expect for the predicate inversion structures with *wh*-movement:

- (111a) What do you think this man is [sc *this man what*]?
- (111b) Who do you think the best president was [sc *who the best president*]?

In (111a) the SC predicate is *wh*-extracted and the SC subject is *wh*-extracted in (111b). Provided further that both SC constituents are merged below the copula, as sketched in (105) - (106) the non *wh*-extracted constituent must have moved too. Since both SC constituents are non-LIs, i.e. SOs without EFs, both of them must have been remerged as a Phase-head with a spelled-out complement domain. Thus, the derivation for these SC structures is shown in (112) and (113) respectively:

- (112) Derivation for *what do you think this man is?*
  - Step 1: Construction of  $SO_1 = \text{this man}$  and construction of  $SO_2 = \text{what}$

Step 2: Spell-Out of complement domains of Phase-heads in  $\text{SO}_1$  and  $\text{SO}_2$

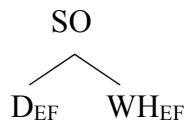


Result of Step 2:

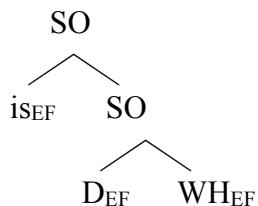
$\text{D}_{\text{EF}}$        $\text{WH}_{\text{EF}}$

Step 3: Merger of  $\text{D}_{\text{EF}}$  with  $\text{WH}_{\text{EF}}$ .

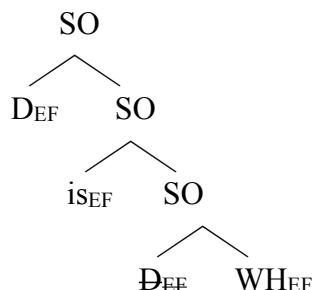
Result of Step 3:



Step 4: Merger of the copular via the EF on the LI:



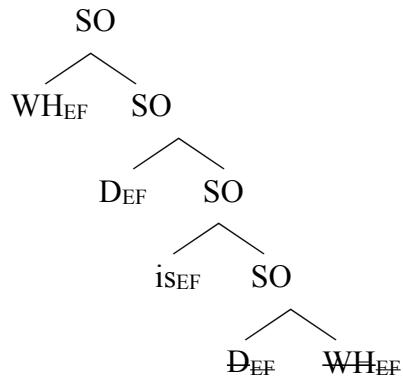
Step 5: IM of  $\text{D}_{\text{EF}}$  with SO



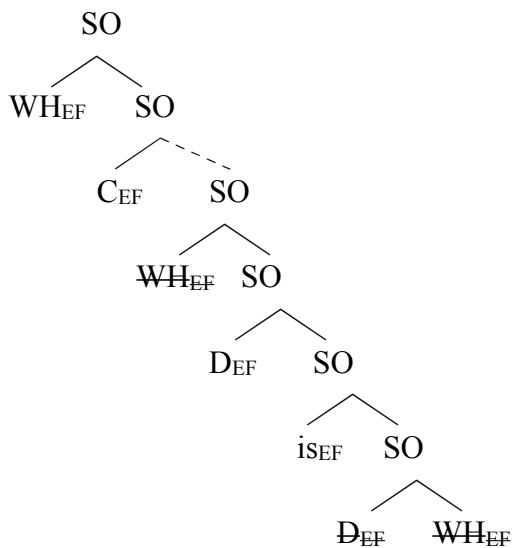

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<sup>58</sup> Please note that the structure for the *wh*-element given here is for purely demonstrative purposes. I remain agnostic to the exact structure of the *wh*-SO and just assume that like under all standard analyses it moves as a ‘phrasal’ category. This entails that it must move as a Phase-head with a spelled-out complement domain in an analysis that subscribes to the H- $\alpha$  schema. Whether it moves as a *wh*-head, as a Q-head (cf. Cable 2010; Narita 2011) or anything else is a question that I leave unaddressed here, because it is orthogonal to the current point. All that matters is that the *wh*-element moves as a Phase-head with a spelled-out complement domain, i.e. as an LI with an EF that is accessible for Merge.

Step 6<sup>59</sup>: IM of WH<sub>EF</sub> to SO:



Step X:IM of WH<sub>EF</sub> to SO ‘headed’<sup>60</sup> by C:



(113) Derivation for *who do you think the best president was?*

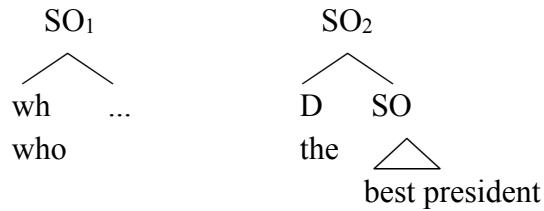
Step 1: Construction of SO<sub>1</sub> = *who* and construction of SO<sub>2</sub> = *the best president*

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<sup>59</sup> This step might not even be necessary, assuming that WH<sub>EF</sub> is still accessible in its base-position for so long as no other Phase-head that triggers Transfer is merged in the ‘clausal’ spine represented by SO. Thus, intermediate movement of WH<sub>EF</sub> to SO is only necessary for keeping WH<sub>EF</sub> available in the derivation, i.e. for omitting Transfer of WH<sub>EF</sub> as an element in the complement domain of some SO.

<sup>60</sup> This is for purely expository reasons again. In traditional terms this derivational step would have been characterized as ‘IM in Spec, CP’. However, since under the H- $\alpha$  schema such labels are an unwarranted deviation from SMT, they can and should not be used. However, it is at times hard to refer to syntactic positions without indicating in traditional terminological terms which position is meant. This is why headed is put in single quotation marks here.

Step 2: Spell-Out of complement domains of Phase-heads in  $\text{SO}_1$  and  $\text{SO}_2$



Result of Step 2:

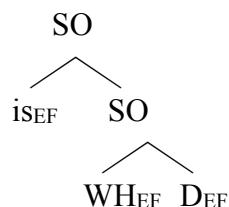
$\text{WH}_{\text{EF}}$        $\text{D}_{\text{EF}}$

Step 3: Merger of  $\text{WH}_{\text{EF}}$  with  $\text{D}_{\text{EF}}$ .

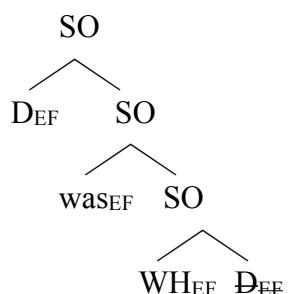
Result of Step 3:



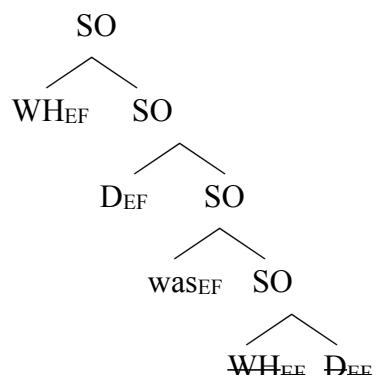
Step 4: Merger of the copular via the EF on the LI:



Step 5: IM of  $\text{D}_{\text{EF}}$  with SO



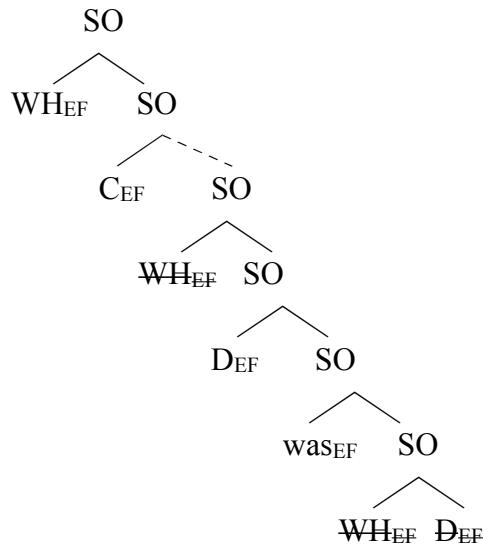
Step 6<sup>61</sup>: IM of  $\text{WH}_{\text{EF}}$  to SO:




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<sup>61</sup> Again, this step might be omitted (cf. comments in footnote 59 above).

Step X:IM of WH<sub>EF</sub> to SO ‘headed’ by C:



Now, the examples in (114) illustrate further that it is not possible to remerge a SC predicate that is an AP outside of the copular construction:

- (114) \*Who do you think intelligent is?

This is not much of a surprise, because from the discussion in Moro (2000) we already know that it is not possible to have an inverse bare copular SC with these SC constituents either:

- (115) \*Intelligent is the president.

Both of these facts follow naturally from an analysis that is based on the H- $\alpha$  schema. While a SC predicate that is a DP can easily be remerged higher in the derivation via the EF on D, this is not an option for a SC that contains a SC predicate that is an AP. Since APs cannot be reduced to LIs, basically because the A is not a Phase-head that has the potential of spelling-out its complement domain. The same logic can be applied to SC constructions that have a PP predicate. Again, because P is not a Phase-head, it is expected that P cannot be extracted out of the SC and thus cannot occur in inverse copular constructions:

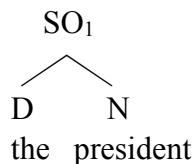
- (116a) The president is in the rose garden
- (116b) \*In the rose garden is the president
- (116c) \*Who do you think in the rose garden is?
- (116d) Which garden do you think the president is in?<sup>62</sup>

The inverted bare copular SC in (116c) is ungrammatical, because the PP cannot be remerged outside the SC. This is because P is not a Phase-head and thus the SO *in the rose garden* cannot be reduced to an LI with an EF. (116c) illustrates basically the same point. However, extraction from inside the PP, as in (116d) is expected to be grammatical, because the interior of the PP remains accessible for the same reason, i.e. that P is not a Phase-head. This leaves us with the situation that derivation of the SC in (116) (and by analogy in (114) and (115)) proceeds as follows:

- (117) Derivation of *the president is [SC *the president* in the rose garden]*.

Step 1: Construction of  $\text{SO}_1 = \text{the president} \ \& \ \text{SO}_2 = \text{in the rose garden}$

Step 2: Spell-Out of complement domain of  $\text{SO}_1$



Result of Step 2:

$\text{D}_{\text{EF}}$

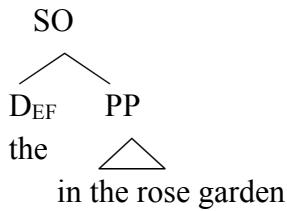
<sup>62</sup> Notice though that the following is also grammatical:

- (i) In which garden do you think the president is?
- (ii) The president is angry at the crowd.

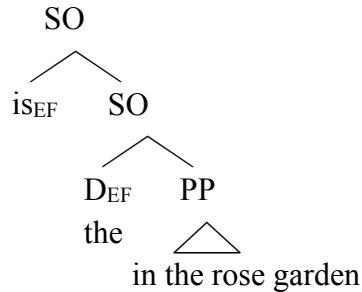
Both seem to be counterexamples: the first because the PP is extracted, which should not be possible given that P is not Phase-head and thus not reducible to an LI. The second is a potential counterexample basically for the same reason. If neither A nor P is a Phase-head, then it should not be possible to merge these in an SC - simply because at least one must be merged as an LI with an EF under the H- $\alpha$  schema. One possible solution would be to say that a distinction needs to be made between lexical prepositions, which are not Phase-heads and those Ps that are just Case assigners. In the latter Case the PPs then behave like other DP-Phases and thus can spell-out their complement domain.

Another way to go about this is to assume that *angry* is itself a SC introducing predicate. The relevant SC then is  $[\text{sc}[\text{at}] [\text{the crowd}]]$ . In this case the SC constituent *[the crowd]* is just a DP that can easily be reduced to an LI with an EF via Spell-Out of the complement domain of D along the by now familiar lines. So although there are some apparent counterexamples, this does not mean that they pose an insurmountable difficulty for the analysis pursued here and this is why I will put them aside in the remainder of this chapter.

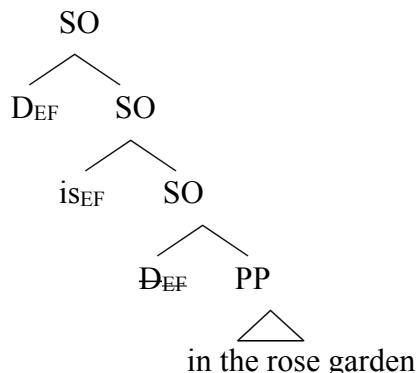
Step 3: Merger of SO<sub>1</sub> and SO<sub>2</sub>



Step 4: Merger of the copular via the EF on the LI



Step 5: IM of D<sub>EF</sub> with SO



The PP in Step 6 is not available for extraction, because it cannot be reduced to an LI with an EF and thus cannot be merged to the complex SO under the H- $\alpha$  schema. However, as the example in (116d) shows, extraction from inside the PP is still an option, which is what is expected from SOs that are not reduced to Phase-heads with spelled-out complement domains.

In consequence, it should also be possible to extract from inside a DP in SC constructions. Let us consider a SC that contains two DPs in this context. The following SC has a DP as a SC subject and another DP as a SC predicate:

- (118) The president of the US is [sc the president of the US the leader of the free world]

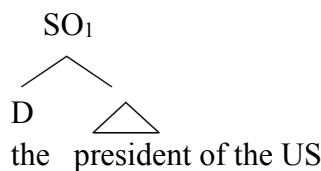
Under the H- $\alpha$  schema it is necessary that for the two SC constituents to undergo Merger at least one of them is merged as an LI with an EF, i.e. as a Phase-head with a spelled-out complement domain. At the same time, it is also sufficient, if at least one of the two SC DPs is merged as an LI, i.e. as a Phase-head with a spelled-out complement domain.

This in turn leaves the theoretical option that one of the DPs, i.e. the one that is not merged as an LI to form the SO that makes up the SC, does not transfer its complement.<sup>63</sup> Thus, up to this point the derivation proceeds as follows:

(119) Derivation of [sc the president of the US the leader of the free world]

Step 1: Construction of  $SO_1 = \text{the president of the US} \ \&$   
*construction of  $SO_2 = \text{the leader of the free world}$*

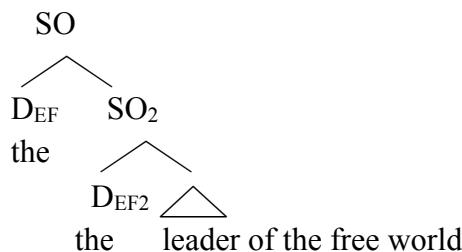
Step 2: Spell-Out of the complement domain of at least one SO (here:  $SO_1$ )<sup>64</sup>



Result of Step 2:

$D_{EF}$

Step 3: Merger of  $D_{EF}$  with  $SO_2$ :



If correct, this now predicts that it should be possible to extract from inside the SC predicate, simply because the complement domain of  $D_2$  has not been spelled-out. This is

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<sup>63</sup> At least the complement domain of this DP is not transferred straight away. It probably is transferred at some stage in the derivation. However, the question regarding the exact timing is something that I will remain agnostic to here.

<sup>64</sup> This is a random choice at this point. It could well be the other SO that spells-out its complement domain. I will return to the consequences that follow from whether it is  $D_1$  or  $D_2$  that spells-out its complement domain instantly.

indeed what we find:<sup>65</sup>

- (120) Of which world is the president of the US the leader?

Similarly, we predict that even extraction from DPs that are SC subjects should be possible, as long as the complement domain of the relevant DP has not been transferred. This is, of course, only possible when the SC predicate is also a DP that is merged as an LI with an EF. Thus, it should not be possible to extract from a SC subject when the SC predicate is either not a DP or - if it is a DP - did not spell-out its complement domain:

- (121) Of which country is the president the leader of the free world?

- (122a) \*Of which country is the president in the rose garden?

- (122b) \*Of which country is the president intelligent?

The grammaticality of (121) receives a natural explanation under the H- $\alpha$  schema. Assuming that the SC predicate, i.e. the DP *the leader of the free world*, is merged to the SC subject, i.e. the DP *the president of which country*, as an LI with an EF, the SC subject need not necessarily spell-out its complement domain as well. If it does not, it is still possible to subextract from the SC subject. This is not the case in the examples in (122) where the PP and AP cannot be merged as LIs with EFs simply because neither P nor A are Phase-heads. Thus, the only option remaining is that the DP *the president of which country* is merged as a Phase-head with a spelled-out complement domain. However, then

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<sup>65</sup> Again, I regard this structure as basically equivalent to:

- (i) Which world is the president of the US the leader of?

The flexibility of extracting just the DP or the *of*-PP can again be explained quite easily by analyzing the preposition just as a Case-assigning element, i.e. as a KP, as opposed to a lexical PP (cf. Narita 2011 for arguments that go into this direction, as well as comments in footnote 62 above and in footnote 9 of chapter 5 and the discussion of the data from the Slavic languages below, where English *of* is realized as genitive Case).

extraction is predicted to be impossible, which is what is confirmed by the data in (122).<sup>66</sup>

Further interesting data comes from languages that allow multiple *wh*-fronting. Let us look at Czech, which is a language with optional multiple *wh*-fronting. Starting with the SC in (119) *The president of the US is the leader of the free world*, we can observe the following. It is possible to extract both SC constituents:

(123a) Kdo co je? Czech

Who what is?

‘Who is what’

(123b) Kdo je co? Czech

Who is what

‘Who is what’

The form in (123a) displays multiple *wh*-fronting and the one in (123b) is the one where one of the *wh*-elements is left inside the SC. Both structures are compatible with the H- $\alpha$  schema. It is no surprise that both *wh*-elements can be extracted from the SC, because they can both be reduced to LIs with EFs.<sup>67</sup> Thus, extraction of both SC constituents is what is predicted to be possible in multiple *wh*-fronting languages.

Further, Czech allows subextraction from the SC predicate. Subextraction from the SC subject seems to be out for independent reasons:

(124a) \*Které země je prezident Czech

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<sup>66</sup> A similar case in point can be made by the following examples:

- (i) The man from Boston/Jack is angry about the problem
- (iia) About which problem is the man from Boston/Jack angry
- (iib) From where is the man from angry about the problem

The relevant structure of the SC is the following [sc[DP the man from Boston] [AP angry about the problem]]. Assuming, as before, that the AP is not a Phase, the only option is that the DP is merged as an LI, i.e. via the EF on the spelled-out Phase-head D. At the same time this predicts that subextraction from inside the DP is not an option. Subextraction from inside the AP, on the other hand, is predicted to be fine, because the complement domain of the A-head is not transferred, because A is not a Phase-head.

<sup>67</sup> Note incidentally, that if \*{t, t} were real (cf. Narita 2011: 124ff.), the example in (123a) should not be licit, because here both *wh*-constituents that make up the SO that is identified as a SC are moved out of their base position, leaving a SO with just two deleted copies behind. Narita (2011) speculates that this is a potential violation of FI. However, as is briefly discussed towards the end of chapter 4.4 the effects of the \*{t, t} constraint can be reduced to other independently motivated phenomena. The grammaticality of (123a) can be taken as a further indication that this is on the right track.

	Which.gen	country.gen	is	president.nom	
‘Of which country is the president the leader of the free world?’					
	vládcem/vládce		svobodného	světa?	
	leader.inst/leader.nom		free.gen	world.gen	
(124b)	Jakého	světa	je	prezident	Czech
	What.kind.of.gen	world.gen	is	president.nom	
‘Of which world is the president of the United States the leader?’					
	Spojených	státy	vládcem/vládce		
	United.gen	States.gen	leader.inst/leader.nom		

Now, given that subextraction from the SC subject is out, it should not be possible to combine subject subextraction with extraction of the SC predicate either. This is what is confirmed by the data in (125a). However, given that subextraction from the SC predicate is possible in principle, as (124b) shows, it is expected that in multiple *wh*-fronting languages this subextraction can be combined with extraction of the SC subject. This is because, for subextraction to be possible the SC predicate must still be accessible, i.e. the SC predicate must still be phrasal and cannot be just a spelled-out Phase-head that is reduced to an LI with an EF. This, however, also entails that the SC subject then must be merged as an LI with an EF and as such, it should also be available for extraction. This is what we see in (125b):

(125a)	*Které	země	je	prezident	Czech
	Which.gen	country.gen	is	president.nom	
	čím/co?				
		what.inst/what.nom			
(125b)	Kdo	jakého	světa	je	vládcem Czech
	Who.nom	what.gen	world.gen	is	leader.inst
‘Who is the leader of which country?’					

The H- $\alpha$  schema predicts that, even in multiple *wh*-fronting languages, it should not be possible to subextract from both SC constituents. In Czech, however, this is not testable, because *wh*-extraction from the SC subject is out for independent reasons. However, the

rest of the pattern found in Czech is totally in line with the predictions from the H- $\alpha$  schema.

What is also interesting about the Czech data is that, when comparing the bare copular constructions to SCs that are complements of *believe*-type verbs, exactly the same pattern emerges. Thus, in a SC like the one in (126) below, it is possible to fully extract both DPs that constitute the SC, as is shown in (127):

- (126) Nazvali prezidenta Spojených státy Czech  
       called.3.pl president.acc United.gen States.gen

‘They called the president of the United States the  
       vládcem svobodných národa  
       leader.inst free.gen nations.gen  
       leader of the free nations’

- (127a) Koho čím nazvali Czech  
       Who.acc what.inst called.3.pl

‘Who did they call what’

- (127b) Čím koho nazvali Czech  
       What.inst who.acc called.3.pl

‘Who did they call what’

And again, it is not possible to subextract from the SC subject, while subextraction from the SC predicate is much better:

- (128a) \*Ktherého státu nazvali prezidenta Czech  
       Which.gen states.gen called.3.pl president.acc  
       vládcem svobodných národa  
       leader.inst free.gen nations.gen

- (128b) Jakých národa nazvali prezidenta Czech  
       What.kind.gen nations.gen called.3.pl president.acc

‘Of which nations did they call the president

      Spojených státy vládcem

united.gen states.gen leader.inst  
of the United States the leader'

Thus, it is again not surprising that subextraction from the SC predicate combined with full extraction of the SC subject is licit, while subextraction from the SC subject combined with full extraction of the SC predicate is not:

- (129a) \*Čím kterého státu nazvali Czech  
What.inst which.gen state.gen called.3.pl  
prezidenta  
president.acc

(129b) Koho nazvali vládcem jakých Czech  
Who.acc called.3.pl leader.inst which.gen  
'Who did they call of which nations the leader'  
národa  
nations.gen

And ultimately it is again not possible to subextract from both SC constituents either, since subextraction from the SC subject is already blocked:

- |                |               |               |             |       |
|----------------|---------------|---------------|-------------|-------|
| (130) *Kterého | státu         | jakých        | národa      | Czech |
| Whic.gen       | state.gen     | what.kind.gen | nations.gen |       |
| nazvali        | prezidenta    | vládcem       |             |       |
| called.3.pl    | president.acc | leader.inst   |             |       |

Thus, what we can see here is that bare copular SC constructions and SCs that are complements of *believe*-type verbs pattern exactly alike in their extraction and subextraction possibilities. Thus, this can again be taken as an indication that the underlying structure for the two types of SCs is alike, i.e. the one described above.

Let us now turn to another multiple *wh*-fronting language: Russian. In Russian SCs the present tense copula is a covert element:

(131)	Prezident	SŠA	-	lider	Russian
	President.nom	USA.gen		leader.nom	
‘The president of the US is the leader					
	svobodnyx	nacij			
	free.gen.pl	nations.gen			
	of the free nations’.				

The copular is only realized overtly, when the SC is in the past tense. Additionally, the Nominative - Nominative marking on the two SC constituents is changed into a Nominative - Instrumental marking:

(132)	Prezident	SŠA	byl	liderom	Russian
	President.nom	USA.gen	was	leader.inst	
‘The president of the US was the leader					
	svobodnyx	nacij			
	free.gen.pl	nations.gen			
	of the free nations’.				

Now, just like in Czech, it is possible to extract both of the SC constituents in Russian. However, this is restricted to those bare copular SC constructions where the copular is overt, i.e. to the past tense variant in (132) and where the two SC constituents bare different cases:

(133a)	Kto	kem	byl?	Russian
	Who.nom	who.inst	was	
‘Who was what?’				
(133b)	*Kto	kto?		Russian
	Who.nom	who.nom		
	‘Who is what?’			

The exact position of the non-overt copular is hard to determine in (133b) and the ungrammaticality of the example may be the result of fronting two homophonous *wh*-

elements. This is highly reminiscent of the situation that is well-known from e.g. the discussion of Serbo-Croatian in Bošković (2002: 364):

- (134) \*Šta šta uslovjava  
          what what conditions  
          ‘What conditions what?’

According to Bošković the ungrammaticality of (134) is the result of fronting two homophonous *wh*-words. This is the same result that we can observe in (133b). Bošković (2002: 355) further argues that *wh*-fronting, which is obligatory in Serbo-Croatian as can be seen from the examples in (135), applies in (134) too, however, at PF the lower copy is pronounced in order to get rid of the homophony effect that is created by fronting the two *wh*-words, which are both *šta*. This is shown in (136):

- (135a) Ko šta kupuje? Serbo-Croatian  
          Who what bought  
          ‘Who bought what?’

(135b) \*Ko kupuje šta? Serbo-Croatian  
          Who bought what

(136) Šta šta uslovjava šta? Serbo-Croatian  
          What what conditions what  
          ‘What conditions what?’

In Russian SCs that do not have an overt copular, however, even if applied, the effect of the PF-deletion mechanism remains vacuous, because the result still is that two homophonous *wh*-words are pronounced in immediately adjacent positions:

- (137a) \*Kto               $\emptyset$         kto?              Russian  
 (137b) \*Kto    kto       $\emptyset$         kto?              Russian  
 (137c) \*Kto     $k\bar{t}o$        $\emptyset$         kto?              Russian

(137) clearly illustrates this. When fronting both *wh*-elements, as in (137b), PF requirements lead to phonological deletion of the higher copy. However, due to the lack of any phonologically realized intervening material, the result under which the lower copy should be pronounced, is still ungrammatical.

Evidence that this is on the right track comes from the sentences in (138). Here the null-copular is overt and the same pattern that is observed for Serbo-Croatian emerges:

- |                             |         |
|-----------------------------|---------|
| (138a) *Kto    kto    est'? | Russian |
| Who    who    is            |         |
| (138b) Kto    est'    kto?  | Russian |
| Who    is    who            |         |
| ‘Who is what’               |         |

Thus, the underlying structure for (138b) is the one in (139), which parallels the Serbo-Croatian examples above:

- |                                           |         |
|-------------------------------------------|---------|
| (139) Kto    kt <sub>o</sub> est'    kto? | Russian |
| Who    who    is    who                   |         |
| ‘Who is what?’                            |         |

However, in order to avoid these complications, I will focus on the SC constructions in which the copular is realized overtly, which has the additional effect that there will be a case distinction on the two DPs so that the corresponding *wh*-elements can conveniently be kept apart. This allows for interesting insights into superiority effects, as we will see below. So let us first take a look at subextraction. It is possible to subextract from either one of the two DPs:

- |                                                                             |         |
|-----------------------------------------------------------------------------|---------|
| (140a) Kakoj               strany               byl               prezident | Russian |
| Which.gen      country.gen      was      president.nom                      |         |
| ‘Of which country was the president the                                     |         |
| liderom               svobonyx               nacij?                         |         |

	leader.inst	free.gen.pl	nations.gen		
			leader of the free nations'		
(140b)	Kakix nacij	byl	prezident	SŠA	Russian
	Which nations.gen	was	president.nom	USA.gen	
			'Of which nations was the president of the US		
			liderom?		
	leader.inst				
			the leader?'		

The example in (140a) shows that subextraction from the DP constituent that is marked for Nominative case is possible and (140b) illustrates subextraction from the Instrumental marked DP.

Now it is important to recall that according to the H- $\alpha$  schema subextraction from one of the SC constituents is only possible when this constituent is still accessible, i.e. when the domain of the D-head is not sent to Spell-Out. Once the domain is spelled-out subextraction should be blocked. At the same time, in order for two DPs to be mergeable in a SC, at least one of them must Spell-Out its complement domain, simply because due to the unavailability of XP - XP Merger there is no other option. This also means that it should be possible to fully extract the DP that is merged with a spelled-out complement domain and to subextract from the DP that can still maintain its complement domain accessible. This is what is confirmed by the data below:

(141a)	Kto	kakix nacij	byl	liderom?	Russian
	Who.nom	which nations.gen	was	leader.inst	
				'Who was the of which nations the leader?'	
(141b)	Kem	kakoy strany	byl	prezident?	Russian
	Who.inst	which country.gen	was	president.nom	
				'Of which country the president was what?'	

(141a) shows that subextraction from the DP that shows Instrumental case marking can be combined with full extraction of the Nominative DP. In (141b) it is the Instrumental DP that is fully extracted and the Nominative DP is the constituent that is subextracted from.

Thus, following the H- $\alpha$  schema, it is the Instrumental DP that spells-out its complement domain in (141b) and the Nomative DP in (141a). Each of the two DPs is then merged with the respective other DP as an LI with an EF.

The last remaining question is whether subextraction from both DPs is possible. The H- $\alpha$  schema clearly predicts that this should not be possible, since at least one of the two DPs must be merged as a Phase-head with a spelled-out complement domain, i.e. as an LI with an accessible EF. Thus, there is simply no way in which the interior domain of both DPs can be accessible for *wh*-subextraction. This is supported by the data in (142):

(142)	*Kakoj strany	kakix nacij	byl	Russian
	Which county.gen	which nations.gen	was	
	prezident	liderom?		
	president.nom	leader.inst		

What is furthermore interesting about the Russian data is that superiority effects disappear in the SCs in which subextraction from one constituent is combined with full extraction of the other constituent. This is illustrated in (143):

(143a)	Kakix nacij	kto	byl	liderom?	Russian
	Which nations.gen	who.nom	was	leader.inst	
‘Who was of which nations the leader?’					
(143b)	Kakoj strany	kem	byl	prezident?	Russian
	Which countries.gen	who.inst	was	president.nom	
‘Of which country the president was what?’					

The sentence in (143a) parallels the sentence in (141a). The only difference between the two sentences is that in (143a) the subextracted *wh*-element precedes the fully extracted *wh*-constituent, whereas the reverse is the case in (141a). The same holds for (143b) which is analogous to (141b). This further underlines the assumption that the SC is the result of direct Merger of the two DPs, as is predicted by H- $\alpha$  schema.

The same can be observed in SCs that are complements of *believe*-type verbs, with one little caveat that I will abstract away from here: Superiority effects remain when the

Instrumental DP is subextracted from. In these cases, however, the other DP is not Nominative marked but Accusative marked instead, as is expected from an ECM-type construction. Yet, as long as the Accusative marked constituent that is extracted from remains inside the SC, superiority effects between the two *wh*-constituents likewise do not occur. The relevant data is provided below.

- |                                                                 |                   |                   |               |         |
|-----------------------------------------------------------------|-------------------|-------------------|---------------|---------|
| (144a) Kogo                                                     | kakix nacij       | ty                | dumaeš        | Russian |
|                                                                 | Whom.acc          | which nations.gen | you           | think   |
| ‘Who do you think they consider of which nations the leader?’   |                   |                   |               |         |
|                                                                 | oni               | sčitajut          | liderom       |         |
|                                                                 | they              | consider          | leader.inst   |         |
| (144b) *Kakix nacij                                             | kogo              | ty                | dumaeš        | Russian |
|                                                                 | Which nations.gen | whom.acc          | you           | think   |
|                                                                 | oni               | sčitajut          | liderom       |         |
|                                                                 | they              | consider          | leader.inst   |         |
|                                                                 |                   |                   |               |         |
| (145a) Kem                                                      | kakoj strany      | ty                | dumaeš        | Russian |
|                                                                 | Who.inst          | which country.gen | you           | think   |
| ‘What do you think they consider of which state the president?’ |                   |                   |               |         |
|                                                                 | oni               | sčitajut          | prezidenta?   |         |
|                                                                 | they              | consider          | president.acc |         |
| (145b) Kkakoj strany                                            | kem               | ty                | dumaeš        | Russian |
|                                                                 | Which country.gen | who.inst          | you           | think   |
| ‘What do you think they consider of which state the president?’ |                   |                   |               |         |
|                                                                 | oni               | sčitajut          | prezidenta?   |         |
|                                                                 | they              | consider          | president.acc |         |

So the superiority effect that is observed when the Accusative-DP is *wh*-extracted goes away when this is the constituent that is subextracted from. Again, similar to the data from Czech, this can be seen as an indication that both bare-copular SCs and SCs that are complements of *believe*-type constructions result from Merger of two DPs, of which one must be a spelled-out Phase-head. Finally, the data in (146) shows that SCs that are

complements of *believe*-type verbs behave exactly like their bare copular counterparts when both DPs are extracted from: they are ungrammatical:

(146a)	*Kakoj strany	kakix nacij	ty	dumaeš	Russian
	Which country.gen	which nations.gen	you	think	
	oni sčitajut	prezidenta	liderom?		
	they consider	president.acc	leader.inst		
(146b)	*Kakix nacij	kakoj strany	ty	dumaeš	Russian
	Which nations.gen	which country.gen	you	think	
	oni sčitajut	prezidenta	liderom?		
	they consider	president.acc	leader.inst		

Again this is fully expected under the H- $\alpha$  schema. There is no way in which subextraction from both DPs should be possible, because this would require that both DPs are merged with their complement domains still accessible. This, however, is impossible under the H- $\alpha$  schema, where at least one DP must spell-out its domain in order to be mergable *via* its EF.

So let us now turn to those aspects that *prima facie* are problematic for the analysis presented here and see how these problems can be overcome.

#### 4.6. \*Enter Phase<sup>68</sup>

As we have seen in the preceding sections, the H- $\alpha$  schema provides a means that allows for deriving SC constructions strictly in line with the SMT. Additional constraints like the \*{t, t} constraint were shown to be unnecessary complementations to the H- $\alpha$  schema and were therefore argued to be dispensable. What is indispensable is the assumption that Phase-theory plays a crucial role in the derivation of SC structures. In fact, it is the key assumption that is implied in the H- $\alpha$  schema (i.e. that phrases which are reduced to Phase-heads upon Spell-Out) that drives the account on SCs that is developed in this chapter. However, the H- $\alpha$  schema as it stands does not suffice for explaining the truly puzzling data already presented in the introductory chapter, which are to be discussed here. Let us start by comparing the examples in (147a) and (147b):

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<sup>68</sup> Major parts of this section stem from further development of collaborative work with Tom Roeper.

(147a) He made the cake beautifully.

(147b) He made the cake beautiful.

Despite their apparent similarity, only the sentence in (147b) is a SC. (147a) is an instantiation of a vP construction modified by an adverb instead (to which the XP - XP Merger problem applies regardless of course). Evidence for this seemingly bold assumption comes from the fact that in (147a) the DP *the cake* is a direct argument of the verb that can be incorporated without any problems (cf. also e.g. Roeper & Siegel 1978; van Hout & Roeper 1998; Harley 2009). This is illustrated in (148):

(148) He is a cake-maker.

All that is needed for the incorporation structure to be licit is that the verb that is incorporated into and the N that is incorporated obey the First Sister Principle and are immediately adjacent (cf. also the discussion in chapter 3 for further elaboration on the conditions of noun-incorporation). The same line of reasoning can be applied to adverb incorporation for structures like (147a). For the adverb *beautifully* to incorporate into the vP the modifier must be immediately adjoined to this constituent. This, arguably is the case in (149) where the adverb is adjoined in a high position from where it incorporates immediately onto the verb:

(149) This is a beautifully-made cake.

In both (148) and (149) it is the EF on the incorporated constituent that makes it available for the IM operation that leads to the incorporated structure combined with the conditions on incorporation that were discussed at length in chapter 2 and that will not be reiterated here.

Now, let us return to the SC structure in (147b). Like the adverbial modifier in (147a) both SC constituents can be extracted from their SC internal position to a higher position:

(150a) What/How did he make the cake **what/how?**                      Beautifully.

- |                                                     |            |
|-----------------------------------------------------|------------|
| (150b) What did he make [sc the cake <b>what</b> ]? | Beautiful. |
| (150c) What did he make [sc <b>what</b> beautiful]? | The cake.  |

The example in (150a) illustrates the *wh*-extraction of the vP modifier, the examples in (150b) and (150c) illustrate the *wh*-extraction of the SC subject and predicate respectively. Notice, though, that extraction of the SC predicate is only possible in *wh*-contexts, i.e. the SC predicate, which is an AP has to be treated as a *wh*-element for it to be able to move. This is because, as has been argued in the preceding chapters, *wh*-extraction should only be possible, when the *wh*-extracted constituent moves as a Phase-head with a spelled-out complement domain.<sup>69</sup> This is, of course, due to the fact that the EF on the *wh*-constituent would not be accessible otherwise.

So, SCs of *belive*-type verbs, although they are in the complement domain of the *v*-head and although each of the SC constituents is merged as a spelled-out Phase-head in *wh*-contexts do not constitute an island for subextraction.

However, the following observations are a bit disconcerting in this context. We already know that incorporation of adverbs is not a problem (cf. (149)). We also know that adverbs and SC constituents are both available for *wh*-extraction. But why then is it impossible to incorporate any of the two SC constituents? Like the adverb, the SC constituents are immediately adjacent to the verb, but the SC seems to behave like an island under incorporation:

- (151a) This cake is beautifully made **beautifully**. adverb incorporation
- (151b) \*He beautiful-made [sc the cake **beautiful**]. SC predicate incorporation
- (151c) \*He cake-made [sc **eake** beautiful]. SC subject incorporation

The same question emerges for the data in (152). As the examples illustrate it is also impossible to incorporate any of the two SC constituents into a noun (152a), into a nominal (152b) or into a passive (152c). Again this is totally unexpected under the First

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<sup>69</sup> To see in detail how IM in terms of *wh*-movement actually works under an account that subscribes to the H- $\alpha$  schema cf. Narita (2011). In essence, it is not the *wh*-feature that percolates and makes the *wh*-constituent an accessible Goal for a probing C-head. Rather it is the Q-feature on a Q-head (cf. Cable 2010), which is a Phase-head, that is being probed. Thus, it is the Q-head that moves as a Phase-head with a spelled-out complement domain along by now familiar lines.

Sister requirement and should fall out naturally as an option under the H- $\alpha$  schema. At least, incorporating the SC subject should be an option, because this is most likely merged as a Phase-head with a spelled-out complement domain and should thus be remergable as an SO with an accessible EF:

- (152a) \*He is a cake-maker [sc ~~e~~ake beautiful]
- (152b) \*The cake-making [sc ~~e~~ake beautiful]<sup>70</sup>
- (152c) \*The cake was beautiful made [sc ~~the~~ cake beautiful]<sup>71</sup>

Thus, the same pattern as above emerges. None of the two SC constituents can be extracted and SCs seem to behave like islands. However, even in the passive construction long-distance extraction from inside the SC is still possible:

- (153) The cake was made [sc ~~the~~ cake beautiful]

So again, regarding the question of whether SC subextraction is possible or not, the answer that can be derived from the empirical data is that we are getting a mixed message. *Wh*-extraction is fine, long-distance extraction in passive constructions is fine too, but incorporation into passives, nouns or verbal constituents is blocked. And crucially, it is also blocked for those SC constituents which are merged as Phase-heads with spelled-out complement domains, i.e. as LIs with EFs. Finally, it is worth noticing that we can even

<sup>70</sup> Notice that this form is particularly interesting, because I have shown in chapter 3 that it is, in principle, possible to incorporate into a nominal and maintain e.g. aspectual modification:

- (i) bus-driving into the city
- (ii) grass-cutting for hours
- (iii) ice-cream eating in the evening

The reason, of course, was that the *-ing* affix is attached in the verbal domain, before nominalization but after incorporation. When *-ings* or some other higher nominalizing affix is attached aspectual modification is out:

- (i') \*bus-drivings/bus-driver into the city
- (ii') \*grass-cuttings/grass-cutter for hours
- (iii') \*ice-cream-eatings/ice-cream-eater in the evening

Apparently, in the SC cases in (152a) and (152b), however neither high nor low incorporation is possible.

<sup>71</sup> Notice that the passivization structure would also be a violation of  $*\{t, t\}$ . However, none of the other illicit incorporation structures discussed here is. Thus, it is much more desirable to account for all of these structures in the same way rather than ascribing (152b) to the  $*\{t, t\}$  constraint and still having to account for the other examples differently.

put the adverbial modification structure and the SC constituents together and the result is still grammatical:

- (154) He made [sc the cake beautiful] beautifully.

Again, this can be explained in a straightforward way by the H- $\alpha$  schema. The derivation of the SC is the same as usual and results from the merger of the DP Phase-head and the AP that make up the SC subject and the SC predicate respectively where the complement domain of the DP has been spelled-out. Then the  $v$  constituent is merged via the EF on  $v$  and finally the adverbial modifier is merged presumably via the EF on the adverb.<sup>72</sup>

So what are the conclusions that can be drawn from these observations? First it is clear that technical solutions like the First Sister Principle or immediate dominance (cf. Roeper & Siegel 1978, van Hout & Roeper 1998, Harley 2009) can account for some of the data but not for all. In particular in the context of SCs these solutions are inappropriate because they do not explain why SCs behave like islands in some contexts but not in others. On the other hand, the H- $\alpha$  schema, which is completely unconstrained and which can account for the derivation of all of the structures via EFs cannot provide an answer to the question why incorporation that involves extraction from the SC is not possible either.<sup>73</sup>

So, the solutions discussed so far can account for some of the data but they leave other data unexplained and they are not conceptually natural. Extra-stipulations like immediate dominance or the First Sister Principle are required to constrain the results from the H- $\alpha$  schema and make the analysis work even in some cases. Hence, what we are looking for is a constraint that is natural and that can account for all of the data discussed

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<sup>72</sup> This is totally in line with the frequently made observation that adjuncts are Phases (cf. also Narita 2011). As a Phase-head under the H- $\alpha$  schema they will always be accessible via their EF and thus susceptible to Merge. Alternatively, it can be argued that the EF on the Phase-head  $v$  provides the relevant input for the H- $\alpha$  schema once the  $v$  has spelled-out its complement domain. Both versions are easily conceivable and are regarded as equally suitable for the moment. In the remainder, I will follow Narita's (2011) conception that adjuncts are Phases, without further motivating this, simply assuming that the alternative strategy is also available.

<sup>73</sup> Just to be truly explicit here, notice that an antisymmetry based account along the lines of Moro (2000) or a predication based account as the one in den Dikken (2006; 2007a;b) does not fare any better here. If, following Moro (2000), IM were a sufficient criterion for PoS dissolution, incorporation should solve the problem perfectly fine. If predication were the relevant criterion, at least incorporation inside the SC should occur as a standard means of dissolving the problem.

in this section. I would like to propose that such a constraint is derivable from the SMT and its implications on Phase-theory. In essence the SMT identifies Phases as a joint boundary on syntax, semantics and phonology (cf. e.g. Chomsky 2001, 2004, 2008; Berwick & Chomsky 2011). If we now argue that the SMT generates a derivational constraint that operates in combination with the H- $\alpha$  schema, an explanation that accounts for the data discussed here is possible. This constraint is *\*Enter Phase*:

(155) *\*Enter Phase*

No movement from an internal position of a Phase into an internal position of another Phase is allowed.

This constraint is somewhat reminiscent of the PIC (cf. Chomsky 2001 vs. Chomsky 2004, 2008). However, it is superior to the PIC in so far as it fills a loophole that is created by the application of the H- $\alpha$  schema. As mentioned before, there are two versions of the PIC (cf. Richards 2007, Grewendorf & Kremers 2009, Gallego 2010). The weaker version is the one that den Dikken's (2007a;b) predication based analysis of Phase extension seems to operate with. However, under the analysis in chapter 4.3 it has turned out that, at least under den Dikken's own account, this is too weak to be of any explanatory value. Under the H- $\alpha$  schema the stronger version of the PIC seems to fall out automatically (cf. Narita 2011). However, nothing prevents us from internally merging an LI with an EF, i.e. a Phase-head with a spelled-out complement domain, by extracting it from inside a Phase-domain, say of vP, and remerging it outside of the relevant Phase-domain<sup>74</sup>, just as much as nothing would prevent us from carrying out the same operation targeting the Phase-domain itself. This is what makes *\*Enter Phase* a much more precise constraint than the PIC and it is enough to explain the incorporation data in (113/149) repeated below:

(156) This is a beautifully-made cake.

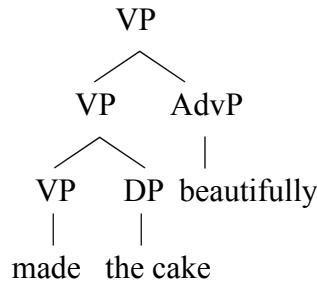
The vP *made the cake beautifully* is a Phase (cf. among many others Fox & Pesetsky 2003;

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<sup>74</sup> This is the standard case of *wh*-movement that proceeds via the outer specifier of vP, for instance (cf. e.g. Grewendorf & Kremers (2009) for execution of this type of IM). Be it *wh*-movement via feature percolation of *wh*-features or via a Q-Phase-head. Both scenarios are compatible here.

Chomsky, 2004; Gallego 2010 etc.) and incorporation here takes place within the same Phase. Thus, *beautifully*, which by - virtue of its status as an adjunct - is a Phase-head that is susceptible to IM via its EF, can incorporate precisely because it does not leave the vP cycle. Thus, incorporating the modifier here does not violate \**Enter Phase*<sup>75</sup>.

(157)



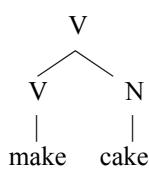
In the examples where incorporation is blocked this is not the case. Here the SC constituents and the verb onto which one of the SC constituents incorporates are in different cycles and this is what blocks the incorporation operation. So, merging from one Phase into the next is not an option not even when the First Sister Principle, immediate dominance or other technical implementations are not violated. And this is what is expressed in \**Enter Phase*.

<sup>75</sup> The noun incorporation in (148), which is also repeated here, can be accounted for along the same lines.

(i) He is a cake-maker.

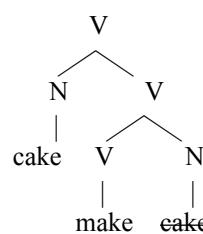
According to the analysis of incorporation in gerunds, discussed in great detail in chapter 3 of this dissertation, the noun in (i) incorporates onto the verb and the N + V complex is then merged with a higher nominalizing Phase-head that hosts the *-er* suffix. This is schematically illustrated below (for a more fine-grained representation cf. the analysis in chapter 3):

(iiia)



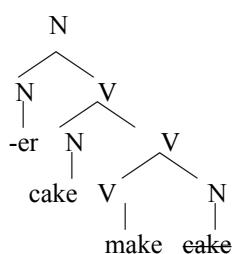
→

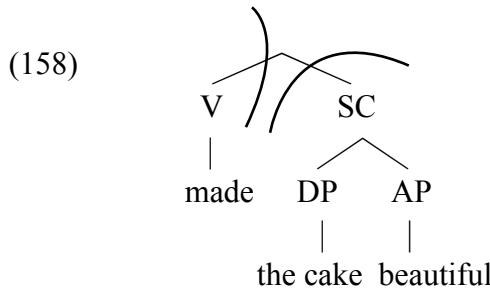
(iib)



→

(iic)





So, what *\*Enter Phase* does is that, on the basis of assumptions that are immediately derivable from the SMT, it restricts the output of the H- $\alpha$  schema in such a way that the incorporation data discussed here receive a natural explanation. Notice that *\*Enter Phase* does not restrict IM *per se*. It is still possible to displace a SO across a Phase-boundary, which is what is expected. The only restriction that *\*Enter Phase* imposes is that IM target a position outside of the immediately dominating Phase-head. Thus, the left periphery is still available for e.g. *wh*-extraction of SC constituents (cf. also the data in (150)).

Corroborating evidence that this is on the right track comes from the two sets of data. The first comes from German where a resumptive *do* is needed, the second are binding facts. Let us deal with each in turn and start with the German data:

- |                                                                                                             |                    |
|-------------------------------------------------------------------------------------------------------------|--------------------|
| (159a) Ted hat [sc Vicki laufen] gesehen<br>Ted has Vicki run.inf see.perf.part<br>‘Ted saw Vicki run’      | German             |
| (159b) Wen hat Ted laufen gesehen?<br>Who has Ted run.inf see.perf.part<br>‘Who has Ted seen running?’      | Vicki<br>Vicki.acc |
| (159c) *Was hat Ted Vicki gesehen?<br>What has Ted Vicki see.perf.part                                      | German             |
| (159d) Was hat Ted Vicki tun gesehen?<br>What has Ted Vicki do see.pref.part<br>What has Ted seen Vicki do? | Laufen<br>Run.inf  |

Again, *wh*-extraction provides a window into the internal structural make-up of the SC. It is possible to *wh*-extract the SC subject without any complications, as the example in (124/159b) illustrates. Extracting the SC predicate is not possible without *do*-support

though. The question is why this should be the case. Especially in light of the fact that it is possible to extract other SC predicates without any problem. Recall again the data already discussed above:

- |                                               |                                 |
|-----------------------------------------------|---------------------------------|
| (160a) Ted hat [sc Vicki unglücklich] gemacht | German                          |
| Ted has Vicki unhappy made                    |                                 |
| ‘Ted has made Vicki unhappy’                  |                                 |
| (160b) Wen hat Ted unglücklich gemacht        | Vicki                    German |
| Who has Ted unhappy made?                     | Vicki.acc                       |
| Who has Ted made unhappy?                     |                                 |
| (160c) Was hat Ted Vicki gemacht?             | Unglücklich    German           |
| What has Ted Vicki made?                      | Unhappy                         |
| ‘What has Ted made Vicki?’                    |                                 |
| (160d) *Was hat Ted Vicki tun gemacht?        | German                          |
| What has Ted Vicki do made                    |                                 |

As the examples show, the pattern for *wh*-extraction of the SC predicate is reversed here, while the pattern for *wh*-extraction of the SC subject remains stable. Notice that none of the approaches to SCs discussed in the preceding sections can account for this subtle distinction. However, it falls out naturally from the analysis presented here. Recall that a prerequisite for XP - XP Merger of the kind observed in SCs is that the SC constituents are merged as spelled-out Phase-heads, because otherwise their EFs were not accessible.

As has been argued in the preceding subchapter, for Merger to operate, it is, in principle, enough if one of the SOs that partake in the Merge operation is equipped with such an EF. However, for extraction to be possible, the SO to be extracted must be accessible as an LI with an EF. This, however, should not be a problem for the *wh*-constituent in (160) neither. Additionally, the SC subjects in both (159) and (160) are referential DPs which are most certainly merged as D-heads with a spelled-out complement domain. So what we are looking at is the schematic structure in (161):

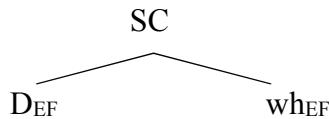
(161a) Merger of DP and Merger of *wh*-P



(161b) Transfer of the complement domain of DP and of *wh*-P

$D_{EF}$                        $wh_{EF}$

(161c) Merger of DP and *wh*-P by virtue of the EFs on Phase-heads D and *wh*.



Now, when comparing this to the situation in (159) above, it is important to notice that the LI *laufen* is definitely untensed. This is what makes it comply with the definition of SC in (20) repeated here for convenience:

(20) A SC is a subject-predicate structure lacking tense.

However, as (among many others) Marantz (2007) argues it is only  $v$  that categorizes a root as verbal and instantiates a Phase. Now, for a SC constituent to be *wh*-extractable it must be a Phase-head. Recall from the discussion of Narita (2011) above that all IM must proceed via a spelled-out Phase-head with EFs accessible. This explains, why it is not possible to extract *laufen*. Since *laufen* is only a VP and not a vP it can be merged to the SC subject via the EF on the spelled-out D-head. However, the VP cannot be *wh*-extracted, because it is not a (spelled-out) Phase. This is what makes *do*-insertion mandatory. It is a last resort mechanism that completes the root Phase and allows reconstruction after *wh*-

extraction.<sup>76</sup>

Now let us turn to the binding facts. If the analysis suggested above is on the right track, we should expect that binding into the SC is restricted to clearly definable circumstances. Consider the following sample sentence in this context:

- (162) Jack showed Bobby himself

It is claimed that the sentence above is ambiguous. The following data bring this out even more clearly:

- (163) Vicki showed Teddy herself/himself

So here both the subject of the matrix clause and the subject of the SC can bind the reflexive pronoun. This binding relation is maintained even when the matrix clause in (163) is embedded into another SC:

- (164) Bobby made Vicki show Teddy PRO herself/himself.

However, it is not possible to bind across more than one SC boundary, as the following examples demonstrate:

- (165) Vicki made Teddy wash PRO \*herself/himself

- (166) Bobby made Vicki make Teddy wash PRO \*herself/himself

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<sup>76</sup> Notice that the following data from English arguably corroborate this pattern:

- |       |                             |       |
|-------|-----------------------------|-------|
| (i)   | Ted made [sc Vicky happy]   |       |
| (ii)  | Ted made [sc Vicky laugh]   |       |
| (i')  | What did Ted make Vicki?    | Happy |
| (ii') | What did Ted make Vicki do? | Laugh |

*Wh*-extraction of the adjective is fine and does not require *do*-support, however, *wh*-extracting the untensed verb (or (verbal) root for that matter) requires *do*-insertion. This, of course, begs the question of the status of the *wh*-word *what* which apparently can replace DPs - which are Phases - and APs - which are Non-Phases without further ado, while replacement of V is only possible with *do*-support. Notice though that in all three cases *what* itself maintains its status as a Phase-head - otherwise, of course, *wh*-extraction in any of these cases would be impossible under the H- $\alpha$  schema.

Here it is only the SC subject of the embedded clause that can bind the reflexive pronoun. This is what is expected and shows that small clauses behave totally regular under binding.

A natural extension of this approach can be applied to verb-particle constructions and their nominalizations. Let us look at some of the data here:

- (167a) Jack casts his brother out
- (167b) Jack casts out his brother
- (167c) \*Jack outcasts his brother
- (167d) the outcast
- (167e) \*the castout<sup>77</sup>

In (167a) and (167b) the SC constituents, i.e. the particle and the DP object, can be ordered freely. This is what is expected, because all that is needed is that the EF on the SOs be accessible for Merge. Merge then is within the same cycle. When the verb *cast* is merged via its own EF in the next step, this constitutes a new cycle, because the verb is also a Phase-head. Therefore, following from \**Enter Phase* it is not possible to incorporate the particle onto the verb, as the ungrammaticality of (167c) illustrates. In the grammatical example in (167d) in turn incorporation is not onto the verbal head, instead an additional

<sup>77</sup> This is a fairly robust pattern:

- (ia) it comes out
- (ib) the outcome
- (ic) \*it outcomes
  
- (iia) it grows out
- (iib) the outgrowth
- (iic) \*it outgrows (except with a special meaning, but cf. the *outbreak - breakout* cases in (169))
  
- (iiia) he lifts up
- (iiib) the uplift
- (iiic) \*he uplifts it
  
- (iva) the disease broke out
- (ivb) the outbreak of the disease
- (ivc) \*the disease outbroke

Potential counterexamples like *the download*, *the overthrow*, *outly* can all be dismissed, because there are no verbal structures like:

- (va) \*he loads it down
- (vb) \*they throw government over
- (vc) \*this area is lying out

(Cf. also Roeper 1999 for a conclusive analysis of these forms).

nominal Phase-head is merged and the particle can incorporate onto this head from within the lower Phase-cycle. So here the following structure emerges:

- (168) [out [NP [v cast]]]

So, completely in line with *\*Enter Phase* here the particle incorporates onto the nominal structure and thus does not violate the Phase-boundary imposed by the lower V (cf. also Roeper 1999 for arguments that go into a similar direction). In the again ungrammatical (167e) incorporation is blocked, because here it would target the lower V instead of the higher N-Phase, but only at a stage at which the derivation has already reached the N-cycle - hence the ungrammaticality of this example.

One remaining question is how existing double forms, which are exemplified in (169) fit into the pattern:

- (169a) the breakout

- (169b) the outbreak

The derivation for (169b) follows the same principles as the derivation in (168), which has been discussed above. This means that the particle is incorporated onto the higher nominal structure and not onto the lower V - strictly in line with *\*Enter Phase*. So the particle is displaced into the higher nominal cycle and not into the immediately dominating verbal cycle.

The puzzling case is the one in (169a). Here the whole verb-particle complex is nominalized and no incorporation takes place. Thus, the structures that emerge for the two forms in (169) are illustrated in (170):

- (170a) the [NP [VP breakout]]

- (170b) the [out [NP [v break]]]

So, in the absence of IM operations in (170a), no violation of *\*Enter Phase* is expected, which is why this form is grammatical. In fact, it is worth noticing the distinction in meaning between the forms. This strongly suggests that the derivational history is not the

same for the two forms and the derivational constraint discussed here provides a natural way of implementing this.<sup>78</sup>

Hence, *\*Enter Phase* proves as a natural concept for explaining certain incorporation operations that are otherwise motivated by some stipulated mechanisms, which cannot account for the full pattern. And for natural concepts it is not unexpected to find sister concepts. One such concept indeed exists: *Vacate Phase* (cf. Roeper *in preparation*). Roeper (*in preparation*) argues that *Vacate Phase*, which is the mirror image of *\*Enter Phase* is obligatory in the derivation of open, non presuppositional questions. Questions like these are standardly generated by subject-auxiliary inversion.

- (171a) He can play ball.
- (171b) Can he ~~can~~ play ball?

The crucial question in this context is what triggers the movement of *can* in (171b). According to standard assumptions (cf. e.g. Chomsky 2008; Grewendorf & Kremers 2009) T is not a Phase-head *sui generis*. But it can behave like a Phase-head under feature inheritance from C. Now, if feature inheritance were sufficient why then is movement necessary in (171b)?

Roeper (*in preparation*) argues that *Vacate Phase* provides a natural answer in this context. Assuming that the tense information on the T-head is linked to a proposition (cf. Hinzen 2007), moving the T-head out of the Phase prior to Transfer then means that a proposition is never generated. This is exactly what is at play in (171b). Moving the auxiliary out of the inherited T-Phase head (cf. Branigan 2005, Fox & Pesetsky 2005) prevents the generation of a proposition and thus leads to a non-propositional question interpretation.

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<sup>78</sup> Notice again that the forms below do not provide counter-examples:

- (i) take out, strike out, lock out, knock out

These forms differ from the *breakout* example in so far as the verbal forms listed above can all take direct DP objects, this is not possible for *breakout* though:

- (iia) he breaks out from/of jail
- (iib) \*he breaks out jail

Finally, Roeper (*in preparation*) provides the following example as further indication that this is on the right track:

- (172) He can play ball, can't he?

The first part of the sentence is equivalent to the example in (171a) and is most certainly derived in the same fashion. Thus, here a proposition is generated when the T-head which is a Phase-head *qua* feature inheritance from C is spelled-out. The question tag, which is probably attached in a later cycle, presumably by Late(r)-Merge (cf. e.g. Lebaux 1988, Boeckx 2008a), cancels the proposition established in an earlier cycle. So in this case here, a proposition is established due to the absence of Phase-vacating subject-auxiliary inversion (as in (171b)), and the role of the question tag is simply to negate or confirm this proposition.

#### 4.7 Conclusion

In this chapter another domain in which Merge allegedly creates a PoS is subjected to closer scrutiny. This is the domain of SCs. Here two approaches that are based on PF- and LF-considerations respectively have been investigated.

One is the approach outlined in Moro (2000, 2009) which is based on considerations of dynamic antisymmetry. Here a distinction is made between copular (or bare) SCs and SCs which are complements of *believe*-type verbs. The former are analyzed as the product of Merger of two XPs that results in a point of symmetry (PoS) (cf. also Pereltsvaig (2001) for a similar analysis). This PoS is a problem for the LCA (cf. Kayne 1994), since it prevents linearization at PF and thus has the potential of stalling the derivation. This problem is overcome in Moro (2000) by remerging one of the SC constituents in a higher specifier position, thus guaranteeing LCA compliance.

The alternative approach pursued e.g. in den Dikken (2006; 2007a;b) is that of analyzing SCs as predication structures. The predication relation is mediated by a functional head, termed Relator, to which the SC constituents are merged as subject and predicate. Under this analysis no PoS ensues. In den Dikken (2007a,b) the analysis is developed further and predictions, i.e. RPs, which are SCs, are identified as inherent Phases. In order to be able to account for predicate inversion structures and for equative

SCs den Dikken argues that these Phases can be extended by moving the Relator head to a higher functional head F, thus allowing either the subject or the object to displace to a higher specifier position as well. Certain extraction properties automatically follow.

Den Dikken's (2006; 2007a;b) analysis is broader in its empirical coverage, because it applies to bare SCs and to SCs that are complements of *believe*-type verbs. For the latter Moro (2000) assumes an asymmetric structure as well, but remains silent on the specifics of the functional head that introduces the asymmetry, and on the question why an analysis along these lines does not carry over to bare SCs. However, despite its wider range, the predication analysis of den Dikken is not without problems either. Among those problems are the still unclear role of head-movement in Phase extension, the identification of Phases as predication relations, the syntactic definition of predication, the role of the Relator head and the meaningless (cf. den Dikken 2007a) functional head F it moves to etc.

Thus, two radically different analyses of SCs that take heed of PF (i.e. LCA-related) or LF (i.e. predication-related) properties of SCs respectively but otherwise face a number of ancillary problems are available. What these two analyses have in common, despite their radically different interface orientation, is that they both amount to reverse-engineering the SMT.

By relating SCs to the H- $\alpha$  schema (cf. Narita 2009, 2011) the analysis presented here offers a novel account that avoids the problems outlined above. According to the H- $\alpha$  schema Merge requires at least one of the two elements participating in the operation to be equipped with an EF. Since EFs never delete, but also do not percolate, they are operative on LIs introduced into the derivation from the lexicon by EM or on Phase-heads, whose complement domain is spelled-out. The latter results from the fact that upon Spell-Out not only the complement of a Phase-head but also the syntactic relations established with regard to it are discharged (cf. Narita 2011). This renders specifier-less Phase-heads into LIs with an active EF and has the effect of rendering XP - XP structures illicit. A somewhat different line of reasoning brings Kayne (2010) to the same conclusion, but does so at the cost of reintegrating precedence information into narrow syntax and is therefore a deviation from the SMT.

The application of the H- $\alpha$  schema to SCs made it immediately obvious that cases of XP - XP Merger that lead to a PoS never ensue. Nor is a SC an instantiation of a Relator

phrase of dubious status. Instead both SC constituents are merged as Phase-heads with spelled-out complement domains. This Merge configuration makes it impossible to incorporate any of the SC constituents onto the Phase-head of the higher cycle, while long-distance extraction of these constituents and subextraction patterns remain a natural option. The former is shown to be a natural fall-out of a derivational constraint that follows from the SMT. This constraint is *\*Enter Phase*, which has a sister constraint in *Vacate Phase* (cf. Roeper *in preparation*).

Thus, the approach pursued here provides a narrow syntactic analysis of SCs that is in line with the SMT and that can account for displacement facts without making recourse to PF or LF demands.

## 5 Theoretical Implications

In the preceding three chapters three empirical domains have been investigated: small clauses, nominal gerunds and nominal root compounds. Standardly in the derivation of structures in each of these domains a PoS is identified. This PoS, it is equally standardly argued, needs to be dissolved for the derivation to continue. The classic conundrum here is whether this PoS dissolution is a phonological or a syntactic matter. In chapters two, three and four it has been shown that there is a correlation between PoS dissolution and label-identification. In each case, it has been shown that a PoS arising in the derivation is dissolved as soon as pieces of previously derived structure are sent to the interfaces for Spell-Out and Interpretation. In this sense, PoS dissolution has been shown to be a narrow syntactic phenomenon that is regulated by interface requirements imposed by the SMT.

The SMT, in turn, as has been argued in the introductory chapter, is the strongest possible guideline for any explorations into the inner workings of the human faculty of language in the narrow sense, or syntax for short. As such, the SMT is a defining part of, if not the one essential ingredient to, the core assumptions of the research agenda laid out in the *Minimalist Program* and its further development (cf. comments in chapter 1 and also in Boeckx 2006). So, the fundamental assumption of the SMT - that syntax is an optimal solution to interface requirements - here is the *tertium comparationis* against which the analyses in the previous chapters have been cast. This chapter now looks at the question of what theoretical implications follow from these analyses for the advancement of minimalist theorizing. Of course, aiming to be comprehensive and/or concise in this context is a bold and hopeless venture. However, at various points the theoretical turns that have been taken in this dissertation have a direct bearing on some of the hot button issues that are under continued discussion in the linguistic literature. This has not always been made very explicit in the preceding chapters, mainly because it would have been a distraction from the line of reasoning pursued. However, in this chapter some of these implications shall be brought to the front. As already indicated above, the aim here is not to deliver a full-fledged account on all and one theoretical questions, but rather to tie the insights that can be derived from the fine-grained analytical steps taken here into the broader perspective of contributing to theoretical advancements.

In this context three aspects will be of primary relevance. First, the question of what the analysis presented here reveals about the identification of (the properties of)

Phases will be addressed. Second, implications for the question of whether head-movement should play a role in narrow syntax will be reviewed and finally, the status of  $\varphi$ -features will be looked at. Let us start by looking at the role of head-movement first, since the existence of head-movement within narrow syntax is one of the prerequisites for some of the takes on Phases that have been discussed here. For instance, it is essential for a Phase extension analysis in the sense of den Dikken (2007a, b) and the non-existence of head-movement would seriously undermine this analysis. In a second step we will focus on Phases themselves and  $\varphi$ -features, which are traditionally taken as an indicator for Phase-heads, will be scrutinized last. In this context questions on what the relevant  $\varphi$ -features are and the interplay between  $\varphi$ -features, Phases and Merge, which has already been commented on in chapter 1, will be dealt with.

## 5.1 Head-Movement in Narrow Syntax

The debate on whether head-movement is an operation that takes place in narrow syntax or after Spell-Out at the sensorimotor interface has a long-standing tradition in the linguistic literature. To recapitulate all sides of the argument is definitely beyond the scope and intention of this chapter, and before I look at the two most prominent trends, let me point out that the approach to head-movement that is taken here differs considerably from both of these trends. Head-movement, which is identified as a syntactic operation here, is shown to be, in fact, the only type of movement operation that is available in narrow syntax. Only elements with EFs, i.e. LIs are susceptible to movement at all. Depending on the structural configuration the candidates for head-movement are found in, this movement operation leads to incorporation, i.e. when the conditions for syntactic head-incorporation described in Roberts (2010) (cf. also the discussion in chapter 2) are met. Alternatively, the movement operation leads to displacement of a Phase-head with a spelled-out complement domain. This is what makes the latter a case of successive cyclic head-movement (SCHM), which does not occur in the incorporation structures, because this would amount to either vacuous movement or to a violation of the extension condition (cf. below for details)

However, let me start by looking at the two broad trends that are discernible in the literature for the treatment of head-movement. Both have in common that they deny the existence of head-movement as is within narrow syntax. Instead, following Chomsky

(1995a, 2000 *et passim*) they either identify it as a PF phenomenon (cf. e.g. Koopman & Szabolcsi 2000; Boeckx & Stjepanović 2001; Parrot 2001; Harley 2004; Schorlemmer & Temmerman 2011) or they identify it as a case of remnant movement (cf. e.g. Koopman & Szabolcsi 2000; Nilsen 2003; Müller 2004). In-between positions that are taken here can also be distinguished into two types. On the one hand it is argued that head-movement is neither an operation that takes place at PF nor in narrow syntax. Instead it is relegated to the morphological component (cf. e.g. Parrot 2001; Matushansky 2006 for suggestions along these lines). Alternatively, it is argued that head-movement can be found in narrow syntax and at PF (cf. Schorlemmer & Temmerman 2011 and (to some extent) Roberts 2010).

Before going into the details of which of these approaches are *a priori* (in)compatible with the account pursued in the preceding chapters, some brief comments on the identification of heads may be in order. As Matushansky (2006: 69-70) remarks, the answer to whether head-movement is a PF or a syntactic phenomenon may very well hinge on the definition of head. This is particularly relevant when there is a distinction to be made between simple and derived heads.

The BPS perspective taken in the present approach automatically rules out the standard definition of heads prevalent in the P&P framework, according to which a head is identifiable by the property of being a terminal node (cf. Chomsky e.g. 1981, 1986). With the abandonment of the distinction between terminal and non-terminal nodes, which also undermines the original assumptions of the LCA (cf. Kayne 1994), the identification of heads as terminal elements is virtually impossible. Matushansky (2006: 69) discusses the merits of identifying heads as feature bundles and/or LIs that are inserted from the lexicon (or Numeration for that matter). As Matushansky points out, while applicable to a number of cases, this definition is problematic for all kinds of derived heads, which are “syntactically atomic [but] internally complex” (2006:69). For these latter cases, Matushansky (2006) argues that these heads are built in the morphological component by M-Merger, and thus enter syntax as an atomic unit. So, in her account all movement is motivated by a combination of the operations Search F, which is a cover term for a number of operations (e.g. Agree or C-Select), and Merge. The latter operation is retained as the most basic and cost-free operation applicable within narrow syntax operating on SOs and is thus close to Chomsky’s (e.g. 2008) characterization of the operation. Search F, in

contrast, operates on features, as is expected from any Agree or C-selection operation, and thus possibly targets units smaller than those that Merge operates on.

Hence, under this view, whenever Search F identifies an item, say a feature, that cannot undergo Merge, standard assumptions on pied-piping require that the smallest item containing the targeted feature is moved (cf. Matushansky 2006 for details). Now, whenever such a movement configuration applies and leads to the result that two heads are immediately adjacent, M-Merger applies and bundles the two heads together, returning them to syntax as just one item (cf. *ibid*: 97).

While this may seem like a perfectly fit solution for getting around the problem of derived heads in syntax, it comes with a number of other complications. For one, although Matushansky goes to quite some length to show that M-Merger is an independently motivated operation the application of which is unrelated to the operation of Search F (cf. *ibid*: 86-94), the status of a morphological operation within syntax raises some questions on the interaction between morphology and syntax.

If M-Merger is a morphological operation that is applicable only under narrowly defined circumstances that are dictated by the syntactic configuration (i.e. two adjacent heads)<sup>1</sup>, this suggests that the operation is a post-syntactic operation.<sup>2</sup> However, if the output of M-Merger is an item that is morphologically complex but that is syntactically opaque, i.e. a derived head that feeds into further syntactic computation, this suggests that the output of a post-syntactic process can feed into syntactic computation. This is rather unusual and leaves at least the question of how a post-syntactic process can interact with narrow syntax open. In a sense then, M-Merger aligns DM conceptions of ‘syntax all the way down’ (cf. e.g. Halle & Marantz 1993; Harley & Noyer 1999) with more standard syntactic approaches in the line of Chomsky, but it does so at the cost of reintroducing a

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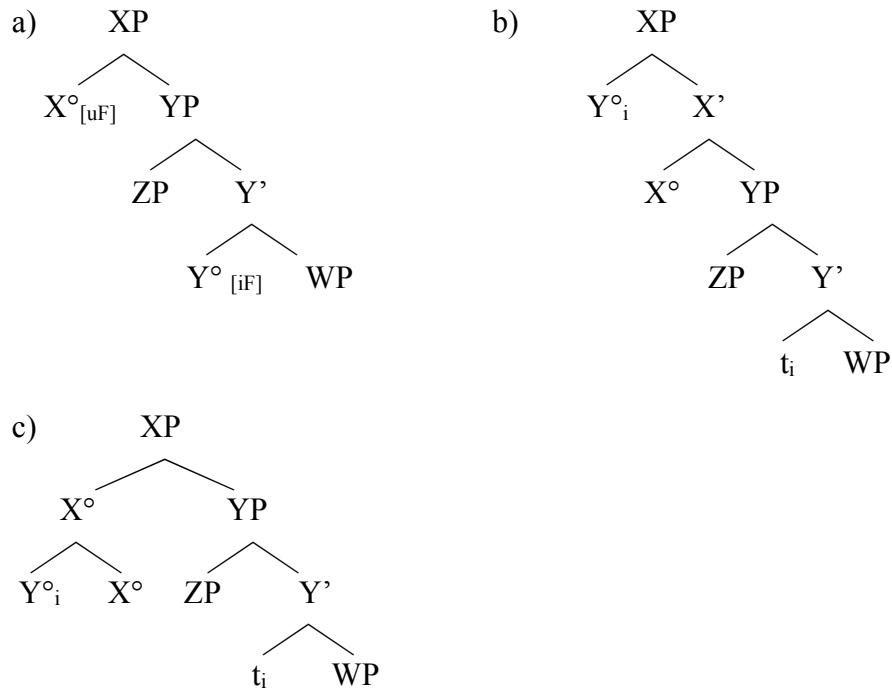
<sup>1</sup> It is important to notice here that it is irrelevant how this configuration came about; i.e. whether IM (which Matushansky 2006 terms Remerge or Move) or EM leads to this configuration. Additionally to being adjacent, Matushansky assumes that the two heads stand in a sort-of specifier-head relation from where the element in specifier position then incorporates onto the element in the head position (cf. also Roberts 2010: 43-44). In this respect Matushansky’s analysis differs from earlier characterizations of M-Merger, as laid out e.g. in Halle & Marantz (1993) where M-Merger applies between two heads in a head-complement relation rather than a specifier-head relation. However, the question, in how far this is a relevant distinction in current theories where the complement vs. specifier distinction is non-existent, remains (but cf. comments below).

<sup>2</sup> Zwart (2001) provides a rather detailed outline on how morphology could function as an “interface” (cf. *ibid*: 59) between syntax and phonology. According to his view, morphology operates on syntactic terminals and renders strings of phonemes as output. Crucially, this does not mean though, that the output of morphology can feed back into syntax. Thus, this is to be clearly dissociated from the view taken in Matushansky (2006) where bi-directional interaction between syntax and morphology seems to be the norm.

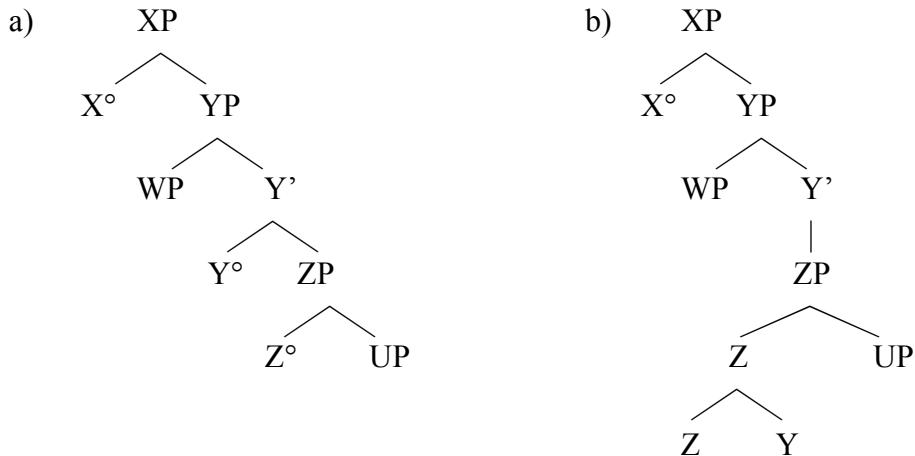
basic distinction between the elements that syntax and morphology operate on, thus perpetrating the idea that syntax and morphology operate on the very same elements.

To be precise, this problem is not only inherent to Matushansky's account, but is already prevalent in earlier approaches that rely on M-Merger, such as, e.g. Halle & Marantz 1993 (cf. also Julien 2002: 87-90 for some critical reflections). By assuming that M-Merger involves movement of a head to a specifier-position of a higher head, which is then followed by head-adjunction Matushansky (2006) gets around the problem of headless structures that is inherent to the analysis in Halle & Marantz (1993). To see this, let us compare the structures for both:

(1) Head-movement as M-Merger Matushansky (2006: 81):



(2) Head-movement as M-Merger:



[adapted from Halle & Marantz 1993: 134-135]

So in (2), following the head-movement constraint of Travis (1984), the Y-head moves to the Z-head, which is the head of the complement of Y. This leaves the YP headless and thus incompatible with any syntactic analysis that subscribes to endocentricity. In fact, it is somewhat reminiscent of standard analyses of lowering and all the well-known problems that come along with them (cf. also Julien 2002: 88). This problem is avoided in (1) where the Y-head first moves to the specifier of X and then adjoins to the lower X-head from there.<sup>3</sup> This has the effects that the movement operation as such is feature-driven, initiated by Search F, and that head-movement is characterized as adjunction thus avoiding all the problems of exocentric structures. Yet, as pointed out above already, if the operation in (1c) is conceived of as a morphological operation, it is not clear how it interacts with syntax and it is to be noted that in the original account of M-Merger in Halle & Marantz the operation is likewise characterized as morphological on the one hand (cf. *ibid*: 115) and as syntactic on the other (cf. *ibid*: 114).

Furthermore, it is worth noticing, that what Matushansky describes as M-Merger in (1c) is what Roberts (2005; 2010) describes as incorporation. This is particularly astonishing in light of the fact that Matushansky (2006: 70; footnote 1) explicitly argues that incorporation is to be dissociated from head-movement. The former being much more

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<sup>3</sup> This is not in line with the head-movement constraint though. For one it is not movement from a complement head to the selecting head position. Nor is it movement from one head position to another at all. This is somewhat surprising, since Matushansky (2006) is very careful in the description and identification of heads (cf. also discussion below).

complex and much less understood than the latter. However, what is not clear from the analysis that Matushansky presents, is where the dividing line between head-movement and incorporation is to be drawn. Clearly, confining the analysis to standard cases of V-to-T movement here is not enough, if this very same movement operation then is analyzed in terms of incorporation.

Thus, Matushansky's (2006) analysis, although it meticulously distinguishes between simple and derived heads, is incompatible with the analysis taken in the present study. This is an immediate consequence of the fact, that the definition of head in Matushansky (2006) is distinct from and incompatible with the definition of head employed here. Although, as mentioned above, it is not possible (and not wanted for that matter) to identify heads as terminal strings in a syntactic tree, it is still possible to unambiguously identify heads in a syntactic phrase marker. As the discussion in chapters 2 and 4, in particular, has shown, all LIs qualify as heads. The characteristic feature of LIs discussed in both of these chapters is that these are SOs bearing EFs. Hence, it can be argued that EFs do not only signal mergability, they also signal head-status.

This definition of head is somewhat deviant from standard definitions of head though. In fact, headedness so defined is a relative notion. For one, all elements in the lexicon<sup>4</sup> are identified as heads. This comports well with Matushansky's (2006) characterization of simple heads.

Derived heads come in two slightly distinct flavors here. For one, the discussion in chapters 2/3 has shown that derived heads can be the result of a syntactic incorporation operation along the lines outlined in Roberts (2010). According to the analysis of clitic incorporation discussed in Roberts (2010) three conditions have to be met for syntactic incorporation to be possible. For one, the incorporating element must be a minimal category. This, as has been shown in chapter 2, can be linked in a straightforward way to the presence of EFs when following Chomsky (2008); Narita (2011) and others. Provided further that the incorporation constraint holds and that the incorporating element is a

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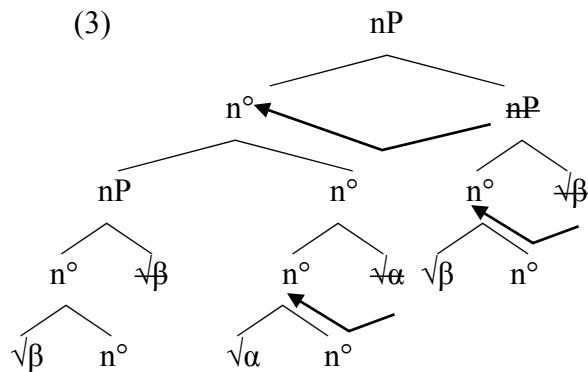
<sup>4</sup> Here it is important to notice that this holds independently of the exact conception of lexicon. As has been discussed in chapter 2 roots as well as all other lexical items must be equipped with such a feature. Thus, regardless of whether the lexicon is perceived of as split into various components or whether a lexicon-internal split between 'lexical' and 'functional' vocabulary items or some other imaginable variant is given preference, it should hold that all the items listed must be equipped with EFs (but cf. de Belder 2011; van Craenenbroeck & de Belder 2011 for an alternative view that we will discuss shortly in later sections of this chapter.)

defective Goal, where defectiveness is defined in relative terms, incorporation can take place. This incorporation operation, as Roberts (2010) notes, is an entirely syntactic operation that makes M-Merger in terms of Matushansky (2006) and similar accounts dispensable. All that is needed for incorporation to take place is the presence of an element with EFs, i.e. a minimal category in Roberts' terms, and the rest is determined by the syntactic operations of Agree and feature checking that are operative in syntax for totally independent reasons (cf. chapter 2 for detailed exposition). Thus, neither the requirement for the incorporation constraint to hold nor the requirement for the Goal to be defective are stipulated ancillary assumptions. They are nothing more than statements over configurations that result from the application of operations such as Agree and feature checking. This is readily visible from the fact that defective Goals are defined in relative rather than absolute terms in Roberts (2010), with Goals being defective only if the features of the Goal constitute a proper subset of the features of the Probe.

Notably, this syntactically motivated incorporation operation has the same effect that Matushansky (2006) ascribes to M-Merger: the resulting SO is one with EFs that behaves like an unanalyzed unit for further syntactic operations thus obscuring the internal complexity of the derived LI. Notice, however, that this happens only after the constituents that form the new SO have been sent to Spell-Out and thus have been interpreted at the C-I and the S-M interfaces. In this latter respect the analysis here is highly reminiscent of Chomsky's (2000 *et passim*) claim that head-movement lacks semantic effects. However, as Matushansky (2006: 98) correctly points out, this is only apparent, because even Chomsky (2001) reintroduces a parallel between movement operations that are assigned to the PF-component and their LF-counterparts. This is done in the context of V-to-T-to-C movement and N-to-D movement, which Chomsky (2001: 38) describes as PF movement, precisely because of its lack of semantic effects. On the other hand, Chomsky (*ibid*) also argues for the formation of LF-'supercategories', likewise formed after Spell-Out and in a fashion completely parallel to their PF-counterparts but totally independent of them.

Thus, quite generally, relegating head-movement to PF on the basis of an apparent lack of semantic effects is based on a much more shaky foundation than one is lead to

expect from the frequent use of this line of argumentation in the linguistic literature.<sup>5</sup> And it is diametrically opposed to the cases of head-movement that are discussed in chapter 2. There head-movement is analyzed as syntactic incorporation and semantic effects indeed occur. To see this more clearly, recall that head incorporation can only apply under the condition that the incorporating element is a minimal category (cf. Roberts 2010). This is achieved by spelling-out the complement domain of the categorizing *n*-heads. This is illustrated in (106) of chapter 2, repeated here as (3):<sup>6</sup>



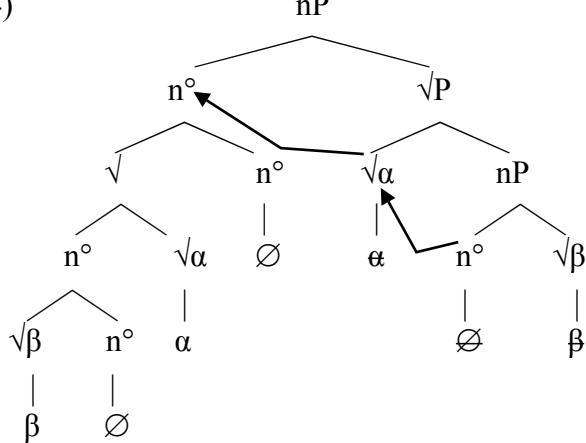
Just like all other Phase-heads, the *n*-heads discharge their complement domains at Spell-Out and are accessible to the derivation then as LIs with EFs. Incorporation then only results when two of these LIs are combined by Merge and when the subsequent operations of feature-checking and Agree identify the resulting configuration as one in which the conditions on defective Goals and the Inclusiveness Condition apply. As has been pointed out in chapter 2 already, this is somewhat similar to the conflation mechanism in Harley (2009). However, it significantly differs from Harley's account in the ordering of the operations. In the present account the 'conflation'/incorporation operation takes place only after categorization, thus automatically complying with the Inclusiveness Condition of Roberts (2010), whereas in Harley (2009) conflation takes place at the level of

<sup>5</sup> Notable exceptions here are Boeckx & Stjepanovic (2001) who provide some empirical arguments in favor of head-movement as PF-movement and more recently also Schorlemmer & Temmerman (2011). However, as Matushansky (2006) remarks the lack of semantic effects is not unexpected (cf. also Roberts 2010) and neither Boeckx & Stjepanovic (2001) nor Schorlemmer & Temmerman (2011) can make the claim of their argument strong enough so that head-movement falls out as an operation that is exclusively associated with PF. On the contrary, Schorlemmer & Temmerman (2011) explicitly conclude that 'certain instances' (*ibid*: 7) of head-movement are located at PF, while others 'take place in the narrow syntax' (*ibid*).

<sup>6</sup> Keep in mind that  $x^\circ$  and  $xP$  are just notational expedients carried over from earlier frameworks. Neither the  $xP$  status is genuine in a BPS account nor is the  $x^\circ$  status equivalent to head, the definition of which, after all, is at the center of the discussion here.

uncategorized roots. As discussed in chapter 2 as well, the analysis in Harley (2009) has the effect of ruling out the derivation of strictly left-branching compounds, which can still be derived under the approach pursued here. We can now note further that the two analyses differ slightly, but significantly with respect to their compatibility with the extension condition (cf. Chomsky (1995a *et passim*). This is particularly interesting, when taking into account that this is another point of criticism that is leveraged against syntactic approaches to head-movement. To see this, let us compare the structure in (3) once again to the structure provided in Harley (2009), repeated here in (4) from (105) of chapter 2:

(4)



[adapted from Harley 2009: 17]

While the n-head incorporates into the root only after Merger of *n* with  $\sqrt{\alpha}$  and the projection of  $\sqrt{P}$ , and similarly  $\sqrt{\alpha}$  incorporates into the higher *n* only after Merger of the higher *n* with  $\sqrt{\alpha}$  and projection of *nP*, this is clearly not the case in (3). Here incorporation takes place immediately upon Merger provided that the configuration required *qua* incorporation constraint and the definition of defective Goals as in Roberts (2010) holds. In that sense the account of Harley (2009) is more in line with the analysis in Matushansky (2006) where extension is at the root only before the application of M-Merger. In the analysis in (3) instead, the incorporation operation itself is operative at the root.

It is interesting to note though, that the analysis in (3) and the analysis in Harley (2009) additionally obey the head-movement constraint of Travis (1984), whereas this is not so clear for the approach in Matushansky (2006). Strictly speaking, M-Merger from a specifier position onto the lower head is not in line with the head-movement constraint,

according to which all head-movement must proceed from a lower complement head to the higher complement-selecting head. However, this is, of course, obsolete under current BPS approaches, where the distinction between complement and specifier is clearly unformulable (cf. also discussion in chapter 1) and it is particularly incompatible with the structures discussed here, which, as Harley (2009) explicitly notes are void of argument (or other) selectional requirements. So, while it is not quite clear, what compatibility with the head-movement constraint amounts to when head-movement is analyzed as a syntactic operation, it is interesting to see that Harley explicitly argues against the existence of a selectional relation between the incorporation host and the incorporated element, which is, after all, one of the defining features of the head-movement constraint. Yet, at the same time, Harley (2009) is forced to account for the interpretational effects that emerge from the conflation operation in terms of pragmatic principles that determine the denotation of the derived compound. None of this is necessary under the current account. Here the interpretive flexibility of the compound is a direct consequence of its syntactic derivation, as is discussed in chapter 2 in extensive detail.

The remaining question then is, why the SO in (3) behaves as a unit for further steps of the derivation. Put differently, the issue that has not been fully resolved yet is why excorporation, which would open the possibility SCHM, does not occur. What seems undisputable is that the SO in (3) is, in fact, opaque in all subsequent steps of the derivation, yet it is not exactly clear what brings this about. On the contrary, given that the two elements that partake in the incorporation operation are both Phase-heads, i.e. LIs with EFs, targeting one of these LIs for excorporation should be an option that is available naturally. In order to understand why this option is not available regardless, it is important to keep in mind that incorporation operates on these two LIs automatically, provided the syntactic configuration makes this possible. Thus, the constituent parts of the SO do not occur in the remainder of the derivation other than as Phase-heads with spelled-out complement domains.

Now, it could be argued that Merger of two Phase-heads of which one is a defective Goal and that additionally complies with the incorporation constraint of Roberts (2010) has the effect of transferring the Phase-properties onto the resulting complex head. This, however, is very stipulative and has the effect of rendering the notion of Phase completely vacuous in this context.

An alternative explanation can be derived when considering the options for excorporation in (3). Two scenarios are conceivable here. Under the first either one of the two  $n$ -heads is extracted and remerged with the root node in (3). Let us here look at both options in turn. Abstracting away from the question what might trigger such an operation in the first place, simply assume that the  $n^\circ$  that is the Phase-head - with  $\sqrt{\beta}$  in its spelled-out complement domain - excorporates. This Phase-head can only be remerged at the root. This, however, will trigger incorporation, because  $n^\circ$  will still be a defective Goal and subject to the incorporation constraint. Thus, such a move is truly vacuous and can be excluded on the basis of computational economy. The other alternative is that the  $n^\circ$  that is the Phase-head with  $\sqrt{\alpha}$  in its spelled-out complement domain excorporates. Again, leaving the non-trivial question of what would trigger such an operation aside, basically the same reasoning as above applies. So, we can safely exclude this option also by simply adhering to computational economy, which *a priori* excludes all types vacuous movement. Under the alternative scenario either one of the two  $n^\circ$ s in (3) is extracted and remerged in a position lower than the root node. This, however, will violate the extension condition and can therefore be excluded as well. Thus, there is virtually no configuration under which excorporation does not return either a vacuous movement step or one violating the extension condition. This is then the reason why head-movement in terms of incorporation does not allow for excorporation and for that matter successive cyclic movement.<sup>7</sup>

So, apart from the simple heads that are taken from the lexicon (or Numeration) and which enter the derivation as heads *qua* their EFs, there is a second type of head. These are derived heads in the sense of Matushansky (2006) that have the property of behaving like Phases (cf. *ibid*: 95), i.e. unanalyzed chunks, in subsequent steps of the derivation. This is related to the syntactic incorporation operation that applies to these heads and can be found in abundance on the structures discussed in chapters 2 and 3.<sup>8</sup> In chapter 4 another type of derived head can be identified.

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<sup>7</sup> As has been pointed out above, potential triggers for excorporation have been left out of the picture. From the conclusion reached it should be clear that no such trigger should be available. The only trigger conceivable would be a feature that is targeted by some higher Probe. This feature can however be only one that is accessible on the root NP in (3) as well, otherwise incorporation would never have occurred in the first place.

<sup>8</sup> One important fact to note here is, of course, that thus the incorporation operation is operative in recursive cases of nominal root compounding, which is traditionally described as a morphological operation thus is virtually indistinguishable from the syntactic incorporation operation that is operative in nominal gerunds.

In fact, the type of derived head identified in chapter 4 does not differ all too much from the type of derived head identified in the two preceding chapters. It basically is a Phase-head with a spelled-out complement domain (cf. Narita 2011). Under this view, even those categories that are genuinely perceived as phrasal function as heads in the syntactic derivation. So, for instance, a (specifier-less)<sup>9</sup> DP with a spelled-out Phase-complement is nothing but a D in the remainder of the derivation and as such it is an LI with an EF available for further Merge. In this respect, this type of derived head is not distinct from the derived heads in chapter 2 and 3.

A clear difference between the derived heads discussed in chapter 4 and those in the preceding two chapters is that the derived head in chapter 4 is not subject to incorporation. Thus, here these heads do not function as defective Goals and the incorporation constraint does not apply to them. This is, however, totally unproblematic, due to the fact that incorporation applies only optionally in the sense that it is only applicable when the syntactic configuration is such that the two conditions on incorporation formulated in Roberts (2010) are met (cf. also the discussion in chapter 2 for details). If they are not met, this does not automatically lead to crash, it simply means that the Phase-head with its spelled-out complement domain also functions in the remainder of the derivation as an unanalyzed chunk. This is what is expected from a Phase-instantiating head. Now, if this head is merged with another piece of structure and does not happen to meet the requirements of the incorporation constraint or of being a defective Goal, the output of this Merger will simply be a SO without EFs. In traditional terms this can be described as some kind of bar-level or XP category: a non-minimal category in any event.<sup>10</sup>

Now, in more general terms, this poses an interesting puzzle. If, say D is such a Phase-head, which as has been shown in chapter 4 is a reasonable idea to maintain, then this Phase-head, provided that it does not incorporate, because it does not meet the structural requirements for the operation to apply, should be available for extraction and Remerger, i.e. movement. As long as this movement is movement that extends the root,

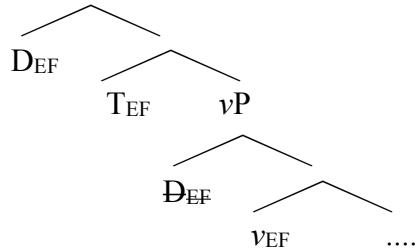
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<sup>9</sup> That this works only for specifier-less categories is nothing that needs extra stipulation. It simply falls out from the definition of Merge that requires at least one of the Merge partners to be an LI with EFs (cf. comments in chapter 4 for some comments and in Narita (2011: 47ff) for detailed discussion).

<sup>10</sup> In the system that is designed here this is simply a SO without EFs (cf. e.g. the examples in (5) and (6) and the discussion of DP - DP Merger in chapter 4).

nothing should prevent it. This is, in essence, what is at the core of the analysis in Narita (2011) and it is schematically sketched in (5) below for a simple case of DP<sup>11</sup>-movement from (Spec.) vP to (Spec.) TP:

(5)



[adapted from Narita 2011: 45-52]

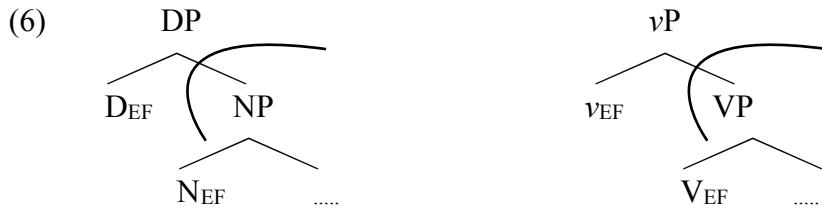
For a DP to be merged in the specifier<sup>12</sup> of vP in (5), either the DP or vP itself must be merged as an LI, since direct Merger of DP and vP constitutes a violation of the ban on XP-XP Merger, which is straightforwardly derived from the requirement that Merge operates on SOs with EFs (cf. Chomsky 2008, Narita 2011, as well as the discussion in chapter 4). This can be achieved by assuming that either D or v (or both for that matter) are merged as Phase-heads (cf. also Narita 2011: 48-50). This is schematically shown in (6):

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<sup>11</sup> Narita (2011) actually sketches this as an instance of K/P (CaseP) movement rather than D/P-movement, concomitantly identifying K rather than D as the relevant Phase-head. One reason for identifying K rather than D as the (highest) Phase-head in the nominal domain is that pied-piping in possessor constructions can be analyzed only under this view (cf. ibid: 52-53). Though convincing for the case of possessors, this does not automatically lead to the conclusion that D heads are Non-Phase-heads. Alternative scenarios are easily imaginable. So, for instance, either D or K could be analyzed as Phase-heads. This is probably somewhat undesirable, because it creates an unwanted indeterminacy in the identification of Phase-heads. There are, however, approaches that seem to argue in the direction of an increasing number of phasal heads in proportion to an increasing amount of structure building (cf. e.g. Boeckx 2008b; Richards 2010). Another way to go about it is to simply assume that both D and K function as relevant Phase-heads. This may turn out to be problematic with respect to a stacking of Phase-heads, on the other hand, it seems to resonate well with the distinction between structural, inherent and lexical case marking - with only the former requiring dedicated heads. Yet another solution could be to argue that D and K are actually instances of the same head, possibly with different values for φ- or Case-features. And eventually, it is also conceivable that the DPs in chapter 4 should actually be reanalyzed as KPs.

Whichever path may turn out to be the right one to pursue in these matters, should, however, be inconsequential for the analysis sketched here. All that matters is that the moving element moves as a Phase-head with a spelled-out complement domain and that it remerges at the root, thus complying with the H-α schema of Narita (2011) and the Extension Condition of Chomsky (1995a). Given the still somewhat underdetermined status of DPs as Phases (cf. e.g. Matushansky 2006 and numerous others), I will simply make use of the C-D analogy and assume D to be the relevant Phase-head for the moment.

<sup>12</sup> This is of course only a contrivance term, since, as is well-known that under a BPS analysis ‘complement’ and ‘specifier’ are notions devoid of content.



[adapted from Narita 2011: 48]

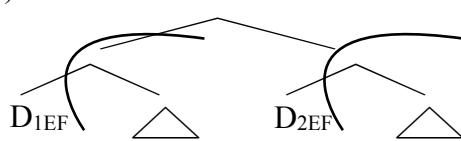
Thus, in effect, it is sufficient to subject either DP or vP in (6) to Spell-Out with subsequent Transfer of the complement domain, but, in principle, nothing prevents Spell-Out of both Phase-heads. In fact, this latter option is the route taken in Narita (2011).<sup>13</sup> Thus Merger here amounts to what is shown in (7) (cf. *ibid*):



Now, in order to move D from Spec, vP to Spec, TP in (5), all that is needed is that the EF on D, which is accessible anyway, due to the fact that EFs never delete and never obstruct the derivation from proceeding (cf. Chomsky 2008), be targeted. Thus, in this sense EM of D in Spec, vP and IM of D in Spec of TP amounts to the very same thing in line with assumptions in Chomsky (2004, 2007, 2008, *to appear*) that any distinction between EM and IM is stipulative (cf. also Narita 2011: 49). So, it is this same reasoning that has been applied to the SC structures in chapter 4, where e.g. the two DPs in a SC like the one in (8) are merged as Ds with spelled-out complement domains as well (cf. (9) repeated from (106) in chapter 4):

(8) Jack is the president

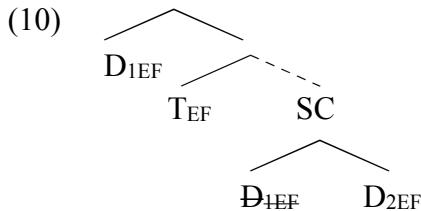
(9)




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<sup>13</sup> In order to make this work, Narita (2011) assumes that *v* can assign a theta-role to D/P before as well as after Spell-Out of the complement domain of *v*. This seems somewhat *ad hoc* and begs the question of what this implies for unaccusative structures. However, an answer to these questions is orthogonal to the current discussion and will therefore be ignored. All that matters is that it is in principle possible to merge both SOs as Phase-heads with spelled-out complement domains.

In fact the IM operation that dislocates one of the two SC constituents (*Jack* in this case) again operates on the basis of the very same EF that is relevant for EM of the two SC DPs in the first place. Thus, displacement in (8) directly parallels the displacement operation described in (5) above:



Thus, the picture that emerges here is that two types of heads need to be distinguished. One is a simple head, i.e. an LI that is taken from the lexicon. The other is a derived head, i.e. a Phase-head with a spelled-out complement domain (cf. (6) above for illustration). Importantly, both heads are characterized by their EFs and it is precisely these EFs that make both types of head susceptible for head-movement.

When viewed in this light, all movement operations turn out to be head-movement. Provided that Merge, IM and EM alike, can only operate when at least one of the items to be merged is an LI with an EF (cf. Narita 2011 and discussion in chapter 4), there is simply no other option than head-movement. Thus, the question whether head-movement is an operation that takes place within narrow syntax or whether it is a post Spell-Out operation at PF receives a totally different answer than the one that is standardly assumed in the literature. As has been discussed above, the two types of head-movement that fall-out from the analysis are either incorporation, or movement of a spelled-out Phase-head. Both are shown to be narrow syntactic operations with clear effects on interpretation.

Furthermore, the question of why there is no successive cyclic head-movement (SCHM) receives a new answer that differs from standard accounts in ways predictable by the implications of the theoretical assumptions discussed here. In incorporations structures SCHM does not occur, i.e. incorporated heads do not excorporate and the derivation treats the resulting SO as an unanalyzed unit. Excorporation is blocked, because it either amounts to vacuous movement and thus constitutes a violation of derivational economy, or it violates the extension condition (cf. Chomsky 1995a and subsequent literature). In those structural configurations where incorporation does not take place (presumably

because either the incorporation constraint does not hold or there is no defective Goal), head-movement is still an option. The only requirement then is that a Phase-head spells-out its complement domain. As an immediate consequence of the Transfer operation, the Phase-head is accessible for Merge via its EF. Thus, all standard accounts of phrasal instances of successive cyclic movement here actually amount to cases of SCHM of a Phase-head.

It is important to notice though that the fact that SCHM does indeed exist and is a truly narrow syntactic operation does not automatically entail that head-movement at PF is not an option at all. As e.g. Boeckx & Stjepanovic (2001) and Schorlemmer & Temmerman (2011) point out, some of the numerous instances that have been analyzed as head-movement may very well be cases of PF-movement. In fact, even the most standard cases of *v*-to-T movement might fall under this heading so long as they are not cases of incorporation. Alternatively, classic *v*-to-T movement could also be analyzed as Agree with either no movement taking place or with movement depending on the order of the operations of Match and Agree (cf. e.g. Gallego 2010; Herbeck *forthcoming*). However, the exact technicalities of such an analysis are beyond the scope of this chapter and will be left to further research. Suffice it to say here, that, if it should turn out that *v*-to-T movement is a case of syntactic head-movement, it is expected that this is regulated by the identification of the relevant Phase-heads. So, strictly speaking, it is expected that the frequently observed differences between *v*-to-T movement in say Romance languages vs. English is related to the identification of different Phase-heads in these languages (cf. e.g. Gallego 2010; Jiménez 2011) for analyses that provide some evidence that this is on the right track.<sup>14</sup>

Now, before turning to the already prevalent question on the role and identification of Phases in the present account, let us briefly consider the alternative route that is taken for the analysis of head-movement structures. That it those cases where head-movement is

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<sup>14</sup> It is, of course, still an open question whether this type of movement is indeed head-movement and even if this question can be answered unequivocally with a yes, it is still not clear whether this type of head-movement is phonological or syntactic. One clear difference between the type of head-movement analyzed in the preceding sections of the present chapter and head-movement of the *v* to T movement type is that the former is movement that extends at the root and creates a new syntactic position, whereas the latter is not to the root and is characterized by replacement. So, it may well turn out that this is the defining characteristic that distinguishes both types of movement operations and in consequence it possibly may also be relevant for distinctions among the grammatical components that the movement operation is allocated to. As has been pointed out above already, however, these are only very speculative remarks that necessitate further systematic investigation.

analyzed as remnant movement (cf. e.g. Koopman & Szabolcsi 2000; Nilsen 2003; Müller 2004). *Prima facie* remnant movement seems to be incompatible with the analysis pursued here, because all remnant movement *qua* definition is an instance of phrasal movement and as such incompatible with the H- $\alpha$  schema of Narita (2011). Recall, however, that the H- $\alpha$  schema, also provides a solution for standard cases of XP movement, in terms of analyzing them as instances of movement of a Phase-head with a spelled-out complement domain. This should, in principle, also be applicable to cases of remnant movement, which thus emerges as a natural possibility in the BPS approach that is pursued here (cf. also Narita 2011: 57).

Let us take a look at a classical example from Holmberg (1999):

- |                                 |         |
|---------------------------------|---------|
| (11a) Kysst har jag henne inte. | Swedish |
| Kissed have I her not           |         |
| ‘I have not kissed her’         |         |
| (11b) Sett har jag honom inte   | Swedish |
| Seen have I hom nor             |         |
| ‘I haven’t seen him’            |         |

The sentences in (11a/b) are analyzed as in (12a/b) respectively:

- |                                                       |  |
|-------------------------------------------------------|--|
| (12a) [vpKysst henne] har jag henne inte kysst henne. |  |
| (12b) [vpSett honom] har jag honom inte sett honom.   |  |

More specifically, it is argued that the object pronoun moves from the complement position of the DP over negation and only after that the remnant VP moves to Spec, CP. Now, both movement operations are instances of phrasal movement, however, the movement of the object pronoun can easily be accounted for as head-movement in compliance with the H- $\alpha$  schema, simply by assuming that the pronoun is moved as a DP-Phase-head. The same holds for the English examples in (13) quoted from Narita (2011: 57):

- |                                  |  |
|----------------------------------|--|
| (13a) How likely to win is John? |  |
|----------------------------------|--|

- (13b) Fired by the company John indeed was.

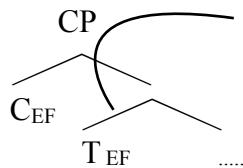
The relevant structures are provided in (14):

- (14a) How likely John to win is John ~~how likely~~ John to win  
(14b) Fired John by the company John indeed was ~~fired~~ John by the company

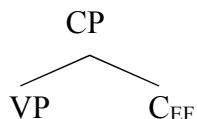
Again, in (14a) and (14b) movement of *John* from inside the VP to a higher position outside VP, (arguably Spec, vP in (14a) and Spec, TP in (14b)) can easily be accounted for when analyzing *John* as a spelled-out D-head with the relevant Phase properties. The remaining question is what happens in the second movement step in the structures in (12) and (14). Moving any of the VPs to Spec, CP (or whatever else the exact label for the landing position may be) is clearly an instance of phrasal movement and as such incompatible with the H- $\alpha$  schema, unless the VP is analyzed as a V Phase-head with a spelled-out complement domain.

As the analysis presented in this dissertation stands, V is clearly not a Phase-head (cf. in particular the analysis in chapter 3). However, it is still possible that C is merged as a Phase-head with a spelled-out complement domain akin to the options for merging vP and its specifier represented in (6). The relevant part is schematically presented in (15) for the structures in (12) and (14):

- (15a) Spell-Out of the complement domain of Phase-head C



- (15b) Merger of Phase-head C with VP:



Although, again the exact technicalities of this IM operation are unclear, it should at least be evident by now that remnant movement and the SCHM-approach to head-movement

discussed here are not necessarily mutually exclusive. However, as Narita (2011: 57) correctly points out, further constraints on remnant movement that have been addressed elsewhere in the literature (e.g. Müller 1996; Takano 2000; Abels 2007, 2009) may further restrain the possibilities of this type of movement operation. Going into the details of these constraints is yet again beyond the realm of the analysis pursued here and this is why it is left for future investigation at this point. In the next section we will now turn to the question of what the role of Phases are in a BPS approach that makes use of the H- $\alpha$  schema.

## 5.2 Phases

As is immediately evident from the discussion on head-movement in the preceding subchapter, as well as from the analysis of the three empirical domains, discussed in chapters 2-4 of this dissertation, Phase-theory plays a prevalent and important role. Despite the relatively recent explicit<sup>15</sup> advancements of Phase-theory, it is again well beyond the scope of the current chapter, to lay out the details of the development of Phase-theory (but cf. e.g. Gallego 2010 for a comprehensive and accessible overview). Instead, once again, the main aim of this section is to position the stand that is taken on Phase-theory and on Phases in chapters 2-4 in the broader perspective of current discussions in the literature. Or differently put, the goal is to clarify the implications that can be derived from the view on Phases that is taken here and to relate it to the broader picture of Phase-theory in minimalist theorizing.

When acknowledging the recent writings of Chomsky (2000, 2001, 2004, 2005, 2007, 2008) as the driving proponent of Phase-theory, still two broad trends are discernible within these writings on how Phases should be described and ultimately identified. Eventually, both of these two approaches relate the existence of Phases to requirements of computational economy, however, the properties on the basis of which Phases are identified could hardly be more distinct. According to, what I would like to refer to as the ‘early’ view on Phases (cf. Chomsky 2000, 2001, 2004 2005), Phases are instantiated by

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<sup>15</sup> This is indeed the crucial point here. Ideas such as computational economy, underlying Phase-theory, have already been at the center of very early writings of Chomsky (1955, 1964 etc.). This is also (part of) the reason why Phase-theory is sometimes criticized as a mere reformulation of old ideas on barriers and islands and as such also ridden with the problems of these earlier analyses (cf. e.g. Boeckx & Grohmann 2007 for arguments along these lines).

prechunked lexical arrays. Thus, quite generally speaking, each derivation is built from a preselected lexical array and once all LIs from the lexical array have been used up, the derivation is exhausted. So for the standard case, the lexical array for the sentence in (17) consists of (at least)<sup>16</sup> the items in (16):

(16) Lexical Array: {C<sub>1</sub>, T<sub>1</sub>, v\*<sub>1</sub>, love<sub>1</sub>, Ted<sub>1</sub>, Vicki<sub>1</sub>}

(17) Ted loves Vicki

This approach, it was quickly noted caused a conceptional problem in the derivation of sentences like the one in (18) (cf. e.g. Chomsky, 2000: 106; Grewendorf & Kremers (2009: 386; Richards 2010: 76):

(18) There is a chance [that proofs will be discovered].

This structure, so it was argued, should not be derivable from a lexical array that contains (at least)<sup>17</sup> the following elements:

(19) Lexical array: {C<sub>1</sub>, T<sub>1</sub>, a<sub>1</sub>, be<sub>1</sub>, chance<sub>1</sub>, discovered<sub>1</sub>, is<sub>1</sub>, proofs<sub>1</sub>, that<sub>1</sub>, there<sub>1</sub>, will<sub>1</sub>}

Provided that Merge takes precedence over Move<sup>18</sup>, the question that immediately emerges is why *proofs* moves in the embedded structure in (18), when, according to (19) Merge of the expletive should be an option:

<sup>16</sup> I will abstract away from the question whether *Ted* and *Vicki* are elements of category *n*, headed by a phonological empty D or whether they are instances of category D themselves. Either view should be compatible with the analysis presented here. The same holds for the question of whether additional categories, e.g. those relevant for Topic/Focus and/or those for aspectual projection(s) should be included in the lexical array or not. Again, neither alternative should have an impact on the overall analysis.

<sup>17</sup> Again, I will abstract away from the details of the exact categorial make-up of the lexical array. In particular I will refrain from taking a stand on whether the two instances of *v* in (19) are instances of *v\** or *v<sub>def</sub>* in Chomsky's terms. The literature that elaborates on this question is rich and abundant and it is therefore impossible to even try to due justice to it here.

<sup>18</sup> This is, of course, an assumption that is open to empirical challenge. Yet, I will abstract away form this challenge for the moment, since it is the purpose of the present discussion to reconstruct the reasons for the introduction of Phases rather than to reflect on the validity of an *a priori* distinction between EM and IM.

- (20) proofs will be discovered ~~proofs~~.

A similar case in point can be made for the following structure:

- (21) Which article is there hope [that someone will read]

Again, it would be assumed that Merger of the expletive should preempt movement of the internal argument in (21). In fact, this is what seems to happen in the example in (22):

- (22) \*There is likely [a proof to be discovered]

The difference between (18)/(21), on the one hand, and (22), on the other, as is argued in Chomsky (2000; 2001 and subsequent literature), can be explained when assuming that the lexical array is prechunked in such a way that only dedicated chunks are available to the derivation at any given point. Hence, for the example in (18) the lexical array can (at least)<sup>19</sup> be split into the following two subarrays:

- (23a) Subarray 1: {be<sub>1</sub>, discovered<sub>1</sub>, proofs<sub>1</sub>, that<sub>1</sub>, will<sub>1</sub>}

- (23b) Subarray 2: {C<sub>1</sub>, T<sub>1</sub>, a<sub>1</sub>, chance<sub>1</sub>, is<sub>1</sub>, there<sub>1</sub>,}

In step one of the derivation now only the subarray in (23a) is available and only in step 2 of the derivation the subarray in (23b) becomes accessible. Thus, the question of why Merger of the expletive does not preempt movement does not arise, simply because the expletive is not available at the stage of the derivation in which movement occurs. Arguably, in (22) the situation is different, because here the lexical array is not chunked into any smaller parts (cf. among others Chomsky 2000: 106-107; Richards 2010: 76). Thus, the ungrammaticality of the structure results from the movement of the internal

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<sup>19</sup> Note that (23a) and (23b) are provided here only for illustrative purposes. Smaller chunks are easily conceivable, again depending on whether a distinction between  $v^*$  and  $v_{def}$  is warranted and on whether DPs (and if so whether all DPs) constitute Phases.

argument. This is out, because the expletive is accessible within the same array.<sup>20</sup>

So, what falls out from this is one empirical argument developed in Chomsky (2000, 2001) under which prechunked lexical arrays are viewed as Phases. Two things are important to note here. One is that Phases so defined are a means of regulating lexicon - syntax interaction (cf. e.g. Boeckx 2008b; Gallego 2010: 40-41). The other is that *as is* this approach to Phases is rather stipulative and does not provide any answer to the question of where the relevant cut off points for prechunked lexical arrays are, i.e. where the Numeration is split into smaller subarrays. Chomsky (2000; 2001) argues that the relevant cut off points are C and  $v^*$ . Conceptual arguments that Chomsky adduces in favor of this view are that Phases trigger certain effects at the interfaces. At the PHON-interface the decisive characteristic is isolability, whereas at the SEM-interface it is propositionality. So, the argument can be summarized as follows. It is only at  $v^*$  and C that isolability arises e.g. in the form of clefting or VP movement. For this argument to go through, Chomsky (2000) argues that only parts of the Phase are actually spelled-out. This is formalized in what came to be known as the stronger version of the PIC also referred to as PIC<sub>1</sub> by virtue of it being Chomsky's (2000: 108) first attempt to formulate this condition:

(24) Strong PIC/PIC<sub>1</sub>:

In a Phase  $\alpha$  with head H, the domain [i.e. the complement of H (LSB)] of H is not accessible to operations outside of  $\alpha$ ; only H and its edge [i.e. specifier(s) (LSB)] are accessible to such operations.

Thus, provided that  $v^*$  is the relevant Phase-head, then the domain of  $v^*$ , i.e. VP, is

---

<sup>20</sup> Actually, things here turn out to be a bit more problematic than they appear at first sight. Although the Merge over Move requirement provides some indication that this explanation is on the right track, the difference between the following two examples casts some serious doubt on the validity of the overall analysis:

- (i) There is likely to be a proof discovered.
- (ii) \*There is likely to be discovered a proof.

The data in (i)/(ii) is problematic in at least two respects. First of all, it is not clear why from an identical lexical array two partially parallel derivations are possible. Notice that the ungrammaticality of (22) emerges only after IM of the internal argument in Spec, T, not after the intermediate step in (i). Secondly, it is not so clear why the Merge over Move requirement does not preempt the movement step in (i) as well, nor why this movement operation is indeed mandatory, as the ungrammaticality of (ii) illustrates. This at least suggests that Merge over Move is not sufficient - begging the obvious question of why it should be necessary (cf. also Boeckx & Grohmann 2007 and references therein for some criticism on Merge over Move).

inaccessible to any operation that takes place outside of  $\alpha$ . This guarantees the PHON-isolability of VP.

At SEM, it is theta-role assignment, which again falls within the realm of  $v^*$ , and the establishment of force, which in matrix contexts correlates with C, that Chomsky refers to.

However, it was quickly noted that the approach sketched here and laid out in detail in Chomsky (2000, 2001 and 2004) suffered from some inconsistencies. The problems here are basically twofold. One problematic aspect is tied to the conception of Phases as described above. Although, Phases can be identified at the SEM- and PHON-interfaces, it is important to notice that identification is not uniform for both interfaces. This is because SEM identifies e.g.  $v^*$  as a Phase, by virtue of this being the place where theta-role assignment is complete. Now, this means either that at the SEM-interface the specifier of  $v^*$  belongs to the  $v^*$ -Phase, simply because this is the place where the theta-role for the external argument is assigned or, as Gallego (2010) discusses, it means that theta-role assignment and thus Merger of the external argument is in the domain of  $v^*$ .<sup>21</sup> At the PHON-interface the situation is the complete reverse. Here it is the isolability of VP, i.e. the domain of  $v^*$ , to the exclusion of the edge, consisting of the  $v^*$ -head and its specifiers, that indicates Phasehood. This then means that the criteria for identifying what belongs to a  $v^*$ -Phase differ significantly between the PHON- and SEM-interfaces. And the problems do not stop just there. For C, for instance it is force that Chomsky mentions as the relevant criterion at SEM. However, force, or alternatively truth-value assignment (cf. also Hinzen 2007) is only a property of matrix C - where notoriously it is not only the domain of the Phase that is transferred at both interfaces. Instead here the root-node, i.e. the node including the Phase-head and any potential specifiers, is transferred at both PHON and SEM. This means that PHON then transfers only the complement domain of the Phase in all cases but the one in which we are looking at matrix C. So, among others, it is problems like these which lead Boeckx & Grohmann (2007) to the conclusion that the

---

<sup>21</sup> In either case a number of questions ensue. For the standard case, at least the following are among these: If the specifier is part of the Phase, then why is it not transferred? In fact, why is only the complement transferred? If the external argument is initially merged below the Phase-head, then why does it move to Spec,  $v^*$  at all? And what is the exact position it is merged in in the first place? Additional questions are: why is  $v$ , e.g. unaccusative  $v$  considered a weak Phase then? And why does not unaccusative  $v$  in particular simply transfer its domain which is complete in the sense that all theta-roles are assigned. I will refrain from going into the details of these questions, which have been discussed in numerous places in the literature and will continue outlining the general concept instead.

postulation of  $v^*$  and C as the relevant Phase-heads in Chomsky (2000, 2001, 2004) is stipulative and non-explanatory.<sup>22</sup>

The second problematic aspect of this conception of Phases is that it is not clear what exactly happens (and when!) at the Phase-cycle. In Chomsky (2001) it is argued that at the Phase-cycle all material that is uninterpretable at any of the two interfaces is deleted. Of course, material that is uninterpretable at the interfaces, such as, e.g. unvalued  $\varphi$ -features, is deleted once the  $\varphi$ -features have been valued (cf. *ibid* for details). The crucial question then is, when exactly this Valuation takes place. Originally, Chomsky (2001, 2004) argued that Valuation takes place before Spell-Out, with Spell-Out eventually leading to Transfer and Deletion. Yet, again this causes the conceptual problem that upon Transfer all  $\varphi$ -features are valued and the derivation thus cannot determine the material relevant for deletion, unless some mechanism that allows the derivation to look back is built in, which is a clearly undesirable result (cf. Epstein & Seely 2002 for a very elaborate version of this criticism).

Aware of the criticism, Chomsky proposed two ramifications to the theory of Phases, which at an abstract level can be related to the same source (i.e. the special role of T/Non-Phase heads). To see this more clearly, let us look at each one in turn. The first one came relatively early. Data from Icelandic and European Portuguese clearly show that the PIC in its strong form is untenable (cf. Gallego 2010: 43):

- |      |                                           |                |              |          |            |
|------|-------------------------------------------|----------------|--------------|----------|------------|
| (25) | Henni                                     | leiddust       | strákarnir / | þeir     | Icelandic  |
|      | her.dat                                   | bored.3.pl     | the boys.nom | they.nom |            |
|      | The boys/They bore the girl               |                |              |          |            |
| (26) | Ontem                                     | compraram-se   | demasiadas   | salicha  | Portuguese |
|      | yesterday                                 | bought.3.pl.SE | too-many     | sausages |            |
|      | 'Yesterday too many sausages were bought' |                |              |          |            |

Arguably, in both examples T must establish a relation with an element that is in the domain of  $v^*$ . This is, however, impossible under  $\text{PIC}_1$ , because the element that T seeks to

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<sup>22</sup> It is almost needless to say that Boeckx & Grohmann (2007) are neither the only ones nor the first voicing this kind of criticism. Matushansky (2005) has already shown that the criteria adduced for determining what counts as a Phase-head lead to inconclusive results for D, which behaves like a Phase at PHON but not (necessarily) at SEM.

establish a relation with is already spelled-out and as such inert for the remainder of the derivation. So, already in Chomsky (2001) the original version of the PIC is weakened to what is known as the weaker version of the PIC or PIC<sub>2</sub>:

(27) Weak PIC/PIC<sub>2</sub>:

The domain of the Phase-head H is not accessible at the next highest (strong) Phase ZP; only H and its edge are accessible to such operations.

This now allows T to establish a relation with material inside the complement domain of  $v^*$ . However, it comes at the price of significantly weakening the PIC or dealing with two versions of it, which are virtually irreconcilable (cf. Richards 2010). PIC<sub>1</sub> is conceptually more natural, and PIC<sub>2</sub> is empirically warranted.

The second ramification took a while longer but is eventually relates to the same thing. Richards (2010) points out that the crucial difference between the two versions of the PIC relates to the search space for T. It is in this respect that it is impossible, to operate with both versions, because PIC<sub>1</sub> and PIC<sub>2</sub> make radically different predictions with respect to the question of what T can search into (i.e. up to  $v^*$  under PIC<sub>1</sub> (cf. (24)) and all the way down into V (and its complements) under PIC<sub>2</sub> (cf. (27)). So, when it is noted elsewhere (cf. e.g. Epstein & Seely 2002: 70-72) that the original conception under which Valuation takes place before Transfer is problematic, because it makes it virtually impossible for the interface systems to distinguish between valued and unvalued features - at least not without looking back - then Chomsky (2007, 2008) argues that this is avoided by assuming that Valuation and Transfer do not happen consecutively but simultaneously. This solves the when-question, however, it leaves open the where-question, i.e. the question at which stage of the derivation Spell-Out happens. The natural answer is, of course, at the Phase-level. However, to nail this down exactly is more difficult than it looks at first sight. The relevant Phase-heads are C and  $v^*$ ). Feature Valuation and Transfer is, however, not a property of C and  $v$  but rather of T and V (cf. Chomsky 2004, 2007, 2008; Gallego 2010 and many many others). So, in this sense T (and V for that matter) is once again special. Chomsky (2007, 2008) accounts for this special status by assuming a mechanism of feature inheritance. This is schematically illustrated as in (28) (cf. Gallego 2010: 45):

- (28) Feature-Inheritance:  
 with H a  $\varphi$ -feature introducing Phase-head  
 $[\alpha [H_\varphi \beta]] \rightarrow [\alpha [H \beta_\varphi]]$

Now, it is not my intention to go into the details of what motivates feature inheritance (but cf. e.g. Richards 2007) nor into the problems related to this mechanism (cf. e.g. Grewendorf & Kremers 2009 for valid criticism and a solution to some of the major issues) right here. Rather I will continue pointing out the broader implications of the conceptual change that necessitated a mechanism like feature inheritance.

As Gallego (2010) notes, the conception of Phases that emerges from the analyses in Chomsky (2007, 2008) is radically different from the earlier conceptions in Chomsky (2000, 2001), in so far as the identification of lexical arrays as relevant indicators of Phases has taken a backseat to  $\varphi$ -features as the relevant indicators. In Chomsky (2007, 2008) uninterpretable  $\varphi$ -features are the defining characteristic of Phase-heads. This, Gallego (2010) points out, is not just a matter of terminology. In fact, arguing that uninterpretable morphology is the sole indication of Phasehood has a number of implications. In fact, Gallego (2010: 57) considers these implications so strong that he advances the following Phase Condition (cf. ibid):

- (29) Phase Condition:  
 Uninterpretable Features (uFF) signal Phase boundaries

According to Gallego (ibid: 50ff.) this radically changes the way in which Phases are conceived. They are not longer ridden with the problems that come from a conception of Phases as interface based, because the status of Phases *qua* (29) is dissociated from interface conditions. In fact, Gallego (2010), following the ideas underlying Chomsky (2007, 2008), argues that the properties that have originally been identified as interface-driven properties turn out to be narrow syntactic properties with certain interface effects. It is in this sense that a definition of Phases that is based on the presence or absence of uninterpretable  $\varphi$ -features, as in (29), can be considered as interface-free. This conception correlates with what can perhaps best be described as the ‘later’ view on Phases.

As Richards (2010: 75) points out, the conception of Phases that focuses on uFF has the additional effect of strengthening the role of Phase-heads. In essence, the identification of Phase-heads follows naturally from the uFF conception, because here Phase-heads are the only elements that bear uFF and thus they are also the only elements that introduce uFF into the derivation. Richards (2010: *ibid*) argues further that under SMT considerations the Phase-head/uFF based definition of Phases *prima facie* seems far less stipulative, especially so, since Phase-edges fall out as a natural consequence rather than as a matter of explicit definition in terms of the PIC. However, this does not lead him to endorse the uFF/head-based approach to Phases. Instead, he suggests a reformulation of the PIC in such terms that the two virtually irreconcilable versions of it can be unified. This, however, comes with a caveat. The unification rests upon the conception of Phases as being determined by lexical subarrays (cf. *ibid*: 81):

- (30) PIC<sub>LA</sub> (Unified Phase Impenetrability Condition relativized to lexical subarrays):

Given structure [<sub>ZP</sub> Z [<sub>XP</sub> X [<sub>HP</sub> α [H YP]]]], with H and Z belonging to separate L[excial]A[rray]s:

The domain of H is not accessible to operations outside LA<sub>H</sub>; only H and its edge α are accessible to such operations

with LA<sub>H</sub> = the lexical subarray defined by head H

with either X ∈ LA<sub>H</sub>

or X ∉ LA<sub>H</sub>

So, in effect Richards (2010) argues that it is possible to unify the two versions of the PIC along the lines of (30), but only if Phases are understood in terms of lexical arrays rather than in terms of LIs with uFF. The ‘either’ variant then corresponds to PIC<sub>1</sub> and the ‘or’ option gives us PIC<sub>2</sub>.

What is interesting about this conception of Phases is that it goes back to the earlier approaches to the identification of Phases as in Chomsky (2000, 2001). Yet, as Richards (2010) argues the PIC<sub>LA</sub> can (and indeed should!) be seen as independent of earlier characteristics of Phases, such as isolability at PHON or propositionality at SEM. Instead,

Phases in Richards (2010) are defined over the pairwise composition of lexical arrays in which each lexical array consists of a Phase-head and a Non-Phase-head (cf. *ibid* for details). To see this more clearly, let us briefly digress and consider the argumentation in Richards (2010) in a bit more detail here. So, provided that the clausal spine is composed of the core functional categories V-v-T-C<sup>23</sup>, the PIC<sub>LA</sub> allows for two options of how the lexical arrays that constitute Phases can be composed. Both options comply with the criterion of pairwise composition of Phases as is illustrated in (31):

- (31) either: {C, T}, {v, V} → {phase-nonphase} → PIC<sub>1</sub>  
 or: ..., C}, {T, v}, {V, ...} → {nonphase-phase} → PIC<sub>2</sub>
- [adapted from Richards 2010: 82]

What (31) illustrates is that under the version of the PIC in (30) there is no *a priori* reason for preferring one version of the PIC over the other. Both are equally conceptually natural now and it all depends on what the relevant ‘pairs’ for the pairwise composition of a Phase, i.e. lexical array, are. As argued in Richards (2010) the relevant difference amounts to whether T forms a lexical array with C or with v.

Regardless of what the answer to this puzzle might be, Richards (2010) following the argumentation in Richards (2007) further points out that the question of the role of the feature inheritance operation needs to be factored in here. Based on the conception of Phases as designated heads with uFF (cf. Chomsky 2008) the question that immediately emerges is why φ-features are interpreted on T (and V for that matter) and not on C (and v).

Chomsky (2008) provides a number of arguments in favor of feature inheritance. Among these are that the A vs. A' distinction can be derived from it (cf. *ibid*: 15) with all A'-movements being movements that are to the edge of the Phase-head, i.e. the head that introduces the uFF into the derivation, and all A-movements being movements to a head

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<sup>23</sup> This assumption is, of course, far from uncontroversial. However, for the sake of the argument to be made here, I will refrain from discussing the overall validity of this claim. Interestingly, a lexical array based definition of Phases that relies on pairwise composition is probably in a much better position to cope with intermediate ‘Phase-heads’ than the uFF-based approach. All that is needed in the lexical array account is that there is a balance of Phase-heads and Non-Phase-heads for each lexical array. So, in a sense Richards (2010) conception comports well with the approach in Boeckx (2008b) where the amount of Phase(-head)s increases with the amount of structure.

that is not a Phase-head and thus has inherited its  $\varphi$ -features from the Phase-head it is dominated by. Furthermore the parallel probing of C and T (and by extension also of  $v$  and V) can be explained this way, thus eventually providing a question on the timing of Valuation and Transfer of uFF, as this can now happen simultaneously (cf. *ibid*). And eventually support for feature inheritance can be derived from the observation that defective T, as in raising constructions and ECM infinitivals, does not only lack C, but also  $\varphi$ -features. This is a logical consequence, when  $\varphi$ -features on T are universally perceived as being inherited from C.

However, none of these points is accepted without criticism (cf. e.g. Grewendorf & Kremers 2009 for extensive comments on the latter two points and Richards 2007 for criticism on the former). In particular, Richards (2007) argues that feature inheritance, as explored in Chomsky (2008), does not necessarily follow from any of the arguments mentioned above. This is elaborated further in Richards (2010), where it is pointed out that the A- vs. A'-distinction is already encoded in the types of features on the relevant heads, with EPP-features yielding A' and Agree-features yielding A (cf. *ibid*: 89-90). In principle, it should also be possible to have the Agree-feature on C and project multiple specifiers for C. Additionally, feature inheritance from  $v$  to V does not follow from inheritance from C to T under the A- vs. A'-distinction, simply because this distinction does not apply at the  $v/V$  level.

Richards (2007) suggests a more principled reason for feature inheritance that follows from the PIC paired with the Principle of Full Interpretation. The PIC entails the existence of an edge<sup>24</sup> from which the following premise can be derived:

(32) The edge and the domain of a phase are transferred separately

[adapted from Richards 2010: 90]

On the other hand, the Principle of Full Interpretation requires that Valuation and Transfer of uninterpretable features must happen immediately, because after the application of Agree the distinction between valued interpretable and uninterpretable features is lost and it is thus impossible for the derivation to distinguish between them. This leads Richards

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<sup>24</sup> Note that this holds for any version of the PIC, even for the revised one in Richards (2010).

(ibid) to the following premise:

- (33) Value and Transfer of uF[F] must happen together

However, these two premises are antithetic. On the one hand the edge of a Phase must remain active for further computation *qua* (32), on the other hand the Phase-head which introduces uFF and belongs to the edge must still be transferred as soon as possible *qua* (33). This, as Richards (2007; 2010) argues can be resolved by feature inheritance. When the Phase-head gets rid of its uFF via feature inheritance, it can remain active in the derivation (i.e. in the edge). What Richards (2010) further derives from this is that the once impoverished status of T in Chomsky's (2008) system now gains strength from the fact that it is obligatory as a recipient of features from C. And this logic can easily be extended to the v/V domain as well. Ultimately, this suggests a strictly alternating pattern between Phases and Non-Phases, which eventually can be reconciled with the Phases as lexical arrays view, since each lexical array, i.e. Phase, then consists of a Non-Phase and a Phase-head and is thus composed pairwise.

So, the lexical array based approach to the identification of Phases explored in Richards (2010) is just as interface independent as the account that identifies Phases via designated Phase-heads that introduce uFF into the derivation. It does not need to make recourse to interface related concepts of isolability or propositionality and is just as lexicon-syntax centered as its alternative. However, it should be noted that even Chomsky acknowledges that these interface properties should be regarded as epiphenomena that can be derived from narrow syntactic properties (cf. Gallego 2010: 40-41). Given the SMT holds, this should not even come as a surprise. In fact, it is expected that narrow syntactic properties have a noticeable effect at the interfaces, it just should not be the case that interface effects determine narrow syntactic properties and operations, since this would amount, yet again, to a reversal of the SMT.

So, *prima facie* the lexical array based approach of Richards (2010) and the uFF approach of Chomsky (2008), Gallego (2010) and many others seem to be equally conceptually natural now. However, as has been shown above, Richards' lexical array based analysis of Phases still relies on feature inheritance. In fact, Richards himself acknowledges that there is a discrepancy here:

[...] the explanation of the pairwise composition of LAs [...] was premised on Chomsky's (O[n] P[hases]) feature-inheritance system - a maximally phase-head-centric approach to phase theory that sits uneasily with the elimination of phase heads as a primitive notion from the LA-based system. The question that arises, then, is to what extent these two seemingly diametrically opposed approaches to phases are compatible with each other. Can they be unified?

(Richards 2010: 92)

However, the alternative question to be asked here is why a conception of Phases as uFF-based should be given up, when feature inheritance, which is arguably based on the very distinction between Phase-heads and Non-Phase-heads - that is manifest in the presence vs. absence of uFF on the LI upon entering into the derivation - is called for anyway. Differently put, it could be argued that a conception of Phases that relies on pairwise composition but still requires feature inheritance and by logical extension a distinction between heads that introduce uFF into the derivation and those that inherit these uFF is redundant. In comparison, a conception of Phases that relies on uFF alone and does not care about pairwise composition is simpler in Occam's razor terms and therefore under *ceteris paribus* preferable.<sup>25</sup>

With this much in place, let me now return to the question of what this means for the analysis in chapters 2-4, which, after all, relies heavily on Phases. It should be immediately obvious that the early conception of Phases is incompatible with the approach pursued here. Interface isolability and propositionality are not induced as relevant criteria for Phasehood, and indeed, many of the Phases identified here do not satisfy these criteria. This, however, is not a problem when we acknowledge that the existence of these interface properties are but epiphenomena that arise from narrow syntactic properties. Yet, this does not mean that Phases here are regarded as totally interface independent. On the contrary, it is shown that Phases have clear interface effects, as is expected under the SMT. However, these effects can be traced back to deeper syntactic criteria.

In this sense, then Phases are conceived of as interface-free here, just as much as under the Chomsky (2008) and Richards (2010) account. Furthermore, it is obvious that

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<sup>25</sup> Notice also that under a Phase-account that does not rely on lexical arrays the derivation can be fed directly from the lexicon and does not need to proceed neither via a Numeration - prechunked or not - thereby avoiding the onerous question how the Numeration/derivation knows where the relevant cut off points are.

among the remaining two options the analysis in chapters 2-4 relies on a conception of Phases that is based on Phase-heads with uFF rather than on the pairwise composition of lexical arrays.

Since, as can be concluded from the discussion above, consideration of uFF is a prerequisite for either conception of Phases, it is about time to take a closer look at  $\varphi$ -features. This will be dealt with in the next section.

### 5.3 $\varphi$ -Features

The result of the discussion of Phases in the previous section is that Phase-heads signal what constitutes a Phase and these Phase-heads in turn are signaled by the presence of unvalued features. So those features that need to get valued and deleted in the course of the derivation are taken as crucial indications for Phasehood in so far as the heads that introduce these features into the derivation are identified as Phase-heads (cf. Chomsky e.g. 2002; 2004; 2008). *Prima facie* this conception of Phases does not seem to be easily reconcilable with the stand on Phases taken here. Under the Chomskyan (2001; 2002) system the only heads that introduce unvalued  $\varphi$ -features into the derivation are C and  $v^*$ , and for the latter it is not even clear whether e.g. unaccusative  $v$  constitutes a Phase-head or not (cf. e.g. Marantz 2007, Boeckx 2009 vs. Chomsky 2004, 2008 for two diametrical opposed views on this).

So, before fully embracing the view that Phase-heads can be identified on the basis of their property of introducing unvalued features into the derivation, let me briefly digress and pay some more attention to the question of the role that defective Phase-heads play in this system, because this is the place where interesting insights on the properties of non-defective Phase-heads can be gained. According to the standard reasoning in Chomsky (2001; 2002), unaccusative  $v$  is not a Phase-head because it is defective. This defectiveness is manifest in the lack of the ability of  $v$  to assign (Accusative) case and it results from the fact that  $v$  lacks the full set of  $\varphi$ -features. However, this is also where things start to get a bit vague.

Under the standard (and more restrained) view, it is not the case that such a  $v$  does not have the full set of  $\varphi$ -features, it is just that all the  $\varphi$ -features of  $v$  are matched, yet not all of them are valued (cf. Gallego 2010: 27-28). This hinges on the assumption that in an Agree-driven system the operation Agree that has the potential to assign a value to an

unvalued feature consists of two steps. The first is Match, the second is Valuation (cf. Hornstein 2009; Gallego 2010). Thus, defectiveness is a situation in which there is Matching, but there is no Valuation.

Under the slightly more radical view the defectiveness of Phases is defined by the complete absence of one of the  $\varphi$ -features on the defective Phase-head (cf. Chomsky 2000; 2001; Gallego 2010: 119-120 for further discussion). Depending on whether  $v$  is unaccusative/passive or a raising/ECM verb the defectiveness is either expressed in the lack of a person feature; the former case, or the lack of a number feature; the latter case.

One last option, which I will not discuss any further here is that defectiveness is the result of the absence of a projection close to a Phase-head (cf. Gallego 2010: *ibid*).

So, under the standard conceptions it is either the case that a Phase-head is defective, if this is a head that either introduces a set of unvalued  $\varphi$ -features into the derivation that is incomplete in the sense that one of the  $\varphi$ -features is absent, or if it is a head that has the full set of unvalued  $\varphi$ -features, but fails to value all of them upon Matching so that a second Match and Valuation operation for the same set of  $\varphi$ -features is necessary. If, however, the full set of  $\varphi$ -features is present on a given head and all of the  $\varphi$ -features are valued upon Matching, then the head is a non-defective, fully operative Phase-head. In essence, as I have already pointed out above, Phase-heads emerge as the locus for the introduction of unvalued  $\varphi$ -features into the derivation (cf. Gallego 2010; Chomsky 2004; 2008; Boeckx 2009 etc.) and the identification of a Phase is intimately tied to the presence of unvalued  $\varphi$ -features.

However, we have already seen that there are some qualifications to this conception. Under certain circumstances some heads are identified as defective rather than fully operative, i.e. non-defective Phase-heads. What is striking about the characterization of defective Phase-heads under the standard view is that potential defectiveness is always confined to the probing element, i.e. to the Phase-head. But this leaves a number of questions unanswered. For one, it remains somewhat unclear whether the unvalued  $\varphi$ -features that are relevant in the context of defective Phases are really only person and number, as is argued in Chomsky (2001). Here a non-defective  $v^*$  and C Phase-head is characterized by the presence of both of these features on the Phase-head and this is distinguished from defective  $v$ , which differs from the non-defective variant in that it lacks a specification for one of these features (cf. *ibid*), as has already been pointed out above.

This begs the question whether there is also a defective version of C and whether the defectiveness on C also yields the two way distinction between defective person and defective number features that parallels the unaccusative/passive vs. raising/ECM distinction. Furthermore, the question whether defectiveness is limited to probing elements only emerges. Differently put, the question then is whether only Probes, i.e. Phase-heads are likely candidates for showing the deficiency or whether Goals can also be defective (c.f. e.g. Roberts 2010).

And ultimately, in a more general sense there is also the question whether defectiveness exists with any relevant consequences at all or whether there is just a principled distinction between heads that are Phase-heads and those that are not. After all, Gallego (2010) is right in raising the question of what is the point in calling something a defective Phase-head if it does not trigger Transfer. Either an LI triggers Transfer and then it is a Phase-head or it does not and then it behaves like all the other LIs that are not Phase-heads.

So, despite the apparently very simple picture in Chomsky (2000; 2001) under which Phase-heads are determined by the presence of valued  $\varphi$ -features there is still a substantial amount of variation possible and a number of proposals have been made to explore the different paths that are open from here on out. Again, in this chapter it is not my intention to explore all of these potential paths in great depths. Rather I will focus once more on the question what the implications of the analysis presented in chapter 2-4 of this dissertation are in this context. As has been indicated above already, following the analysis in Marantz (2001, 2007) under which all categorizing  $x$ -heads are Phase-heads deviates significantly from the dedicated Phase-heads that are identified in Chomsky (2002, 2004) as the LIs that introduce unvalued  $\varphi$ -features into the derivation, at least when the relevant  $\varphi$ -features are person and number and arguably nothing else.

Marantz (2007: 1-2) argues that the categorizing  $x$ -heads form words with a categorial feature and a  $\varphi$ -feature set out of uncategorized roots. These words then behave like Phases in the sense that they have a propositional status similar to the status that Chomsky (2000; 2001) assigns to Phases. However, the discussion in chapter 5.2 has shown that the identification of Phases on the basis of their propositional characteristics is somewhat problematic and it has been discarded in Chomsky's later papers (cf. e.g. 2004, 2008).

Notice though that the Marantzian conception of categorizing little  $x$ -heads as Phase-heads is not incompatible with the identification of Phase-heads in Chomsky (2004, 2008). After all, the property of the categorizing  $x$ -head that makes it a Phase-head is that it introduces  $\varphi$ -features into the derivation, just like the Phase-heads in Chomsky (2004, 2008) do. The only difference between the Marantzian and the Chomskyan conception of Phase-heads is that for Chomsky only  $v$  and C count as Phase-heads, because these are the only LIs that introduce unvalued  $\varphi$ -features into the derivation, whereas for Marantz all  $x$ -heads are Phase-heads regardless of whether the  $\varphi$ -features they introduce into the derivation are valued or unvalued.

The analysis in chapter 2 clearly follows the conception of Phases in Marantz (2007) in so far as it identifies  $n$ -heads as Phase-heads, irrespective of the fact that the person and number features of this head are introduced into the derivation as valued features. Yet, this does not mean that the analysis also necessarily embraces the Marantzian assumption that these Phases are propositional units.<sup>26</sup>

First, the analysis in chapter 2 under which  $n$ -heads emerge as Phase-heads hinges on the fact that it is not enough if the two  $n$ -heads in a productive, recursive and compositional nominal root compound bear valued  $\varphi$ -features for person and number; rather the actual values of the  $\varphi$ -features are also important. For the PoS eradicating incorporation to be operative in this type of nominal root compound, one of the  $n$ -heads needs to have a marked, i.e. non-default, value on its number feature. Recall further that the conditions for incorporation are those described in Roberts (2010). The hallmark of Roberts' incorporation analysis is that the Goal, i.e. the LI that is incorporated into a probing head, is defective. This defectiveness, however, is not determined in absolute terms. Rather it is a relative notion that emerges from the fact that the feature set of the Probe properly includes the feature set of the Goal. The analysis in chapter 2 has shown that this is precisely the situation that can be observed in cases of nominal root compounding. Thus, here it is the Goal LI rather than the probing head that is defective.<sup>27</sup>

Now, does this make every little  $x$ -head a Phase-head? The answer is: maybe. From

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<sup>26</sup> To be clear, the analysis also does not rule this out, which is as it should be given Chomsky's conception that Phase-boundaries have significant interpretation at the interfaces (cf. Gallego 2010: 40) is only an ancillary fallout from the role that Phases play within (narrow) syntax.

<sup>27</sup> Here a qualifying statement might be in order. Of course, the labels Probe and Goal here emerge only as epiphenomenal, since according to the analysis in chapter 2 it is the EF on both  $n$ -heads that initiate probing.

the perspective that it is the EFs on the respective *n*-heads that induce probing, every *x*-head, which is equipped with an EF, is a Phase-head. This, of course, makes every head a Phase-head (cf. also Epstein & Seely 2002; Gallego 2010: 43). However, at the same time it should be kept in mind that EFs, although they have the capability of initiating probing, never get valued. This is because they do not need to. They can pass Spell-Out without being valued or deleted (cf. Chomsky 2008, Narita 2011 and others). Thus, although all *x*-heads, and in fact all LIs, have the potential of initiating probing, due to their unvalued EFs, they are at best a version of defective Phase-heads, because their unvalued (and probing) feature never gets valued or deleted.

Hence, the question whether e.g. an *a*-head is a Phase-head in the same sense that *n*-heads are Phase-heads in chapter 2, can only be answered when the properties of both heads are carefully compared and when it is determined which features, other than person and number, are introduced by *n*, or *a* respectively. However, this is beyond the scope of the present analysis. Thus, the answer to whether really all *x*-heads are Phase-heads as indicated by Marantz (2001; 2007) will remain unanswered at this point. Yet, it should be clear that the identification of *n* as a Phase-head is not as irreconcilable with current assumptions on Phase-heads as it may seem at first sight. This is especially true when taking into consideration how the valued  $\varphi$ -features on the *n*-head are interpreted.<sup>28</sup> Recall that the [plural] feature on *n* does not necessarily lead to a genuine plural interpretation. Instead, it is interpreted as *kind*, suggesting that a plural interpretation roughly in the sense of ‘a-set-of-distinctive-entities-of-a-quantity-larger-than-one’ does not hinge on the presence or absence of the  $\varphi$ -feature [plural] alone, but rather on the interaction between this  $\varphi$ -feature and certain other dedicated functional heads (cf. e.g. Borer 2005a; b; Alexiadou, Haegeman & Stavrou 2007 and others), as well as the discussion of this issue in chapter 2. However, not all of these functional heads are necessarily also Phase-heads. In this sense, the ‘reduction-of-computational-load’ (cf. Chomsky 2000; 2005; 2008) argument also ties in nicely, in so far as the *n*-head is just one cut off point at which the computational load that has built up from the introduction of the interpretable  $\varphi$ -features person and number and arguably other features, e.g. gender, declension class and a host of

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<sup>28</sup> I am (sort-of) assuming that the valued features are interpretable (cf. Chomsky 1995a) and I brush over some subtle distinctions between  $\varphi$ -features that may be valued but non interpretable (cf. e.g. Chomsky 2000, 2001; Gallego 2010) for some remarks that go into the same direction.

semantic features that are interpretable and inherent to the root have accumulated.<sup>29</sup>

So let me now turn to the other LIs that are identified as Phase-heads in this dissertation. In chapter 3 *v* is identified as a Phase-head. This probably comes closest to Chomsky's original conception of Phase-heads. The only caveat here is that *-ing* introducing *v* is really an instance of *v* rather than *v\**, but it is certainly an LI that introduces unvalued  $\varphi$ -features into the derivation. These  $\varphi$ -features are again valued by the interpretable  $\varphi$ -features on the SO that is the complement of the root that *v* categorizes.<sup>30</sup> In this respect, *v* does not differ from the Phase-head that Chomsky (2000 *et passim*) identifies.<sup>31</sup> The other Phase-head discussed in chapter 3 is perfectly parallel to the Phase-head in chapter 2. It is a nominalizing *n* Phase-head. The only difference between the *n*-head in chapter 2 and the one in chapter 3 is that *n* is merged to an uncategorized root in chapter 2, thus instantiating inner morphology in the sense of Marantz (2007), while the *n*-head in chapter 3 is merged to an already categorized SO, thus instantiating a case of outer morphology (cf. again Marantz 2007).

Finally, the Phase-head that is identified in chapter 4 is D (or K<sup>32</sup> for that matter). Now, to be clear here let me emphasize that D, just like the *-ing/-ung* introducing *n* in chapter 3, is a Phase-head that is in all likelihood attached on top of an already categorized phasal *n*. In a sense then D is also a case of outer morphology just like *-ing/-ung*

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<sup>29</sup> Actually, it is far from clear which features are the relevant features here. Chances are that more than just person and number are relevant for the composition of an LI and there may even be some mechanism like Merge, say *Merge'* (cf. Gallego 2011) that compiles features in the lexicon and forms what is pretheoretically identified as a word in syntax. However, at least to my knowledge, this has not been worked out anywhere yet and Gallego's (2011) proposal is a first step into this direction. Whether this conception is reconcilable with the approach taken here is an interesting question that can only be determined on the basis of further research in both directions.

<sup>30</sup> Notice too that the incorporation onto verbal (and nominal) *-ing* in the forms in chapter 3 is again determined by the absence of definiteness features on the incorporating SO. Thus, this is again a potential case of defectiveness akin to the defective Goal identified in chapter 2 in the context of the incorporation analysis based on Roberts (2010).

<sup>31</sup> Recall also that the questions of whether there exist a defective and a non-defective version of *v* and if so whether these actually behave differently with respect to the capacity of inducing Spell-Out is far from settled (cf. e.g. Legate 2003; Marantz 2007; Boeckx 2009; Gallego 2010 for arguments that there is virtually no distinction between *v* and *v\**).

<sup>32</sup> I will eventually remain neutral on the question whether D or K is the actual Phase-head (but cf. comments below). There are a number of arguments in favor of either D or K being a Phase-head (cf. Svenonius 2004; Bošković 2005; Hiraiwa 2005; Matushansky 2005; Müller & Heck 2008; Ott 2008; Samuels 2008; Narita 2009; 2011; Richards 2012) and whatever turns out to be the relevant Phase-head should be compatible with the argumentation presented in chapter 4.

introducing *n*, although it is, of course, not affixal.<sup>33</sup> Then again, the question that remains is what makes D a Phase-head. Arguably, just like *n* and *v*, D is also an LI that introduces φ-features into the derivation. In essence, D is identified as the counterpart of C in the clausal domain (cf. e.g. Chomsky 2005; Hiraiwa 2005 and others). An investigation into the concise properties of D is beyond the scope of the discussion in this section. Nevertheless some rather short qualifying remarks might be useful.

The strongest argument for D as a Phase-head in chapter 4 is of empirical nature and can just be derived from the analysis of the data. However, there might also be some indications that D introduces unvalued φ-features into the derivation. When following the original account in Narita (2011) on which the analysis in chapter 4 is based, Case is the most obvious candidate. However, I refrained from fully embracing this line of analysis in chapter 4, for the simple reason that the *n*-heads in chapter 2 also show case marking. So, either these *ns* are also Ds or the correlation between D and Case does not hold.

Yet, as the discussion in chapter 2 has shown, it may turn out that the *n*-heads are all marked for inherent Case and not for structural Case. Recall, that genitive Case has been identified as one of the (valued and) interpretable features on the *n*-heads in nominal root compounds and that for those *n*-heads that are marked for [plural] it is not really clear whether they bear genitive Case as well, because in German all plural forms are syncretic between nominative and genitive Case. Thus, it might be reasonable to assume that the distinction between inherent and structural Case falls along the *n* vs. D line. D then is the locus for unvalued and uninterpretable (structural) Case features, whereas (inherent) Case features on *n* are interpretable. Ultimately, what values the φ-features on D is just the tense feature on *v/V* or *C/T* respectively (cf. Gallego 2010 for a detailed analysis that goes into the same direction).

However, the properties of these φ-features are far from clear and until we have a more scientific account on the role, function and type of the φ-features that are relevant, we can just note that none of the potential Phase-heads discussed in this dissertation fall in line with those that have already been identified as the obvious potential candidates elsewhere. All that the analysis presented here does in this respect is that it adds some

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<sup>33</sup> Obviously this statement comes with a caveat. There are, of course, a number of languages, where D may well be affixal. This, however, does not diminish the validity of the argument, rather - if anything - it adds to its strength.

substance to the role that some of the  $\varphi$ -features are supposed to play.

Still, it might turn out that syntax, regardless of whether it is Agree-driven as in Chomsky (2008) or Merge-driven as in Narita (2009; 2011) and in this dissertation is far less featural than is generally assumed (cf. e.g. Boeckx 2010 for some ideas in this direction). As long as  $\varphi$ -features remain the unknown in our equation, i.e. as long as there is no coherent explanation for what they are, where they come from and which function they fulfill, these questions must remain unanswered. At least, though, we are in a position to isolate the unknown variable in our equation and work with the rest, which is precisely the position that we are familiar with from all over (natural) science and thus a situation that should give rise to hope rather than despair.

## 6 Conclusion

Starting from the assumption that Merge is an operation that can apply freely in narrow syntax, this dissertation investigates structures that are created by this unconstrained form of Merge and analyzes in particular those constructions resulting from an unconstrained, or wild-type, Merge that are characterized by a PoS and that therefore cannot be labeled.

The analysis of these labelless symmetric SOs encompasses three broad empirical domains: nominal root compounds, nominal gerunds and SCs. The PoSs that arise in these constructions in a sense are and are not all alike. Thus, a distinction is made between the types of objects that are involved in the construction of the symmetric SO: while nominal root compounds are adjunction structures, i.e. structures in which no selection relation holds between the two (or more) heads involved, incorporated forms of nominal gerunds are those in which an argument relation holds between the (verbal) incorporation host and the (nominal) incorporee. In SCs, on the other hand neither an argument relation nor an adjunction relation holds between the two PoS inducing SOs.

Despite these apparent differences, the analysis in this dissertation shows that the PoS that is created in these various types of constructions can be traced back to the same structural configuration. In each case the PoS that arises is one that results from the Merger of two LIs, i.e. heads. Thus, previous analyses that argued for a principled distinction between a PoS resulting from the Merger of two heads, as in the nominal root compounds and in incorporated nominal gerunds on the one hand, and a PoS resulting from the Merger of two Phrases, as in SCs on the other hand are unwarranted. Given basic assumptions on Merge, i.e. that this is an operation that needs at least one SO with an EF - which is just an LI - as its input, there simply are no cases of XP - XP Merger and a PoS resulting from the Merger of two phrases can thus never arise. Therefore all symmetries that arise in the course of the derivation can be traced back to a Merge configuration that involves two heads.

Still, upon closer inspection a distinction between the various instantiations of such a PoS can be made. Within the domain of nominal root compounds two configurations are distinguished. Under one the PoS arises from the Merger of two unlabeled roots. The resulting SO is itself an unlabeled constituent. This unlabeled symmetric SO, however, is never interpreted as such, because it is never spelled-out. Only when the unlabeled symmetric SO is embedded under a categorizing *x*-head, *n* in this case, is the complement

domain of this Phase-instantiating *x*-head spelled out and the PoS is dissolved at PF.

In the other configuration the PoS results from Merger of two *n*-heads. This situation parallels the Merger of two roots, in so far as this is likewise an instantiation of a PoS that arises from Merger two LIs, because the complement domain of each of the two *n*-heads is spelled-out, by virtue of them being Phase-heads, thus leaving behind nothing but the categorizing functional heads themselves. This situation is different from the situation that arises from Merger of two roots, in so far as each of the two *n*-heads spells-out their respective complement domain, i.e. the root they are merged to, prior to the instantiation of the PoS that results from the Merger of the two *n*-heads themselves. The PoS is then dissolved by incorporating one of the elements into the other. This incorporation operation is guided by an independently motivated incorporation constraint.

The distinction between compositional, productive and recursive nominal root compounds their and non-compositional, non-productive and non-recursive counterparts is an immediate consequence of these differences. Thus, the distinction between two types of nominal root compounds, both of which can be found in intra-language variation, e.g. in German, can be regarded as a first indication for an empirical phenomenon that is at the surface of grammar, but the origins of which are rooted in deep principles of narrow syntax and thus as the best evidence for the inner workings of the SMT.

A second empirical domain in which we can observe basically the same kinds of effects is that of nominal gerunds and their counterparts in other languages (i.e. among others nominalized infinitives in German and supine forms in Romanian). Here a PoS arises from Merger of a categorized *n*-head (again, presumably with a spelled-out complement domain) with an uncategorized root, which is categorized at a later stage of the derivation, namely under feature inheritance. Thus, here the PoS is manifest only when the uncategorized verbal root (i.e. what is traditionally glossed as V) is actually verbalized by Merger of *v* and when feature inheritance has taken place. Two options are available at this point. Either a Case-marking preposition, i.e. *of* is inserted - thereby blocking incorporation - or incorporation that is guided by the same principles as incorporation in nominal root compounds takes place. Again, both options lead to subtle but clearly and easily identifiable differences in meaning. In the former case a *specific*-interpretation results, in the latter a *kind*-reading emerges. A careful comparison between those nominal gerunds that license aspectual projections in their incorporated and non-incorporated forms

and those that do not license such projections further reveals that these distinctions can be traced back to the nature of the *-ing* affix. If the affix is generated low in the tree, it is a verbal affix an aspectual structure is licensed. This verbal structure is also present in those cases where the *-ing* affix is generated under a nominalizing node. However, the access to these verbal properties, which is manifest in the ability of the licensing of aspectual modifiers, is blocked in these cases, because the nominalizing *-ing* affix instantiates a *n*-Phase-head and thus blocks access to lower functional structure that is located in the domain of the spelled-out *n*-Phase.

Thus, here again we are facing a situation where subtle interpretive distinctions that can be linked to the occurrence vs. non-occurrence of aspectual marking are predicted by the theory, i.e. a situation where we can derive yet another indication for the SMT at work.

The last empirical domain investigated in this dissertation, in which, again, similar effects can be observed, is the domain of SCs. Here, also, the PoS results from Merger of two LIs. This follows from the requirements on Merge, i.e. that for Merge to be operative at least one of the elements that partake in the operation must be an LI with an EF. This rules out the possibility that two phrases can ever be merged. Thus, in structural terms Merger of two DPs as LIs, i.e. as D-heads, in SCs is not any different from Merger of say two *n*-heads in compositional, recursive and productive nominal root compounds, or, for that matter, Merger of two roots in the non-compositional compounds. The only detectable difference, if any, is that Merger of two D-heads is a Merger of two LIs that have already spelled-out their complement domains - which is yet again similar to the *n - n* Merger cases - whereas Merger of two roots is Merger of two LIs that have not received any interpretation yet. What differs between cases of *n - n* Merger and cases of D - D Merger is that only the former is susceptible to incorporation. In the latter the feature-set of the two D-heads does not meet the requirements for incorporation, i.e. there will be a distinction in Case-marking and possibly other feature specifications that prevents incorporation. Thus, two possibilities arise. Either the SO that is created by D - D Merger is one that is symmetric and thus unlabeled and when this is spelled-out at the next higher Phase-level it renders an equation interpretation, or, alternatively, one of the D-heads is displaced via IM, which is always an option, because the EF is available on a spelled-out Phase-head. This is what renders SCHM, produces an asymmetric and thus labelable structure and leads to a predication-interpretation.

This latter strategy is also available in those SCs where a spelled-out Phase-head with an EF, i.e. (specifierless) D, is merged with a SO that cannot be reduced via Spell-Out, e.g. a constituent that is traditionally labeled as PP or AP. While it is not possible to remerge the AP or PP constituents, because they are not Phase-heads and thus not susceptible to Merge via their EF (potentially barring some cases in which the preposition is simply a Case-marker), it is perfectly fine to remerge the DP constituent. This means though that subextraction out of AP or DP is fine, as long as the subextracted element is an LI with an EF. In principle this strategy is also available when the two SC constituents are DPs, because it is enough to reduce just one DP to an LI with an EF. This D-head can then be merged to a DP that is still a complex SO without an EF and it has the effect that the complex (non-reduced) DP remains available for subextraction (which is not an option when the domain of a Phase-head has been spelled-out). In any case, a PoS does not arise in these cases, which are all standard cases of X - YP Merger, i.e. Merger of a head and a phrase and again a sufficiently asymmetric and labelable structure results. Corroborating evidence that this is on the right track comes from *wh*-extraction and subextraction data in multiple *wh*-fronting languages, which shows that it is possible to either fully extract both SC constituents (of a DP - DP SC) or to subextract from one and to fully extract the other, while it is impossible to subextract from both SC constituents at the same time. This is what is expected when the at least one of the SC constituents must be merged as an LI with an EF - which is what makes subextraction from SO impossible.

So again, subtle distinctions in meaning, i.e. in equative constructions vs. predication constructions, and subtle facts from extraction and subextraction possibilities under multiple *wh*-fronting can be linked to (the same) deep syntactic principles that can be immediately related to the SMT. Thus, taking for granted that the SMT is probably too strong, there is at least a good indication in seemingly peripheral domains of the grammar that something close to the SMT is at work at the core of human language.

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