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NOMINAL MODIFICATION

Johann Wolfgang Goethe-Universität Frankfurt am Main

Renewal proposal - research programm

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Spokesperson: Prof. Dr. Esther Rinke

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Summary in English

The Research Training Group (RTG) 'Nominal Modification' is an internationally visible research platform that enables excellent international young scholars to collaborate with senior researchers and post-doctoral fellows from Goethe University (GU) on an innovative cross-modular and cross-linguistic research program. Based on a structured and internationally oriented qualification program, the RTG qualifies the PhD students optimally for the academic job market and beyond.

The aim of the research program is to reach a better understanding of the processes of nominal modification and of the structure of the nominal domain. The cross-modular perspective of the RTG enables us to investigate the interaction of different linguistic modules in the human language faculty. The first aspect of the research program is concerned with the internal syntactic structure of modified nominal phrases, addressing the universality of the DP layer, the availability of functional layers within the nominal phrase and the parallel between CP and DP both from a synchronic and typological and a diachronic perspective. The second aspect investigates the external syntactic structure of modified nominal expressions, focussing on extraposition, word order variation and discontinuity. Within a cross-linguistic perspective, we examine whether extraposition phenomena are motivated by semantics and/or phonology and how to explain linear ordering restrictions, among other aspects. The third aspect of the research program deals with interpretive aspects of modification. The focus is on the question of when the occurrence of a DP-internal modifier is required or excluded and on the question of how to classify the semantic relations between a modifier and a modified head.

The qualification program offers structured and needs-tailored support for the students to pursue and complete their individual dissertation projects within three years. It also provides support with regards to additional professional skills that qualify the doctoral students for the domestic and international academic as well as for the non-academic job market. The qualification program includes advanced linguistic courses, peer coaching and supervision by at least two supervisors, and opportunities for exchange with high-profile international visiting researchers. In cooperation with Goethe University's graduate academy GRADE, additional training, consulting, and networking events are offered.

Research Program

1 Definition of the research topic

We define nominal modification as any category-preserving operation on a nominal expression, where the term nominal expression is understood in a broad sense.

Typical cases of nominal modification include modification by adjectives, participles, nominal appositions, possessives and dependent clauses (relatives, complement clauses). In general, determiners and quantifiers are excluded from this list, although it has been argued that some quantifiers behave like adjectives (see Giusti 1991). Notably, possessives, depending on the language, are sometimes classified as determiners and sometimes as adjectives. Previous research in the RTG on Nominal Modification has shown that the border between determiners and modifiers is not always clear-cut. In addition, nominal modifiers closely interact with determiners in processes of nominal modification. In order to reach a better understanding of the structure of the nominal domain and the processes of nominal modification, the interaction between determiners and modifiers or determination and modification will be further investigated, including the implications for diachronic development and language acquisition. We will also include other phenomena which are not always mentioned when it comes to proto-typical cases of nominal modification but which nevertheless contribute important insights, such as compounding or dependent clauses.

Nominal modification as a process serves to expand and elaborate nominal constituents. In doing so, different types of modifiers share characteristics such as typical ambiguities (restrictive vs. non-restrictive) and shifting positions (position of attributive adjectives and genitives, splitting and extraposition of nominal modifiers and/or heads). Hence, modification includes systematic semantic, syntactic and phonological effects that interact with each other depending, for example, on the type of modifier or on the language. Therefore, the cross-modular and cross-linguistic approach pursued in the Research Training Group has proven to be very successful and will be continued and extended.

Nominal modification as an overarching topic has proven to be remarkably fruitful for our Research Training Group and will be pursued for the following reasons:

First, nominal modification is highly relevant from a theoretical perspective, including all core areas of grammar and their interactions. From a syntactic perspective, the focus is on the different placement options of nominal modifiers, their combinability among each other and with different types of nouns and determiners within the noun phrase, including local and non-local agreement processes. It is still an open question which functional categories are universally or language specifically available and what counts as evidence for the existence of functional layers within the nominal domain. Syntactic variation within the noun phrase correlates with prosodic marking including the placement of the nuclear accent and prosodic structure as well as the formation of prosodic domains. If we include extraposition or discontinuous phrases can we determine the extent and means by which nominal modification can lead to prosodic restructuring within the noun phrase and beyond? Modifiers that are disconnected from their heads still raise questions concerning their licensing conditions. And how is a modifier semantically combined with its head when surface structure obscures this connection? From a semantic perspective, the focus is on the semantic contribution of nominal modifiers – which may correlate with the type of modifier (e.g. in terms of intersectivity and gradability) but also with its syntactic position within the noun phrase. Nominal modification can have scopal, referential and phraseological effects and can also have semantic consequences beyond the nominal domain.

Second, the research topic of nominal modification invites investigations that provide a testing ground for theoretical analyses and that go beyond formal approaches. Typological variation, studies on dialectal microvariation and on the diachronic development of nominal modifiers and nominal modification structures can shed new light on the issues mentioned previously. Cross-linguistic comparison and diachronic studies will focus on the cross-linguistic distribution and the diachronic development (and relatedness) of certain types of nominal modifiers (and determiners). They will for instance discuss the differences concerning the (prenominal and postnominal) placement options and the ordering of nominal modifiers cross-linguistically and diachronically. Acquisition studies and psycholinguistic experiments can confirm or disconfirm hypotheses concerning the syntactic or semantic complexity of the relevant structures. Although the research group is clearly theoretically grounded, one of the major achievements during the first phase of the research training group was that we could enlarge the empirical basis for the study of nominal modification. This was achieved by collecting and analyzing data from less studied languages (e.g. languages spoken in Africa (Yoruba, Ewe), Caucasian languages and specific German and Italian dialects), data from first and early second language acquisition, and data from diachronic corpora. One of the aims in the second phase is to strengthen methodological broadness in the research training group and to encourage theoretically informed empirical and experimental investigations.

The third factor concerns career advancement for the doctoral and post-doctoral researchers involved in the program. Due to the interdisciplinary and cross-modal approach and the collaborative work in the RTG, which is only made possible by the collective expertise and experience of the participating researchers in Frankfurt, doctoral and post-doctoral researchers will be equipped with cross-disciplinary competence and a broad area of specialization. The complexity of the theme makes it especially prolific in generating a number of different research topics that are best scrutinized from different theoretical and empirical perspectives, with different methodologies and with respect to typologically different languages. This also guarantees that the particular specializations the doctoral students will attain are diverse. Students will be able to pursue scientific careers in different areas of the

field, as specialists in phonology, syntax or semantics, in Romance, German or English linguistics, in diachrony, language acquisition, language typology or psycholinguistics. Hence, the participants in this doctoral program will have concurrently a broad base in linguistics and a specific area of specialization, which will be an optimal starting point for a successful scientific career. In this sense the RTG provides conditions for international students to meet the demands of an evolving and very competitive market.

Finally, all participating researchers in the RTG share an interest in nominal modification. They have contributed to this research area from varied perspectives both on an individual level and in joint projects. The most prominent example of collaboration is the research group on relative clauses funded by the DFG from October 2011 to September 2017. Although nominal modification by relative clauses will not be at the heart of the current proposal, the collaborative work in the Research Unit 1783 'Relative Clauses' has laid the groundwork for the joint interest and the collaboration on further aspects of nominal modification.

In the following sections, we will derive our research questions and aims from the current state of the art and provide a more detailed description of potential research topics that can be further pursued in the framework of the proposed Research Training Group.

Section 3.2 starts with issues concerning the internal architecture of nominal phrases – a central and still very much debated topic both from a theoretical perspective and from the perspectives of diachrony, typology and language acquisition. The focus here is on the universal availability of DP and on the internal makeup of the DP projection in terms of additional functional layers. We will also address the question whether information structure interacts with DP structure as it does at the sentential level.

Section 3.3 concerns external structural aspects of modified nominal phrases, with an emphasis on extraposition, discontinuity and non-locality. Here, factors bearing on the choice between continuity and extraposition or other kinds of discontinuity straddle the borders between syntax, phonology and other domains of linguistics.

Section 3.4 considers interpretive aspects of modification. We will particularly focus on the following four topics: cases in which the occurrence of a DP-internal modifier is either required or excluded, cases in which a DP-internal modifier is interpreted outside the DP, tendencies and exceptions in the semantic relation between a modifier and a modified head, and scope interactions between a head and its modifier.

Potential themes for dissertation topics are detailed in section 3.5. The concrete selection of dissertation topics will depend on the current state of the art as much as on the interests of individual students. The list of research topics and of planned dissertations should thus not be seen as a definitive research plan; instead the summary of topics serves to give an idea of how the general topic of the RTG can easily be broken down into smaller areas for PhD projects over the next few years.

2 Internal structure and syntactic layers of nominal phrases

2.1 Nominal phrases and generative syntax

The internal syntactic structure of nominal expressions has been receiving a great deal of attention within the generative framework since the early 1970s and 1980s. Since Abney's (1987) seminal dissertation, it is common belief that the determiner rather than the noun itself acts as the structural head D° of the nominal expression and that the noun represents its complement. The assumption of a DP structure is based on morphological, syntactic and semantic arguments which argue that DP is a functional extension of the nominal domain in very much the same way as TP/CP are functional extensions of the verbal domain. Morphologically, agreement processes similar to the verbal domain can be observed in the nominal domain, e.g. between the noun and its arguments or between modifiers and the noun such as e.g. between possessives and nouns (Szabolcsi 1983). From a semantic perspective, it has been assumed that it is the determiner head that assigns referentiality and enables argumenthood of a noun phrase and not the noun itself (cf. Longobardi 1994). From a syntactic point of view, different ordering possibilities (e.g. between adjectives and nouns as in

Romance) demonstrate movement operations and prove the availability of additional syntactic positions within the noun phrase (Cinque 1994).

Ever since Abney's (1987) proposal, the following two questions have been the subject of debate among researchers: a) is the DP structure universally available, i.e. can it also be extended to articleless languages and b) what types of structural layering have to be assumed between DP and NP.

With respect to the first question, it has been argued (cf. Corver 1992, Bošković 2008, among others) that articleless languages lack the DP-layer altogether. Bošković (2008) proposes a NP/DP parameter, subdividing articleless languages from languages with articles. Others, however, have provided evidence that the DP layer may be present in articleless languages as well, e.g. in order to account for the behaviour of indefinite determiners and quantifiers (cf. Caruso 2012). A very recent contribution to this discussion is the dissertation by **Anja Šarić** within our RTG, completed in February 2018. Šarić discusses the structure of double genitives and possessives in Serbian, an articleless language and provides evidence in favour of a universally available DP category by questioning the validity of Bošković's (2008) *adnominal genitives parameter*. However, it is clear that one, albeit very convincing, analysis of one phenomenon in one language cannot answer this question comprehensively. There are still many open issues, and other generalizations of the NP/DP parameter are yet to be investigated such as left branch extraction, adjunct extraction, scrambling, negation raising, multiple wh-fronting and superlative readings, which Bošković (2008) considers to be part of the NP/DP parameter.

The second relevant question concerns the functional layers that have to be assumed between DP and NP. As sketched above, typical arguments in favour or against the existence of a functional layer include morphological evidence (case and agreement morphology), evidence from syntactic placement and movement within the DP and semantic or pragmatic effects of different placement options.

The assumed parallelism between the structure of the sentence (CP) and the structure of nominal expressions already suggests that there will be categories other than N and D in the nominal domain. The assumption of functional projections based on agreement and case features may be problematic against the backdrop of minimalist theory (Chomsky 1995, 2000). Nevertheless, under the hypothesis that N corresponds to V and D corresponds to C, some category parallel to the tense/agreement field of the sentence should also be available in the nominal domain, as shown by agreement morphology between the elements combined in a noun phrase. In addition, variable phenomena of nominal modification (e.g. the variability of adjective placement in Romance and the variable position of possessives in some Romance languages) speak in favour of the existence of functional categories between DP and NP: these provide the respective syntactic positions and determine the observed syntactic variation.

Investigating Southern Italian dialects, **Eugenia Greco** shows in her RTG dissertation that possessives are ambiguous between a determiner and an adjectival status and that there is no clear distinction between modifiers and determiners. The difference between the two has to be modeled in terms of movement of the noun to the D position or to a functional position below DP.

Number phrase (NumP), proposed by Ritter (1991), is one functional category whose existence is relatively uncontroversial. Number manifests itself morphologically in terms of agreement between noun, determiner and nominal modifiers (adjectives). With respect to Romance, NumP has been claimed to be a landing site for the movement of N. **Ruby Sleeman's** RTG dissertation on the status of ordinal numbers will help to establish a precise position of these elements. She will also address the ambiguity of the notion NumP which has been used in the literature either as the projection marking plural (and attracting N in some languages, like Romance) or as the locus of numeral modifiers/determiners. It might turn out that numerals and determiners occupy the same position or that we have to postulate two distinct entities, with an evident reflex in the semantics of these elements.

Number is clearly an intrinsic category neither the determiner, nor of the noun, nor of the involved modifiers (Alexiadou, Haegeman, & Stavrou 2008). This fact speaks in favour of the assumption that number is indeed represented as a functional layer within the nominal phrase.

Number has an interpretable effect for the whole noun phrase and it is linked to argumenthood (e.g. as shown by the availability of bare plurals in argument positions). This contrasts, for example, with the properties and functions of gender in the noun phrase. Grammatical gender is an intrinsic property of the noun, and it hardly has an interpretative effect, although gender is morphologically expressed and spread in agreement patterns. Therefore, gender is less likely to host its own functional layer (Alexiadou et al. 2008). GenP and NumP are just two examples for potential functional layers in-between D and N. Other categories have been proposed, such as PossP, AgrP, nP, KP etc. whose status is under debate. To date it is still an open question how many functional projections are contained in the internal structure of the DP and how they are layered. In addition, it has not been resolved whether these functional layers are the same across languages.

An issue related to the functional setup of the nominal domain concerns the evidence for the availability of yet another structural configuration within the DP. In her dissertation project in the RTG, **Fenna Bergsma** works on free relative pronouns which can serve double duty under syncretism (for nominative and accusative case) and argues that those constructions call for a multi-dimensional analysis. Her analysis combines the theory of Grafting (van Riemsdijk 2006a, 2006b) with nanosyntax (Starke 2009). Bergsma's dissertation relies on a particular decomposition of case features (Caha 2009), for which Smith & Moskal (2016) provide further evidence.

Moreover, a closer inspection of agreement patterns and agreement mismatches within and across the nominal domain has inspired recent research (cf. Smith 2015, 2016, 2017) promising a more complete understanding of functional layers and their possible feature specifications (e.g. **DISSERTATION TOPIC I, DISSERTATION TOPIC II**). In his RTG dissertation, **Nicolas Lamoure** shows that different agreement patterns for coordinated nominals exist both within and outside nominal expressions. According to Lamoure, these facts have to be modeled in a theory of agreement flexible enough to accommodate all these cases.

Zheng Shen, the current post-doc researcher of the RTG, looks into a closely related issue: multi-valuation, i.e. cases where one element agrees with two goals and thus is assigned two values. Looking at the nominal domain, Shen (2017) discusses the so-called nominal right node raising construction in (1) and argues that the construction involves the noun *student* being assigned two singular values.

- (1) a. *This tall and that short student are a couple.*
 b. **This tall and that short students are a couple.*

In English the multi-valued Ns must be spelled out as singular. When a verb is multi-valued by two singular subjects (e.g. Mary and Sue in (2)), however, it can be spelled out as either singular or plural.

- (2) *John's glad that Mary and Bill's proud that Sue has/have been to Cameroon.*

A cross-linguistic survey has revealed that multi-valuation demonstrates an Agreement Hierarchy effect, connecting two seemingly unrelated issues: hybrid noun agreement and multi-valuation.

From a phonological perspective, agreement patterns are a relevant object of study as well. **Yranahan Traoré's** RTG dissertation on Tagbana has opened a new avenue of investigation. Although other languages can superficially be mistaken as being similar to Tagbana, Tagbana is unique in its agreement behaviour, because agreement is transmitted through a special form of alliterative concord. In the second phase of the RTG, other languages with alliterative concord could be investigated more thoroughly (**DISSERTATION TOPIC III**) and a dissertation on phonological patterns of agreement through phonological features could be included. In addition to the crucial descriptive point of view, some theoretical and cross-modular aspects are also worth of study, for example, the implementation of phonology into morphological theories.

In addition to morpho-phonological features and agreement relations, syntactic placement and word order within the nominal expression provide additional evidence for the internal structural makeup of the noun phrase. One example is the placement of adjectives that has

lead Cinque (1994) to propose a relatively wide range of distinct functional categories with interpretative content and a fixed order among them. It has been shown repeatedly that certain adjectives occur in an unmarked order relative to each other in the absence of any special intonation, see for example Bolinger (1967), Valois (1991), and Cinque (1994). A variety of potentially universal hierarchies have been proposed. Sproat & Shih (1991) proposed (3)a, Dixon (1982) (3)b and Cinque (1994) (3)c using different categories.

- (3) a. Quality > Size > Shape > Color > Provenance
- b. Value > Dimension > Physical property > Speed > Human Propensity > Age > Color
- c. Possessive > Speaker-oriented > Subject-oriented > Manner

According to Cinque (1994), adjectives occupy unique specifier positions of functional heads and are universally ordered according to semantic or pragmatic principles. Apparent violations of the above mentioned universal hierarchies do not give raise to ungrammaticality, but are considered instances of pragmatically unmotivated scrambling.

A dissertation that investigates these aspects in two Niger-Congo languages has just started in the RTG by **Lola Priscilla Adenuga**. Adenuga investigates predicative and attributive adjectives in Ògè (Niger-Congo), and plans to compare her findings to her mother tongue Yorùbá.

One question that arises is whether the violation of universal ordering or in a more general sense any kind of marked word order of modifiers within a nominal expression is indeed 'unrelated to pragmatics' or whether it can be related to information structural categories such as topic, focus, etc. The parallel between CP and DP suggests that information structure might determine word order variation within the sentence as well as within the DP. Further evidence for such parallelism could be provided by the form of the article. **Seyna Carlucci-Dirani** investigates in her RTG dissertation the distribution of full and reduced definite articles in South Hessian and attributes different information structural states to the them. She investigates whether the pragmatics of the full article can provide evidence for a parallel between CP and DP.

The more general question concerning the syntactic layering within the DP can also be explored starting from the highest portion of its internal structure, i.e. its left periphery, in order to establish whether there are parallel phenomena between the two areas, and if there are, how far the parallel can be extended (i.e. **DISSERTATION TOPIC IV**). Given the fact that the left periphery is typically related to the syntax-discourse interface, the investigation of these questions can also provide insights into the interaction of different modules of the grammar. For example, the higher CP-layers are known to be immediately relevant to pragmatic and phonological processes and this impact would also be predicted to exist in the DP. Furthermore, a stricter analogy between CP and DP should be observable concerning the positioning of single pragmatically-related components. These analogies could be brought out by close inspection of the relevant interfacing (i.e. interpretive) mechanisms, seeking and exploring connections between content-related (CP) categories and sentence type (Force) on the one hand and reference-related (DP) categories on the other hand, including both information structure, illocution, etc. as well as specificity, definiteness, etc.

The interaction of syntax and prosody is not only a relevant research topic with respect to word order variation and information structure. It also concerns recursive structures, e.g. DP modified by several or complex modifiers. Recursion at the level of nominal expression also has a prosodic component (see Kentner & Féry 2013 for instance). Prosodic structure has long been assumed to be non-recursive (Nespor & Vogel 1986, Selkirk 1995, Truckenbrodt 2006). Recently, prosodic recursion has attracted greater attention as a general theoretical feature. New approaches to prosody (Ito & Mester 2012, Selkirk 2011) assume a strict one-to-one mapping between morphosyntactic categories and prosodic categories. An evident problem with this mapping is related to the prosodic analysis of a DP modified by a PP or a relative clause. Such a DP is a Prosodic Word containing a Prosodic Phrase or an Intonation Phrase, a configuration forbidden by nearly all prosodic models, also called 'prosodic monster,' e.g., a category n dominating a category of the same category n plus a higher category n+1 or n+2. This configuration violates the principle of layeredness which forbids such a dominance

relation. The solutions taken by individual languages to circumvent this allegedly impossible structure (one of them being extraposition) will be investigated in the RTG. It might even be that the different forms of recursion find different prosodic solutions. Language acquisition, psycholinguistics and prosody will cooperate to investigate this aspect of nominal modification.

2.2 Cross-linguistic comparison and diachrony of nominal modification

Some of the questions mentioned in 3.2.1, derived from linguistic theory, arguably beg to be addressed from a cross-linguistic and diachronic perspective that can contribute new insights to the question whether the DP layer is universal and which structural layers should be adopted above NP.

The ongoing dissertation by **Mariam Kamarauli** within this RTG has contributed to this aspect by providing a consistent analysis of NP structures in Georgian. Asking whether the existence of a DP layer can be assumed, at least for historical stages of the language, this study represents an important advance for diachronic investigations into Caucasian languages.

Both Germanic and Romance languages developed from languages without determiners to languages with articles. For German, this development happened mainly during the Old High German (OHG) period with some later developments in Middle High German. In Romance languages, articles are attested in the earliest medieval records. However, the distribution of articles diverges in some respects from their contemporary use. It has been argued that definite articles follow a grammaticalization path from topic and specificity markers (Vincent 1997, Posner 1996) to pure markers of definiteness. According to Roberts & Roussou (2003), this process can be captured in terms of a loss of movement of the demonstrative to SpecDP in favour of direct insertion (merge) of an article in D°. The latter option emerges as a consequence of an economy principle guiding grammaticalization processes. It is, however, not yet clear, how this approach captures intermediate steps in the diachronic development (Rinke 2010, Kupisch & Rinke 2011) (**DISSERTATION TOPIC V**).

The diachronic development of articles has also been investigated for Germanic (e.g., Oubouzar 1992, Kraiss 2014). For varieties of German, it has been observed that the grammaticalization process of the definite article has led to an additional morphologically distinct paradigm of reduced article forms, which are syntactically and pragmatically distinct from the unreduced or full forms. Research so far has advanced understanding of the diachronic and synchronic variability in article systems. However, more thorough investigation is needed of how the grammaticalization of articles and other noun phrase internal elements (e.g. numerals, possessives) relates to changes in the functional architecture of the DP. Moreover, it is also an open question whether Romance and Germanic have diachronically developed from NP languages (in the sense of Corver 1992 and Bošković 2008) to DP languages. If this is the case, at which point in the grammaticalization process did DP emerge? Alternatively, DP could have been always available as a functional position and is just becoming visible or overtly realized by the grammaticalized article or possessive. **Maria Kofers** ongoing RTG dissertation on the development of determiner systems in the linguistic area of the Balkans addresses the question to what extent grammaticalization processes involved in the emergence of articles can be assumed to be borrowed and how the phenomenon of the different types of word order implied (preposed vs. postponed) can be accounted for in this context.

In addition to questions concerning the DP shell, research on grammaticalization processes can shed light on the evolution and availability of other DP-internal functional layers responsible for different kinds of modification and modification-like functions (like DP-internal predication, possession, degree adverbs, and others).

As shown in 3.2.1, the availability of functional layers is motivated based on word order variation (availability of positions) and of morphological marking (agreement features). A diachronic perspective reveals that the relevant patterns may change over time and that languages may become more or less flexible with respect to word order variation. They also may lose or develop morphological marking.

Concerning word order variation, there is evidence both in Germanic and in Romance languages for diachronic changes in the position of DP internal categories. OHG exhibited variable placement of determiner-like items and adjectives which could appear pre- or post-nominally.

- (4) a. *ther ira sun guater*
 'this her sun good' (Otfried von Weissenburg, Evangelienbuch I: ch. 6, verse 4)
- b. *gidriwen sinen allen*
 'loyal subjects his all' (Evangelienbuch I: ch. 3, verse 45)
- c. *sin drut thehein*
 'his friend one' (Evangelienbuch IV, ch. 5, verse 63)

In Old Italian (OI), restrictive adjectives can occur pre-nominally, while in Modern Italian they can only occur postnominally, as shown in (5)a-b:

- (5) a. *la sinistra mano* Old Italian
 'the left hand'
- b. *la mano sinistra* Modern Italian
 'the hand left'

There are in principle two alternative explanations for the difference between (5)a and (5)b in OI: either an anteposition rule of the adjective in OI has been lost or, alternatively, the noun raises higher in modern Italian. Which analysis is best suited to explain the data and what additional facts are related to this phenomenon is still an open issue (**DISSERTATION TOPIC VI**). Both analyses and the data in (4) for OHG leave open whether the changes from OHG/OI to the modern state of the languages can be explained by assuming additional functional layers within the DP (e.g., QP, NumP, or PossP).

With respect to morphological marking it can be observed that several language families of Indo-European stock have developed two declension types for adjectives, one of them often being referred to as 'definite' or 'pronominal' (Gippert 2004). In both Baltic and Slavic languages this type is characterized by suffixal elements that have convincingly been traced back to former relative pronouns (Hajnal 1997, Stolz 2010, Zinkevičius 1957). The definite declension thus reflects residual nominal relative clauses with an implicit copula ([the] car that [is] red > the red car), also assumable in comparative forms of adjectives in Georgian (Gippert 1999 and 2000, **DISSERTATION TOPIC VII**). Again, we may ask whether the development of a suffixal marker for a specific kind of adjective is a morphological reflex of a functional head to which this type of adjective is related and which functional layer this may be (D° or some head hosting a specific kind of adjective in-between D and N).

2.3 Internal structure and syntactic layers of nominal phrases: Language acquisition and processing

If layers in the structure of the DP differ across languages, a series of questions related to the acquisition and processing of these structures arise.

Returning to the question of whether DP and NP are available cross-linguistically, it is noteworthy that independent of the type of language they acquire, language learners initially produce nominal phrases that lack nominal modifiers and determiners. This has been reported for monolingual children (e.g., for German: Bittner 1998; Eisenbeiss 2000; Penner & Weissenborn 1996; Tracy 1986), for bilingual children (e.g. Müller 1994; Kupisch 2006, Lléo 2001) as well as for adult second language learners (Ionin, Ko & Wexler 2004). However, the range of languages under investigation has been narrow, with a focus on German, English, and some Romance languages. This leaves *i.a.* open the question of how the different properties of the nominal phrase develop in articleless languages. The ongoing dissertation in our RTG by **Sanja Srdanović** addresses this question by looking at how possessives in multilingual/heritage speakers of Serbian are acquired. In addition, the acquisition of determiners has not been related to the acquisition of nominal modifiers and other properties of nominal phrases (except for Bittner 1998, for German). It could be that variability regarding the (post- vs. prenominal) position of modifiers influences the acquisition path towards an

elaborate nominal phrase. Addressing the related question of in which syntactic position adjectives first appear, **Merle Weicker** shows in her RTG dissertation that adjectives in attributive position (e.g., *the red ball*) emerge earlier in spontaneous speech than adjectives in predicative position (e.g., *the ball is red*). The first adjectives to appear in attributive position belong to the class of non-gradable adjectives such as *red* that do not include any additional parameters (e.g., a standard of comparison as for *tall*).

Cross-linguistic influence concerning the structure of the noun phrase is attested in bilinguals, both during language development (Kupisch 2006) and in adulthood (cf. Montrul & Ionin 2010, who propose transfer effects at the syntax/semantics interface concerning generic / specific interpretations of bare and definite noun phrases). L2 learners of article languages who are native speakers of articleless languages seem to initially interpret determiners like markers of specificity (Ionin, Ko & Wexler 2004), a phenomenon that is also known from the diachronic development of articles (see above). These phenomena should be investigated in more detail as well, by employing a broader perspective on nominal expressions that includes modifiers and by taking into account a greater variety of typologically diverse languages.

The question of the interaction between determiners and different types of modifiers is closely related to the question of how structural complexity determines the acquisition process across different acquisition types. One case in point is the acquisition of recursive structures, which has not been studied in detail (**DISSERTATION TOPIC VIII**). Human languages allow for multiple embedding of the same type of constituent as in *the bird [on the crocodile [in the water]]*. To become adult-like, children have to learn to embed phrases inside phrases of the same type, i.e. to produce recursive phrases. This ability goes beyond the requirements of the language-specific diversity of grammatical markers, overall phrasal length, or number of phrases in an utterance. It seems to relate to levels of embedding.

Several forms of DP recursion can be distinguished, which employ so-called second order recursion structures (see Pérez-Leroux et al. 2012 for this terminology): possessives (*Mary's sister's ball*), comitative prepositional modifiers (*the baby with the doll with blond hair*), locative PPs (*the book on the table on the terrace*), noun complements (*the drawing of the student of math*), recursive noun compounds (*Christmas tree cookie*), recursive adjectivals (*the second green big ball*). Finding out which of these are easier to acquire, and/or exist across languages, will help gaining deeper insights into the internal structure of the DP. In addition, it is a topic of debate whether mastery of one type of recursion automatically triggers recursion of all available types and why the ability to embed recursively starts with second order recursion (cf. Roeper, 2011).

In addition to multiple embedding, according to Pérez-Leroux et al.'s (2012) classification compounding is one type of recursive structure. Compounding as a means of modifying a noun is a very intriguing area of study because it is not productive in all languages to the same degree and because it differs across languages regarding head directionality. From these two observations a number of questions can be derived that have not been in the focus of previous acquisition work. How (early) is head directionality on noun compounds acquired? How are German compounds acquired by bilingual children acquiring an L1 with a different head parameter? And more specifically, how do children master the difference between lexically and syntactically derived compounds and their different modes of composition (cf. Bauke, 2014: e.g., *Landkarte* vs. *Länderspiel/ Landsmann/ Landeskirche*).

In research on language processing, the issue of DP recursion arises in particular with regard to postnominal modifiers. Attachment ambiguities involving post-nominal genitive DPs and PPs in German, as in (6), have been a prominent topic of research before 2000 (cf. Konieczny et al. 1997), but since then not much advance has been achieved.

- (6) *Anscheinend war der Brief der Lehrerin an den Chef gefälscht/gerichtet.*
presumably was the letter the teacher to the boss faked/addressed
- a. 'Presumably, the letter of the teacher was addressed to the boss.'
 - b. 'Presumably, the letter of the teacher to the boss was faked.'

As in many authentic examples, the possibility of recursive modification increases the degree of ambiguity. First, *der Lehrerin* can be dative/ or genitive, according to its attachment to the DP or to the VP. Moreover, *an den Chef* is also ambiguous: this PP can be an NP modifier (*the*

letter to the boss - der Brief an den Chef) or it can modify the VP (*addressed to the boss - an den Chef gerichtet*). Since both readings presuppose that *der Lehrerin* is attached to the DP *der Brief* ‘the letter’, only the genitive analysis of *der Lehrerin* is possible in the final analysis.

Recent developments in parsing theory, in particular with regard to the role of expectation-based processing, have not yet informed research on the question of how such modifiers are identified and attached, and there are several gaps regarding the empirical evidence. First, prior experimental investigations have concentrated on sentences with a single modifier. However, several modifiers in a row are not uncommon, as in (6), which increases the degree of ambiguity considerably. Second, evidence concerning the role of potentially disambiguating prosodic phrasing is limited to a few studies on English PP modifiers (Kraljic & Brennan, 2005). Third, relevant corpus evidence concerning this construction is missing. It is therefore unknown whether attachment preferences for post-nominal modifiers are governed by frequency information, as claimed by many current theories, or by other grammatical factors.

A further case in point is the loss or very restricted use of the attributive present participle in dialects of German (**DISSERTATION TOPIC IX**). There is evidence that its loss or decrease is at least partly due to a strategy to avoid constructional complexity in spoken language. However, grammatical factors must have played a role for their decrease/loss as well.

3. External structure, word order and discontinuity

Closely related to the inner architecture of nominal phrases are issues of word order and discontinuity. Projections of nominal heads that relate to the same argument or adjunct of a predicate without dominating each other form a *discontinuous noun phrase*. From this perspective, extraction of a PP, a comparative or result expression, a relative clause, and the like are considered to form a discontinuous nominal expression together with the nominal head, because the extraposed or dislocated elements are part of the extended projection of the noun. Other cases of discontinuity of a DP include doubling of constituents (as exemplified in resumptive pronouns), floating quantifiers, heavy NP shift, incorporation, and secondary predicates.

Following standard assumptions, nominal phrases are preferably continuous, and discontinuity needs to be motivated by independent and notoriously elusive factors. Starting with Perlmutter and Ross (1970), Guéron (1980), and Culicover and Rochemont (1990) for extraposition, and van Riemsdijk (1989) for discontinuous noun phrases, it has been repeatedly shown in the literature that trying to elucidate extraposition, split-topics or other displacements of parts of a nominal construction from a standard movement perspective leads to unsatisfactory and incomplete accounts. It seems that syntactic explanations cover only part of the constraints underlying discontinuity, as do purely information-structural ones, or purely phonological ones, sometimes falling under the terminology of ‘stylistic rules’ (Ross 1967). A more promising approach to extraposition is to address and compare different possible factors licensing extraposition, syntactic constraints being only one of them. Extraposition, discontinuous nominal phrases, discontinuity vs. locality and the factors influencing the choice of constructions are addressed in turn in the following subsections.

3.1 Extraposition

Nominal phrases can appear with extraposed PPs like (7)a from Guéron (1980), with extraposed relative clauses like (7)b from Culicover & Rochemont (1990), or with extraposed comparatives like (7)c and with result clauses like (7)d. The examples in (7) illustrate extraposition from a subject, which is assumed to be less common than extraposition from an object. Furthermore, extraposed constituents can be argumental, attributive, or adverbial.

- (7) a. *A woman entered the room with blond hair.*
 b. *A man came into the room that no one knew.*
 c. *A better teacher was hired than I had expected.*
 d. *So many people wanted to attend the lecture that we had to get a bigger room.*

Syntactic approaches to extraposition all have their limits, extraposition is a typical case of a construction that has failed to be accounted for in a classical generative model. It underlies constraints that cannot be subsumed under A- or \bar{A} -movement (as for instance lack of unambiguous island effects, lack of freezing effects, or lack of triggering features in the minimalist approach). Furthermore, it is not always clear where in the syntactic structure an extraposed constituent is attached. Semantic facts are not very conclusive, they have been shown to speak for syntactic movement in English, and for PF movement in German (Inaba 2007). A further problem is that, in some generative models, if the explanation for the extraposition itself is of semantic, phonological, or information structural nature, it is too late for narrow syntax to be able to derive it.

RTG members from English Linguistics (most prominently Sailer and Webelhuth) have worked on the syntax-semantics interface of extraposed arguments and relative clauses in English and German. In their work, a surface-oriented syntax in combination with an underspecified approach to the syntax-semantics interface has proven very successful in capturing scopal and locality generalizations of these phenomena. The next logical step to take consists of extending the analytical coverage of the tools and methods that already developed to the extraposition from prenominal modifiers, in result clauses and comparative clauses (cf. (8)):

- (8) *So many people sent so many gifts to us that it will take us some time to sort them all.*

Additional questions that need to be addressed include, among others, (i) to what extent these extraposition phenomena are motivated by semantics (cf. Meier 2001) and/or phonology (Göbbel 2007; Hartmann 2013, 2017; Féry 2015, Truckenbrodt 2005), (ii) how the interaction between extraposition and binding/scope can be derived (Bühning & Hartmann 1997), (iii) why extraposition is found more frequently in some languages (e.g. Germanic) than others (e.g. Romance), (iv) how linear ordering restrictions are to be captured when more than one expression is extraposed within one and the same sentence, and (v) whether all constituent types can both be extraposed and preposed.

A purely phonological approach to extraposition can be undertaken from two perspectives. The first one addresses the factors that render an extraposed PP or clause better than a non-extraposed one. In the case of a clause, if the head noun and a modifying PP or relative clause have to form a single prosodic constituent, as required by the so-called containment prosodic theories requiring one-to-one mapping between syntactic and prosodic constituents, extraposing the PP or the clause improves the prosodic structure: a heavy constituent (N+PP) becomes lighter. The second perspective is the metrical one. An extraposed constituent should not be too far away from its head. An intervening potential antecedent of a relative clause or a PP is not well-formed if stressed: compare the German example (9) from Altmann (1981: 176) which illustrates the ill-formedness of such structures, even though the term *schwanger* unambiguously characterizes *Frau* rather than *Rose*.

- (9) **Peter hat der Frau eine Rose geschenkt, die schwanger war.*
 Peter has the woman a rose given who pregnant was
 'Peter gave a rose to the woman who was pregnant.'

From a psycholinguistic perspective, relative clause extraposition has been investigated mostly with respect to constituent weight (see Wasow 2002 for a critical discussion of accounts attributing extraposition to a 'Principle of End Weight' requiring phrases to appear in order of increasing weight). Bader (2015) has shown that sentences as in (9) get easier during silent reading when the head noun is focused.

Further grammatical factors (e.g., information structure) have been neglected, although there are a number of studies on the difference between extraposed and center-embedded

relative clauses in adults' and children's comprehension and processing. It has been shown in those studies that the acceptability of the construction decreases when the distance between the antecedent and the extraposed relative clause increases (see Uszkoreit et al. 1998 for corpus evidence and Bader 2014 for language production experiments), and in case potential nominal antecedents intervene, especially accented ones. Moreover, it has been shown that unaccented material separating the two parts of a noun phrase renders the distance more tolerable. Acquisition studies showed that English-speaking preschool children are able to interpret extraposed relative clauses like *There's a duck near a horse that's fallen over* correctly as modifying the nonadjacent NP, if this is the only reading available (Fragman, Goodluck, & Heggie 2007).

Some of these issues are addressed in the ongoing RTG dissertation of **Sabrina Weber**, who has investigated the extraposition of PPs from NPs in German by means of production and acceptability experiments. Her results confirm that the amount of material over which a PP is extraposed is the most important factor governing PP extraposition from NP, with factors like PP length and definiteness of the host NP having smaller modulating effects. Furthermore, her production experiments, which used a modified production-from-memory paradigm, indicate that both sentences with adjacent PPs and sentences with extraposed PPs are unmarked from the perspective of the language production system. In his RTG dissertation project, **Lai Yat Han** compares relative clause extraposition in German to topicalization of NPs containing a relative clause in Chinese.

Psycholinguistic research on relative clause extraposition is also carried out in the psycholinguistic unit of the Institute for Linguistics (see Bader, 2014, 2017; Bader, Häussler, & Schmid, 2013). Preliminary results suggest that the choice between adjacent and extraposed relative clauses depends not only on properties of the linguistic stimuli, but also on individual properties of speakers, in particular working memory capacity. If this finding can be corroborated, it raises a range of interesting questions concerning the on-line use of extraposition during spoken language production.

A syntactic ambiguity found across a wide range of languages is the relative clause (RC) attachment ambiguity that arises when an RC follows an NP containing a post-nominal modifier, as in (10):

(10) *I saw the son of the doctor that was running.*

This ambiguity initiated a large amount of research after Cuetos and Mitchell (1988) found a high attachment preference for Spanish (attachment to *son* in (10)) but a low attachment preference for English (attachment to *doctor* in (10)). The finding of different attachment preferences in different languages despite identical structural configurations has led many to conclude that there are no general parsing principles that apply in languages containing the relevant structures. Instead of general parsing principles, language specific strategies derived from usage frequencies have been invoked to account for the observed preferences.

Recently, this debate has been reopened by Grillo and Costa (2014). Grillo and Costa point out that a Spanish sentence as in (11) admits not only an analysis where *que corria* is an RC, exhibiting the same kind of ambiguity as in English, but also an analysis as a Pseudo Relative Small Clause (PR), having a meaning corresponding to (11)b.

(11) *Vi al hijo del medico que corria.*
 (I) saw DOM-the son of-the doctor who run
 a. 'I saw the son of the doctor that was running.' (ambiguous)
 b. 'I saw the son of the doctor running.' (unambiguous)

As a PR, *que corria* necessarily has the higher NP as subject. According to Grillo and Costa (2014, see also Grillo, Costa, Fernandes & Santi 2015) languages for which a high-attachment preference has been found are languages that, like Spanish, offer the possibility of analysing one and the same string as either an RC or a PR. Languages for which a low attachment preference have been found resemble English in allowing only the RC analysis. Based on this observation, Grillo and Costa (2014) advance two claims: First, the parser prefers the PR analysis when available, resulting in a high-attachment preference. Second, the parser prefers

local attachments, resulting in a low-attachment preference for languages that do not admit the PR structure. According to this proposal, the parser does not operate by means of language specific parsing strategies.

In languages with extraposition to the right, the RC attachment ambiguity further raises the interesting question of whether attachment preferences interact with the position of the RC. An example from German is provided in (12).

- (12) a. *Ich erkannte die Töchter der Gräfin, die von der Polizei gesucht wird/werden.*
 'I recognized the daughters of the countess who was/were sought by the police.'
- b. *Ich habe die Töchter der Gräfin erkannt, die von der Polizei gesucht wird/werden.*
 'I have recognized the daughters of the countess who was/were sought by the police.'

Psycholinguistic research so far has focused on instances of the RC attachment ambiguity where the RC is adjacent to the complex NP. However, the ambiguity also arises under extraposition. When the RC in (12)b is construed as modifying the lower NP *der Gräfin*, extraposition violates the subjacency condition. Contrary to earlier claims, it seems uncontroversial that extraposition is not prohibited in this case. On the other hand, corpus data show that the likelihood of extraposition decreases when the degree of embedding increases (Strunk 2014). Thus, subjacency does not seem to act as a grammatical constraint proper but as a performance constraint, as already proposed in earlier work (e.g., Berwick und Weinberg 1984). A dissertation project in the upcoming phase of the RTG could further investigate the RC attachment ambiguity from a cross-linguistic perspective (**DISSERTATION TOPIC Xa**) or focus on the relation between RC attachment preferences and extraposition (**DISSERTATION TOPIC Xb**).

3.2 Discontinuous nominal expressions

A more restricted case of discontinuity is exemplified by discontinuous nominal expressions proper. In extraposition, maximal projections like PPs or relative clauses are moved away from their head. In discontinuous nominal expressions, the two parts of the discontinuous constituent share a single thematic role. In this latter case, neither of them forms a maximal projection.

Languages differ as to which kind of discontinuous nominal expressions they allow. Syntactic restrictions, information structural factors and prosodic properties seem to conspire to allow or forbid such constructions. German and Slavic languages allow discontinuity of nominal phrases as in (13), but English and Romance languages do not.

- (13) *Romane hat Bernadette nur wenige australische gelesen.*
 novels has Bernadette only few Australian read
 'Bernadette has read only few Australian novels.'

In such discontinuous DPs, the two parts of a nominal construction appear at different positions in the sentence viz. only at SpecIP and SpecVP, according to Frey (2004). Slavic languages are even more permissive in allowing fronting of a *wh*-element (Left Branch Extraction) or of an adjective, which is not possible in German or English. While German is reasonably well understood (see for instance Fanselow & Ćavar 2002, Ott 2012, Bader & Frazier 2005), other languages are not. Since the discontinuous parts can be associated with a variety of information structural roles (see for instance Ott 2012 for relevant examples), there cannot be a direct relationship between discourse roles and discontinuity, at least in those languages where discontinuity is productive. It has been shown that discontinuous nominal phrases can even marginally occur when all parts are part of the same broad focus.

In Classical Greek and Latin, as well as in Serbo-Croatian, clitic placement may favour the formation of such nominal splits (Agbayani & Golston 2010, Zec & Inkelas 1990). In Algonquian languages, some of them may even be obligatory (LeSourd 2006). An overview of the

typological properties of such constructions is still lacking, even more so a description of their syntactic, prosodic and semantic properties.

In some languages, even modifiers of a noun incorporated into the verb can appear outside of the complex verb + noun. Baker (1988: 145) proposes that in an example like (14), the non-incorporated part *o-v:ta:k-lʔ* ‘syrup’ is an adjunct to the verb.

- (14) *hati-hnek-aets* *o-v:ta:k-lʔ* (Onondaga, Northern Iroquoian)
 3M.PL-liquid-gather PRE-syrup-SUF
 ‘They gather maple syrup.’

The question what is the best analysis of noun incorporation, particularly when it involves discontinuous DPs, is related to the question of what is the best analysis of non-configurationality and both are far from being settled.

In her RTG dissertation, **Sarah Duong Phu** investigates discontinuous nominal phrases in Vietnamese for their syntactic and prosodic properties. As for syntax, she assumes a hybrid theory integrating movement and base-generation. In two read-speech experiments she found different prosodic or intonational effects in a comparison between continuous and discontinuous noun phrases in Southern and Northern Vietnamese.

Regarding acquisition, it is unclear how children with L1 English or Romance interpret such structures and how bilingual children with L1 English or Romance and L2 German or Slavic master discontinuous NPs like (13) and vice versa.

DP-doubling, for example clitic doubling in dislocated constructions, has also been analysed as involving discontinuous constituents, albeit of a different kind. In some approaches, the DP is contained in a larger DP structure including the secondary or resumptive element (clitic or tonic pronoun and quantifier, see Kayne 1975, Uriagereka 1995, Belletti 2004 among others). Furthermore, the phenomenon of dislocation has found a revival of interest, as testified in the work of Ott & de Vries (2012), who propose that Germanic right-dislocation constructions are to be analysed as biclausal structures, the dislocated peripheral XP being a remnant of ellipsis in the second clause. In this case, too, research involving different linguistic modules is necessary.

3.3 Factors influencing the choice of constructions and their processing

Under which circumstances are (parts of) nominal phrases dislocated, topicalized, extraposed or in situ? Under which circumstances is a dislocated constituent doubled by a clitic (Fischer & Rinke 2013), or accented? Facts bearing on information structure seem to influence the one or the other realization, but how exactly and which other factors are at play is not at all well studied. For example, it has often been claimed that discontinuous DPs arise when the two parts of the DP do not bear the same information-structural role; or that a right-dislocated constituent is unaccented when given, but accented as an ‘afterthought’. However, positions of the parts of a complex nominal phrase are not obligatorily related to information structural roles. In fact, it can be shown that all positions may carry all roles, even if preferences can be pinned down.

English has a syntactic or prosodic ban on complex pre-modifiers, which accounts for the pattern in (15)a. While there is optionality with respect to the extraposition site in (9), extraposition to the end of the clause is required in (15)b to allow for the combination of two antecedents with distinct grammatical functions. This suggests that constraints on the connectivity between head and modifier, i.e. constraints at the syntax-semantics interface, play a role in the choice of the construction in addition to syntactic and prosodic factors.

- (15) a. *More *[than last year] students [than last year] failed classes [than last year].*
 b. *More students *[than we had expected] failed more classes *[than we had expected] this term [than we had expected]*

We find a similar effect in relative clauses with split antecedents. While a canonical relative clause can extrapose optionally, as shown in (16)a, those which are construed with two heads must linearly follow both heads and consequently be extraposed. The example in (16)b is from Perlmutter and Ross (1970: 350), where this phenomenon was initially described:

- (16) a. *A woman [who looked exhausted] entered the room [who looked exhausted].*
 b. *A man *[who were quite similar] entered the room and a woman *[who were quite similar] went out [who were quite similar].*

Moltmann (1992) claims that split antecedents are only possible if the two antecedent phrases occur within the conjuncts of a coordinate structure and have identical grammatical functions. However, Poschmann et al. (to appear) present the results of two questionnaire studies that show that symmetry of the matrix predicate can remedy examples in which the two antecedents of a relative clause with split antecedents are neither overtly conjoined nor have identical grammatical functions. Moreover, the effect is stronger in non-restrictive than in restrictive relative clauses. Based on this evidence they argue that relative clauses with split antecedents are primarily licensed semantically.

Questions of the internal order of the DP and of the semantic aspects relate not only to information structure, but also to accent placement. The proliferation of maximal projections poses the question of accentuation inside the nominal expression. Since accent assignment at the level of the sentence is largely syntax-driven, it is crucial to understand whether such a view of the accent assignment at the level of the DP is also morpho-syntactically motivated. Adjectives are cases in point. If, following most theories on default accent placement, it is assumed that a maximal projection obligatorily carries a main or nuclear accent in its domain, every adjective phrase should carry a nuclear accent, and not only the noun (see for instance Dehé & Samek-Lodovici 2009 for a presentation of the issue). However, in a simple DP like *the little girl*, the adjective is usually not much accented, especially when used non-restrictively. This fact is difficult to reconcile with standard assumptions about neutral accent placement. In the absence of a narrow focus, the sentence nuclear accent is located on the preverbal or final argument of the verb, or on the final constituent if the final non-verbal constituent is an adjunct. In a DP, it is generally the last constituent, disregarding the internal constituency of the DP. A pre-nominal adjective or quantifier does not carry the nuclear stress, and the determiner even less so.

Focus-background structure inside an NP can also shed light on various empirical questions about the interaction of syntax (word order) and prosodic prominence (required by focus). While some languages realize focal prominence in a specific place within a sentence (e.g., Romance languages tend to have a focused element at the end of the clause), such a strategy is sometimes unavailable within a DP, since word order within a DP tends to be more rigidly fixed than within a clause. By investigating this restricted domain, the nature of the interaction between prosodic prominence and focus, as well as its typological variation, may become clearer. This issue is also closely related to the question of why non-continuous DPs are allowed in certain languages and not in others.

It has been shown that prosody also plays an important role in disambiguating syntactic structures. Attachment ambiguities of nominal modifiers (such as adjectives, PPs and relative clauses) can often be disambiguated by prosody. For example, the relative clause in (17) can be associated either with *the actress* or *the servant*. The sentence can be disambiguated by the presence or the absence of a prosodic boundary between *actress* and the relative clause.

- (17) *The servant of the actress who is on the balcony.*

It has been claimed (Fodor 1998, 2002) that there are language dependent parametric variations as to which of the two readings in structures like (17) is preferred in a given language, and that such preferences can be explained in terms of the prosodic properties of that language. Fodor (2002) proposes the Implicit Prosody Hypothesis, according to which a silent reader projects an abstract prosodic representation of the sentence, and this implicit prosody influences the parsing of structural disambiguation. Within the RTG, the questions of attachment ambiguities and preferences can be addressed from prosodic (Féry), processing (Bader), acquisition (Schulz), typological (Gippert) and corpus-linguistic (Sailer, Webelhuth) perspectives.

4 Modification and Interpretation

Having discussed the canonical syntactic form of modification (Section 3.2) and deviations from it (Section 3.3.), in this section we look at the interpretive aspects of modification. We consider cases in which the occurrence of a DP-internal modifier is either required or excluded (Section 3.4.1) and cases in which a DP-internal modifier is interpreted outside the DP (Section 3.4.2). The question of the semantic relations between a modifier and a modified head are taken up in Section 3.4.3, and the scope interactions between a head and its modifier are addressed in Section 3.4.4.

4.1 Non-optional modification

Optionality generally counts as a defining criterion of any kind of modification. However, some modifiers cannot be omitted without concomitant effects on the remaining part of the sentence. The so-called subtriggering phenomenon in English (LeGrand 1975) is a case in point:

- (18) *John talked to any woman *(he saw).*

Related effects outside the nominal domain may shed light on the issue: the unavailability of a generic reading of (19)a has been attributed to the absence of a sufficient basis for ellipsis resolution.

- (19) a. *??Mary drinks a beer.* (no generic reading)
 b. *Mary drinks a beer every evening.* (generic reading)

Following Partee (1995), Rimell (2004) argues that tripartite structuring necessitates the overt presence of either a suitable quantifier or a restrictor; it is not possible to reconstruct both. This reconstructability principle accounts for the oddness of (19)a, where a default genericity operator cannot be filled in because it would lack a restrictor. On the other hand, if there is a quantificational element (like *every evening* in (19)b), a restriction of the tripartite structure of the sentence can be reconstructed. In a similar vein, a relative clause may be interpreted as introducing a restrictor for a covert genericity operator. Thus the modification in (20)b licenses the generic reading of the modified sentence (Dayal 2004, Zaroukian & Beller 2012).

- (20) a. *The students are successful.* (no generic reading)
 b. *The students who work hard are successful.* (generic reading)

Hence the above cases of subtriggering may also be seen as introducing a restriction for a covert genericity operator: in (18) the relative clause can serve as a restrictor in order to reconstruct the modal context for the licensing of free choice *any* (Dayal 2004, Aloni 2007).

Further cases of obligatory modification have been discussed i.a. in Goldberg & Ackermann (2001). The authors argue for a general pragmatic principle enforcing modification if the utterance otherwise would not be informative. As a case in point they discuss cognate objects in the domain of nominal modification as in (21)a. Obligatory modification of head nouns with relatively weak or redundant semantic contribution could be added to their list of phenomena (cf. (21)b and c):

- (21) a. Pat laughed a #(hearty/quiet) laugh.
 b. *Alex wohnt an einem #(ruhigen/schönen) Ort.*
 'Alex lives at a (quiet/beautiful) place.'
 c. *Wir zählten bis zu einer #(großen/hohen/niedrigen) Zahl.*
 'We counted up to a (big/high/low) number.'

In addition to cases of structurally or contextually required modification, there are examples of lexically enforced modification: some determiners require the presence of a nominal modifier (22)a. A number of nouns require a modifier (22)b. Similarly, some idiomatic expressions require a particular nominal modifier, see (23).

- (22) a. *diejenigen (Studierenden), *Ø/ [die in Frankfurt wohnen]/ [mit Wohnsitz in Frankfurt]*
 ‘those (students) who live in Frankfurt/ with Frankfurt as their place of residence’
 b. *in der *Ø/freien/offenen Wildbahn*
 in the /free /open wild
 (idiomatic English equivalent: ‘in the wild’)
 c. *die *Ø/ewigen/*weiten Jagdgründe*
 the /eternal /wide hunting grounds
 (idiomatic English equivalent: ‘the happy hunting grounds’)
- (23) a. *mit jemandem ein *(ernstes) Wort reden*
 with someone a (serious) word speak
 ‘to have a serious talk with someone’
 b. **(fröhliche) Urstände feiern*
 happy resurrection celebrate
 (idiomatic English equivalent: ‘liven up again’; said of bad habits or conventions)

In addition to cases of obligatory modification, there are also cases in which modification is extremely restricted. For example, in some Germanic languages and dialects, weak and strong referential DPs are distinguished by different definite article forms. Which readings a modifier has may depend on the article form (full or reduced). It is claimed in the literature that the weak (reduced/atonic) article does not allow for restrictive modifiers in the form of relative clauses. There are, however, exceptions to this generalization found in Fering (Ebert 1971) and Swiss German (Studler 2008). In the Swiss German example (24), article reduction (*die > d*) is possible although the relative clause has a restrictive reading. This finding is supported by corpus data (Studler 2008).

- (24) *d Lüüt, wo-n-i vo Olte käne, woned ali nüme deet.*
 ‘The people who I know from Olten do not live there anymore.’

As already mentioned in 3.2.1, **Carlucci-Dirani** studies the distribution of strong and weak definite articles in Hessian and finds that restrictive relative clauses cannot be combined with a noun headed by a weak definite article (which is impossible in Bavarian as well, cf. Weiß 1998). Taken together with the findings from Swiss German, these findings indicate that there are cross-linguistic differences between Germanic dialects regarding article realization in combination with modification. Adjectival modification and relative clause modification also seem to have different effects on the article form. Carlucci-Dirani elaborates on the idea that the syntactic structure of the DP is more complex than for example assumed in Abney (1987). As sketched in section 3.2.1, her hypothesis is that the differences in complexity of the DP depend on information structural factors.

In addition, modification is in general highly restricted in cases of weak referentiality.

- (25) a. *Alex is in (*new) hospital. vs. Alex is in the new hospital.*
 b. *Pat is theoretical/*talented physicist.*

It should be noted that even under a weak referential reading, not all contexts behave the same with respect to modification. As shown in (26), the determinerless predicative construction is excluded for expressive modifiers (26)a, even though such modifiers are compatible with non-decomposable idioms (26)b and with determinerless weakly referential PPs (26)c.

- (26) a. *Pat is *(a) damn/fucking president.*
 b. *Pat kicked the damn/literal/figurative bucket.*
 c. *Pat has to go to damn/fucking hospital.*

Cases of non-optional modification challenge one of the core defining properties of modification. These phenomena and their consequences for a general characterization of

nominal modification are the topic of a suggested dissertation project (**DISSERTATION TOPIC XI**).

4.2 Discontinuity vs. non-locality

Loosely speaking, while discontinuous modifiers do not surface within the nominal constituent they (syntactically) modify, non-local ones surface within a constituent they do not (semantically) modify. Two famous cases are illustrated below:

- (27) a. *We saw an occasional raccoon.*
 b. *Dorit was staying in an unknown hotel.*

(27)a does not mean that the raccoon we saw was occasional; rather it says that occasionally we saw a raccoon (Bolinger 1967). Similarly, (27)b does not necessarily mean that Dorit was staying in some hotel that happens or happened to be unknown – it may have been very popular; rather the sentence may express that it is unknown in which hotel Dorit was staying (Abusch & Rooth 1997). In these examples, a syntactically DP-internal modifier has scope over more material than contributed by the DP; this includes extreme cases in which the DP has no meaning of its own - as found with modifiers inside non-decomposable idioms (*She kicked the social bucket*). Though the exact nature of these non-local modifications is still not fully understood, it is clear that the choice of the determiner seems to be relevant for the availability of non-local readings. Semantically more contentful determiners like numerals, quantifiers, or possessives block a non-local interpretation: *#We saw three/all/Rocky's occasional raccoon(s)* does not have the external interpretation (M. Zimmermann 2003, Morzycki 2014). Further cases of non-local interpretation can be observed with expressive modification. The expressive adjective in *I broke the damn bottle* can either modify the entire proposition or the entire DP (Potts 2007); a reading in which it just modifies the noun is highly unlikely. However, it is currently unknown whether there is anything systematic to the connection between non-local modification and re-bracketing such that they may be subsumed under the same kind of coercion mechanism. It would seem that, from a parsing perspective, the challenge presented by either phenomenon compares to that of discontinuous elements. Whether the strategies to resolve them are related, remains to be explored in a cross-disciplinary effort (**DISSERTATION TOPIC XII**).

Further open questions to be pursued concern the question how children acquire the interpretation of non-local adjectives (**DISSERTATION TOPIC XIII**). One central question concerning the acquisition of such non-local adjectives, which has not been addressed in previous acquisition research, concerns the order in which the different interpretations are acquired and whether the acquisition of the non-local interpretation of these adjectives correlates with the acquisition of quantificational determiners that are presumably of the same semantic type. It is also an open issue whether the ambiguity of these adjectives is cross-linguistically available in the same way and how second language learners will acquire it, if the native language and the second language differ in this regard from each other.

4.3 Subsectivity

A variety of criteria has been developed to categorize nominal modifiers according to their semantic behaviour (cf. Kamp 1975, Kamp & Partee 1995). Apart from the traditional distinction between *restrictive* and *appositive* modification, different semantic effects of modifiers can be brought out by a number of *inference patterns*. As a case in point, the majority of adjectives Adj satisfy the following inference for arbitrary nouns N:

- (28) Subsectivity
 From: x is an Adj N
 Conclude: x is an N

(28) is attested by all prototypical cases including colour terms (*green*), gradable adjectives and participles; suitably adapted, it also covers postnominal modifiers like relative clauses as well as local and temporal adverbials. Among the rare counterexamples to (28) are adjectives that may be paraphrased in terms of sentence adverbs as indicated in the pairs in (29):

- (29) a. *Mary is an alleged thief*
 <=> Allegedly, Mary is a thief
 b. *John is a former minister*
 <=> In former times, John was a minister

Clearly, the adjectives in (29) do not satisfy pattern (28). However, since their meanings seem to be captured by propositional operators, it is suggestive that these adjectives be reduced to sentence adverbs – either by lexical decomposition or by syntactic construal. In either case, such a reduction would immediately explain why these adjectives also resist another rather common inference pattern, given in (30):

- (30) Extensionality
 From: x is an Adj N₁
 And: Any N₁ is an N₂
 And: Any N₂ is an N₁
 Conclude: x is an Adj N₂

As in the case of (28) prototypical adjectival modifiers like *Swiss*, *blonde*, etc. satisfy (30), but there are quite a few exceptions. Apart from the adverbial ones as in (29), counter-examples to (30) include dimensional adjectives such as *tall*, which however have been argued to make implicit reference to a contextually given comparison class: e.g. *a tall child* may be someone who is tall for a child. If this comparison class is held fixed throughout the inference, then (30) does go through after all. In fact, under this assumption dimensional adjectives turn out to satisfy the even stronger pattern in (31):

- (31) Intersectivity
 From: x is an Adj N₁
 And: x is an N₂
 Conclude: x is an N₁ and x is an Adj N₂

The name derives from the fact that pattern (31) boils down to the existence of a set X (depending on Adj) such that the extension of 'Adj N' equals the intersection of X with the extension of N. In fact, for those adjectives that allow for a predicative position (without semantic shift) the inference boils down to:

- (34') Intersectivity
 From: x is an Adj N
 Conclude: x is an N and x is Adj
 AND: From: x is an N and x is Adj
 Conclude: x is an Adj N

Thus the intersectivity of *blonde* may be seen by inspection of (34'); however, (31) is more general in that it also applies to cases like *American*, which cannot be used predicatively (but corresponds to the indefinite *an American*). In any case, intersective adjectives may be thought of, and analysed as predicates (possibly depending on implicit arguments).

In her RTG dissertation, **Merle Weicker** investigated the acquisition of gradable adjectives via comprehension experiments. She found that German-speaking children as young as age 3 distinguish between relative (e.g., *big/small*) and absolute (e.g., *clean/dirty*) gradable adjectives regarding the standard of comparison, which is in line with first findings for English (Syrett et al. 2006, Syrett 2007). Moreover, Merle Weicker's findings extend previous research on implicit comparison classes (i.e. the context) and to relative gradable adjectives (Barner & Snedeker 2008, Syrett et al. 2006, Syrett 2007). She shows that at age 4, explicit comparison classes (i.e. the noun) affect the interpretation of relative gradable adjectives, but not of absolute gradable adjectives.

Building on these results on language acquisition, new questions arise concerning the interpretation of double adjective structures. It is still unclear how children interpret multiple adjectives that all modify the noun (e.g. *big green balloons*), i.e. whether they favor the restrictive reading (cf. Trabandt 2016, for NP modification via ordinal and relative clause) or

whether they first misinterpret NPs like *big green balloons* as two different sets of entities e.g., meaning ‘big balloons and green balloons’ (Hollebrandse & Roeper, 2014).

In her RTG dissertation project, **Lydia Grohe** takes up these questions and investigates the interpretation of NPs that are modified by multiple prenominal adjectives as in *the second green ball* or *the big green balls*. First results from Koch et al. (2015) indicate that children misinterpret prenominal ordinals as predicates. According to the view that recursive structures are initially avoided by the language learner (e.g., Hollebrandse & Roeper, 2014), children are predicted to generally prefer a coordinated structure to a recursive structure for double modifiers. Comprehension experiments involving NP ellipsis (e.g., *Nimm die großen grünen Bälle und die kleinen* ‘take the big green balls and the small ones’) will shed light on this question.

Though the standard treatment in terms of comparison classes seems to work fine for dimensional adjectives, it is not obvious that it carries over to other counter-examples to (30) such as *gifted* or *devoted*, which do not seem to make reference to classes of individuals but rather to properties or activities: *a gifted pianist* is someone who has a gift for playing the piano, while *a devoted priest* is someone whose devotion is priesthood.

To the extent that such reductions in terms of hidden arguments can be found, more adjectives seem to satisfy (30) than meets the eye. Those that do typically satisfy (31) also – and hence (28). In fact, it would appear that patterns (30) and (31) frequently go together: non-intersective extensional adjectives appear to be unattested (though the combination as such is not incoherent). One natural explanation is that true nominal modifiers are predicates and combine with their arguments by intersection, thereby excluding the adverbial cases in (29) as well as intensional but still subsective modifiers. Since the latter seem to be primarily found among the non-local modifiers addressed in 3.4.2, a natural hypothesis is that the ubiquitous subsectivity of nominal modifiers is epiphenomenal: local modifiers are predicates (and as such subsective modifiers), whereas the subsectivity of non-local modifiers is a consequence of the specific constellation in which they occur. In her ongoing RTG dissertation, **Carolin Reinert** explores this hypothesis, concentrating on the intersectivity of local modifiers.

An analytic alternative is taken in **David Lahm’s** RTG dissertation project. Lahm investigates the so-called *internal reading* of the predicative use of *different*, as in *Every child watches a different movie*, where the movies covary with the children. Lahm (2016) shows that *different* has a core, local semantic contribution that is just like that of ordinary local modifiers, i.e. that this aspect of the meaning contribution of *different* can even be treated as intersective. In addition, there is a non-local meaning contribution of *different*. Using a framework of underspecified semantics (Pinkal 1996), Lahm is able to capture some scope ambiguities of the non-local meaning of *different* without further assumptions – one of the original motivations for underspecified semantics. Furthermore, this framework allows him to make the difference between the local part of the semantics of *different* and its additional semantic effects transparent. Lahm’s approach extends naturally to other cases of non-local adjectives, such as those characterized as quantificational (Morzycki 2014) or as intensional such as *former* (Egg 2007), or even more complex cases such as *wrong*, mentioned above. From this perspective, subsectivity follows from the basic mechanism of connecting a nominal modifier with the head noun and apparent cases of non-subsectivity follow from the effect of other semantic operators contributed by non-local adjectives.

Future dissertations should investigate the landscape of non-local modifiers and their effects on subsectivity, which should be predictable from their lexical meanings, their positions, and specifically their types (**DISSERTATION TOPIC XIV**). Type-shifting techniques should also prove valuable in the analysis of modified *relational* nouns, as in:

- (32) *John’s favourite sister* (cf. Partee & Borschev 1998)
 a. ‘The sister of John’s that John likes best’
 b. ‘The sister of x that John likes best’
- (33) *Kim is a beautiful dancer* (cf. Vendler 1963)
 a. ‘Kim is a dancer and dances beautifully’
 b. ‘Kim is a dancer and a beautiful person’

The (approximate) paraphrases indicate that intersectivity may play a role beyond unary predicate modification. The analysis of relational modification should also form the core of a future dissertation project. (*DISSERTATION TOPIC XV*)

4.4 Inverse Linking

In inverse linking constructions a quantifier embedded in the modifier of a quantified noun may take wide scope with respect to the embedding quantifier. The quantifiers are interpreted in the inverse order of their surface order. Sentence (34) means that in every basket there is one apple that is rotten. The reading by which the quantifiers have surface order is odd from a pragmatic point of view – presumably because there cannot be one rotten apple that is simultaneously in all baskets:

(34) *One apple in every basket is rotten.*

Other examples, like (35), show a true ambiguity: there can be a single picture showing all classmates, or there can be separate pictures for the individual classmates.

(35) *Peter besitzt ein Bild von allen Mitschülern.*
Peter owns a picture of all classmates
'Peter owns a picture of all classmates.'

There are at least three prominent research questions related to inverse readings: 1) when do inverse readings occur? 2) what exactly is their interpretation? 3) where can they be derived compositionally? We will sketch them in the following.

As to the first question, already Gabbay & Moravcsik (1974) name a number of syntactic, semantic, and lexical factors for the occurrence of inverse readings. In addition, there seems to be a tendency for quantifiers not to have an inversely linked reading if the embedding noun is definite and non-relational:

(36) *#The apple in every basket is rotten.*

(36) becomes more acceptable when the noun basket receives an ad hoc functional reading, i.e., if every basket can be presupposed to contain precisely one apple (Löbner 1979, M. Zimmermann 2002). While such coercion processes have been investigated in connection with other constructions like possessives (T. E. Zimmermann 1991, Partee 1997, Jensen & Vikner 2011) and concealed questions (Nathan 2006), their role in licensing inverse linking readings has largely been ignored. In particular, their precise nature in terms of pragmatic availability and cognitive complexity are unknown.

Fiengo & Higginbotham (1981) attribute the oddity of (36) to the so-called Specificity Condition that variables (traces and anaphors) must be bound within the definite NP and not from outside. This condition bans quantifier raising out of a definite NP. The Specificity Condition is limited to cases of non-relational nouns (36). If the head noun is relational, the inverse-linking reading is unproblematic with a definite, as (37) illustrates.

(37) *The wife of every soldier receives an allowance.*

Moreover, the Specificity Condition seems not to hold if the definite description is novel, but unique (or weakly familiar in the sense of Roberts 2003). As already suggested by Fiengo (1987), the degree of familiarity of the definite description decides on the opacity of noun phrase. Superlative NPs are standard examples for weakly familiar definites. The definiteness contrast is observed with respect to scope ambiguities and with respect to grammaticality judgments, as demonstrated in (38).

(38) a. *#Who did you see the picture of?*
b. *Who did you see a picture of?*
c. *Who did you see the best picture of?*

These observations lead to the generalization that a (strong) familiar definite NP is closed for binding into the modifier and a novel (or weak familiar) definite NP is open for binding from

outside of the NP. With Fiengo (1987: 165), we may hypothesize that “it is possible that these generalisations can be made to follow from a reasonable theory of discourse reference.”

The explanation of these facts will be a nice showcase for the interaction of syntax and semantics/pragmatics. It will shed new light on the types of definites (Ebert 1971, Schwarz 2009) in natural language and the difference between relational (or even functional) and non-relational nouns. (**DISSERTATION TOPIC XVI**).

In fact, the question of how inverse linking is interpreted during language comprehension has not been addressed so far. Inverse linking is known to contrast with other scope ambiguities that involve independent DPs, as in (39).

- (39) *Peter verschenkte ein Bild an alle Mitschüler.*
Peter gave a picture to all classmates
'Peter gave a picture to all classmates.'

The preferred interpretation of sentences with syntactically independent quantifiers, as in (39), is the one with surface scope. To the extent that phrase-structural configurations feed the process of interpretation, the same should be true for cases where one quantifier phrase modifies another quantifier phrase, as in inverse linking cases like (34). Comparing the processing of sentences like (39) to the processing of sentences like (34) can therefore provide important clues about the role of phrase-structural configurations for the process of interpretation. For example, it is interesting to see whether there is a general preference for surface scope in ambiguous examples or not. Although syntactic reasons might favour the surface order, semantic reasons might favour the inversely linked order. Heim & Kratzer (1998: 221f.) discuss several structural accounts for the inverse structure and the surface order structure of rather high complexity.

The surface order seems to be more complex in that it necessitates a small clause analysis for the modifier. Investigating whether it takes more time to comprehend/understand the surface order or the inversely linked order will thus be highly informative with regard to language processing at the syntax-semantics interface.

Another difference between the constellations in (34) and (39) has to do with what an inverse scope reading actually means (question 2). It has been stressed (Gabbay & Moravcsik 1974; Champollion & Sauerland 2011, Sailer 2015, Bumford 2017) that there is more going on than just a scope ambiguity: sentence (29) only talks about baskets that actually contain apples, i.e., even though the embedded quantifier gets wide scope in the inverse reading, its restriction is not independent of that of the semantically embedded, though syntactically higher quantifier. Bumford (2017) enriches this discussion by including combinations of two definites, where one has a superlative, see (40).

- (40) *the rabbit in the biggest hat* (Bumford, 2017: 552)

In (40), the superlative is only computed for hats that contain rabbits. This intertwining of the restrictors is characteristic for inverse readings, though uncommon for the types of scope ambiguity illustrated in (39). Champollion & Sauerland (2011) attribute this effect to a contextual restriction, Bumford (2017) incorporates this restriction into the semantics proper, and Sailer (2015) argues for combining the two involved noun phrases into a polyadic, though reducible, quantifier.

A further challenge for the semantics of inverse scope readings comes from the licensing of negative polarity items in (41), noted in Sailer (2015). Usually, the negative polarity item *je* 'ever' is not licensed inside a definite noun phrase. If, however, this noun phrase contains a universal quantifier with an inverse linking reading, licensing is possible. Since the universal quantifier only licenses NPIs in its restrictor, it is unclear how to capture these data in a standard semantic representation.

- (41) *Auf der Liste wurde [der_i Name *([jeder Politikerin])] vermerkt, [der_i je im Zusammenhang mit dem Skandal genannt wurde].*

As far as the derivation of the readings is concerned (question 3), inverse-linking approaches were used to motivate various theoretical concepts such as branching quantifiers (Gabbay & Moravcsik 1974) or quantifier movement (May 1985, Heim & Kratzer 1998: 197). Champollion

& Sauerland (2011) rely on syntactic operation of DP-internal quantifier raising, whereas Sailer (2015) and Bumford (2017) assume a surface syntax that is interpreted with ambiguity-friendly systems of semantic combinatorics -- underspecified semantics and continuation semantics respectively. In both these systems, the special interaction of the restrictors is constrained to quantifiers that are embedded inside other quantifiers, deriving the contrast between (34) and (39).

The answers to the three research questions are arguably related: if there is a special interpretation associated with inverse readings, this needs to be compatible with the semantic and pragmatic properties of the involved lexical items. In addition, the structural restrictions and reading preferences should provide an indication as to how similar or different the semantic combinatorics for DP-internal quantifiers is from other constellations.

5 Potential dissertation topics

The research program developed in sections 3.1 to 3.4 is grounded in our combined expertise in morphology and syntax, semantics, pragmatics, and phonology together with the perspectives from acquisition, processing, diachrony, and dialectal variation and will continue to enable close collaboration and truly cross-modular dissertation projects. In this section, we sketch 16 potential dissertation projects taking up specific research questions pinpointed in the previous sections. These exemplary dissertation projects serve to illustrate the potential of our research program for the next funding period and to show how the cross-modular approach can be fleshed out in specific dissertation topics in nominal modification. The names listed next to the topics illustrate who of the participating researchers is an expert in this specific linguistic area and could be a supervisor for this topic.

Dissertation topic I (P. Smith)

“Feature Geometries and Feature Transmission under Agreement”

Overwhelming evidence exists that the features that make up the traditional phi-values of nominals (number, gender, person *etc.*) are not simple values, but rather the features themselves are internally complex and they enter the syntactic derivation distributed across the nominal spine. Evidence for this has come from many sources, including affix ordering in nominal expressions (Greenberg 1963, Julien 2002), as well as patterns of morphological suppletion and syncretism (Caha 2009). However, a question little discussed is how and if these features are structured once they are transmitted under agreement, for instance to adjectives that agree with a head noun. There are two clear options. Firstly, the phi-features that are transmitted to the adjective would be structured as they are on the head noun. As such, the features themselves as well as their concomitant structure are transmitted under agreement. The second option is that only the features themselves are transmitted, without their concomitant structure. The result would be features clustered on a single AGR node on the adjective. There is however empirical evidence against the first position, and seemingly in favour of the second. Attested and unattested patterns of suppletion within the realm of number show that in the pronominal system of a language, it is possible to have *either* the dual *or* the plural pattern together with the singular. It is impossible for a language to have the singular and plural pattern together for some pronouns, and the singular and dual pattern together for others. Yet, for agreement targets a different picture arises. In Kiowa adjectives that agree with their head noun show more flexibility (Harbour 2007). Some adjectives group the singular and dual together, whilst others group the singular and plural together. Yet others group the dual and plural together to the exclusion of the singular. Similarly, some verbs in Nen (Evans 2015) have the singular and dual patterning together, and others the singular and plural together. These findings suggest a fundamental asymmetry between the feature structure of number in nominals (where number features are introduced), and elements such as adjectives that undergo agreement with a noun. A dissertation investigating patterns of syncretism and

suppletion in agreeing adjectives will shed further light on this question, and help to adjudicate between the two positions.

Dissertation Topic II (B. Moskal)

“The internal structure of pronouns”

In recent cross-linguistic work, suppletion (allomorphy) and transparent nesting (overt morphological realisation) have been used as a window into the internal structure of morphologically complex items. Specifically, Bobaljik (2012) shows how in adjectival triples positive-comparative-superlative, certain suppletive patterns are attested, whilst others are not. Whilst AAA (*long-longer-longest*), ABB (*good-better-best*) and ABC (Latin *bonus-melior-optimus*) are attested, ABA (hypothetical *good-better-goodest*) is notoriously absent. Suppletion and transparent nesting support an internal structure of adjectives as in (42):

(42) [[[positive] comparative] superlative]

Smith et al. (accepted) show that pronominal suppletion shows similar patterns: in the context of case ABA is again unattested, suggesting the structure in (43), where unmarked case is Nominative/Absolutive, dependent case Accusative/Ergative, and oblique case usually Dative.

(43) [[[unmarked] dependent] oblique]

However, the internal structure of number seems to differ. Both suppletion patterns and nesting suggest cross-linguistic variability among the following (simplified) options regarding the structure of number. ABA is attested in suppletion, and languages vary as to whether the dual is built from the plural (44)a, or vice versa (44)b.

(44) a. [[[singular] plural] dual]
b. [[[singular] dual] plural]

A survey of suppletion patterns in the context of clusivity shows that in (first person) singular-exclusive-inclusive triples, ABA is unattested, but that a preliminary study of transparent nesting suggests variability as to whether the exclusive serves as the base for the inclusive, or vice versa (cf. Harbour 2016). Thus, the suppletion data only support (45)a, but transparent nesting supports both (45)a and (45)b.

(45) a. [[[singular] exclusive] inclusive]
b. [[[singular] inclusive] exclusive]

Whilst some groundwork has been laid, many questions remain open-ended, most notably the relation between transparent nesting and suppletion. This dissertation would address the nature of features, and why they seem to differ across categories (case, number, clusivity), as well as the nature of values of features (binary, privative). Empirically, the dissertation would expand the investigation in the following ways. A more detailed and systematic study into clusivity is required, taking into account the interaction between clusivity and number. Secondly, an extension to and integration with syncretism patterns (see Caha 2009 for nominal-accusative systems, and Vanden Wyngaerd 2016 for person).

Dissertation topic III (C. Féry)

“Alliterative concord in the nominal domain”

As for the phonological part of the graduate school, an aspect that has turned out to be promising in the first phase is the phonological aspect of agreement. It has long been known that agreement in nominal gender systems can be more or less semantic and more or less phonological, although in most of the cases, agreement is just random and is then called syntactic (see Corbett 1991). A compelling example is Swahili, illustrated in (46). In this language, a class marker (CM) is often obligatory on the noun, the nominal elements and the verb. The different CMs can have no phonological relation with the phonological form of the

CM of the noun, as in (46)a or be a copy of the CM of the noun, as in (46)b. In this second case, agreement is called ‘alliterative’.

- (46) a. *kalamu* *n-zuri* *y-angu* *i-lianguka*
 pen₉ cm₉-good cm₉-mine cm₉-fell
 ‘My good pen fell.’ (from Katamba 2003)
- b. *ki-kapu* *ki-kubwa* *ki-moja* *ki-lianguka*
 cm₇-basket cm₇-large cm₇-one cm₇-fell
 ‘One large basket fell.’

There has been some research on alliterative agreement in different languages, as for instance in Bainuk, a Western Atlantic language (Sauvageot 1967, 1987), in Kru languages like Guébié (Sande 2017), Godié (Marchese 1986, 1988) and Vata (Kaye, 1981); but also Abu’ (or Abuq), a dialect of Arapesh spoken in Papua New Guinea (Nekitel, 1986) and Caucasian languages, see the example from Avar in (47).

- (47) *kudij-ab* *oktjabral’ul-ab* *socializmal’ul-ab* *revoljucia*
 big October socialist revolution

Alliterative concord usually consists in copying part of the noun, or the element of the noun responsible for gender (or nominal class), on associated elements like articles and adjectives.

However, languages differ greatly as to what exactly is copied in alliterative concord. It can be a syllable, as in Bainuk, or a syllabic rime as in Avar, a vowel as in Abu’, or just vocalic features, as in Guébié. In Tagbana, consonantal features are present on all associate morphemes in the nominal domain. This language is special in that the agreement features do not necessarily take their origin in the noun itself or its CM. Rather the CM can take part in the alliteration or not. An example where it does not is shown in (47). Class 5 is expressed by the features [-continuant, dorsal].

- (48) *ɟɪ̄-ō* *ki* *gíʔí* *gɪ̄* *gā* *gè*
 house.cl₅ pro₅ which₅ident.ptc₅ dem₅ cl-end.ptc₅
 ‘Which house is this?’

A dissertation could sort out the different cases of alliteration concord found in the literature, and /or concentrate on one language presenting alliterative concord.

A particularly interesting aspect is that there is no satisfying analysis of the interaction between morphology and phonology of the phenomenon. Some of the authors mentioned above use copying mechanisms for their theory agreement, some only present the data without proposing any analysis. In Tagbana at least, alliteration is not simply phonological copy, but rather multiple insertion of phonological specifications. In this language the alliterative consonantal features can be analysed as the class itself, and all morphemes that are specified for a nominal class obligatorily integrate these features in their phonological form.

Dissertation Topic IV (K. Hartmann) **“Focus marking in the DP”**

A series of research questions on nominal modification concerns the potential of DP-internal partitioning into focus and background. A question of theoretical as well as typological interest is whether languages follow the strategies established for topic and focus realization in the sentential domain. This seems to be the case in intonational languages where accents can be shifted to non-projecting constituents expressing narrow focus, cf. the difference between a *green BIKE* vs. a *GREEN bike*. In the latter case, the accent on the adjective presupposes givenness of the following noun leading to a narrow focus interpretation. Not all intonation languages appear to behave alike though, see Swerts, Krahmer and Avesani (2002). In languages using syntactic focus strategies such a parallelism between the sentential and the nominal domain is not always observed. In Dagbani (Gur, SVO), focus marking within the sentential domain requires fronting to FocP:

- (49) *Yílí* *ká* *bì-á* *máá* *dá.*
 house FOC child-SG DEF buy.PFV
 ‘The child bought a HOUSE.’

Focusing of a nominal modifier requires pied piping of the whole DP (50). Movement of the focused adjective alone is just as impossible as DP-internal fronting of the modifier.

- (50) *Búkù vjélli* *ká* *bíá* *máá* *kárim.*
 book new FOC child DEF read.PFV
 ‘The child read the NEW book.’

The unavailability of focus projections within the Dagbani DP stands in contrast to claims in the literature which argue for an articulated left periphery of the DP in other languages like Gungbe (Aboh 2004) or Mandarin Chinese (Hsu 2014).

The question emerges whether DP-internal information structurally related projections in these languages are accessible to all kinds of focused constituents of the nominal domain or restricted to a subset of them. Are they restricted to phrasal sub-constituents? Do they allow for pied piping? Is it only DP-internal focus that may be dislocated, or also a DP-internal topic? It is also interesting to investigate right dislocation under focus, as e.g. in Romance languages. In Spanish and Italian, new information foci in the sentential domain appear in the right periphery of the clause. Whether this strategy is also available to the nominal domain is currently under debate. What is the relation between the syntax and prosody of focal constituents within the DP? Does the satisfaction of requirements in domain A license the violation of requirements in domain B? Hence is there evidence for an optimality theoretic account of focus in the DP as it is suggested e.g. by Hoot (2012)? The GK ‘Nominal Modification’ will contribute to answering these questions.

Dissertation topic V (E. Rinke)

“Intermediate steps in the grammaticalization of the definite article”

Although articles are attested in the earliest documents, their use in the medieval period still diverges across Romance from its contemporary use. In particular, bare nouns are attested in contexts, where they are not licensed in the modern languages. This is illustrated in (51) with respect to Old Portuguese, where determinerless singular count nouns are attested in subject position (51)a and in object position (51)b. In both constructions, modern Portuguese requires the definite article.

- (51) a. *costume é (que) m(er)cadador q(ue) alugar casa na vila & uezj~dade q(u)is(er) fazer de soldada & se a dar nō q(u)is(er) de portagẽ.* (Costumes, 13th cent.)
 ‘It is law that a merchant who wants to rent a house in the town or in the vicinity pays tax and if he doesn’t want to pay it he has to pay charges.’
- b. *.. se alguẽ p(er)de vaca ou boy [ou besta]* (Costumes, 13th cent.)
 ‘if somebody loses cow or ox [or animal]’

Several proposals aim at accounting for the variable use of articles in the medieval stages. Batllori & Roca (2000), for example, argue with respect to Old Spanish, that there are competing grammars (Kroch 1994): an etymological system in which the article still has a deictic value (and is moved to SpecDP) and an innovative grammar, where the article is directly merged in D. However, there is no evidence that the definite article would behave like a demonstrative. Instead, it can be shown that its realization relates to specificity (and topicality), see 3.2.2. In addition, the diachronic spread of articles seems to involve a number of universal steps, some of which are also attested in the first language acquisition of articles. There seems to be a progression of article use with a number of intermediate steps from *definite specific* contexts to *indefinite specific*, *definit non-specific* (including abstract, generic, unique nouns), to *indefinit non-specific* (e.g. singular count nouns in argument position), *possessives* and *proper names* (cf. Rinke 2010, Kupisch & Rinke 2011). A dissertation project could address the following research questions related to this topic: First, can the intermediate steps proposed above be empirically confirmed in a comparative cross-linguistic diachronic investigation?

Second, how can the diachronic progression be accounted for? Is there a parallel to the steps in the monolingual first language acquisition of articles? If yes, how can this parallel be explained and why does the grammaticalization process follow this path? Does it relate to a parametric hierarchy (Baker 2008, Roberts 2011, Fischer & Rinke 2013). And finally, how to explain the intermediate steps in the diachronic development in terms of coherent grammatical systems?

Dissertation topic VI (C. Poletto)
“Adjective positions in the history of Italian”

As illustrated in paragraph 3.2.2, Old Italian (OI) restrictive adjectives can occur prenominal, while in Modern Italian they can only occur postnominally (*la sinistra mano* (OI), *la mano sinistra* (MI)).

This difference has never been investigated up to now in a systematic way, although the pattern is a very robust one in the OI texts. Since OI allows for some measure of OV order (see Poletto 2014), one might wonder whether this is actually a residue of an OV property from Latin, as in general OV languages only have prenominal adjectives or even more, whether this is a direct influence of the Latin grammar all OI authors knew very well. Actually, the whole syntax of the DP phrase is still pretty much terra incognita in OI and also the evolution of cases like (52) into (53) through time and their relation to the progressive increase of the use of definite and indefinite articles, and the loss of structural genitive forms like the one in 0 has never been explored:

- (52) *la costui anima* (Fiori e vita di Filosafi 203b)
 the him-here soul
 ‘the soul of this person’

Poletto (2015) proposed that the grammaticality of cases like (52) depends on a general property of OI i.e. an anteposition rule targeting the left periphery of all phases, the CP, the vP and the DP, as shown in (53):

- (53) *Di dolor madre antica*
 of sorrow mother ancient
 ‘The ancient mother of sorrow’ (VN 30)

This property has been lost, since cases like (53) are ungrammatical in Modern Italian, but we know virtually nothing on the evolution of this anteposition rule after the medieval period.

Alternatively, one would have to say that the difference between the Old and the Modern language depends on the fact that in Modern Italian the noun raises higher than in Old Italian bypassing restrictive adjectives as shown in (53). Following Cinque’s view that it is not the N° that raises but the whole NP, in order to prove which of the two possibilities is correct, one would have to undertake a systematic investigation of the structure of the DP in OI, including not only restrictive and non-restrictive adjectives. More specifically, it remains to be seen a) what the sequence of prenominal adjectives is in Old and Modern Italian b) whether the development, i.e. the loss of prenominal adjectives goes hand in hand with other types of antepositions, which are known to disappear in the Renaissance period c) how this interacts with other phenomena in the left periphery of the DP, namely the progressive spread of definite articles and the loss of structural genitive case. The PhD student working on the problem concerning the evolution of the DP structure in general and the order of the adjectives in particular would have at his/her disposal the OVI (Opera del Vocabolario Italiano) and also the new tagged corpus developed in collaboration with Tony Kroch (University of Pennsylvania) to extract all relevant cases. This would make the research project feasible in the three years of the GK.

Dissertation topic VII (J. Gippert)
“Pronominal inflection of adjectives and nouns”

In the history of several language families of Indo-European stock, adjectives have developed two declension types, one of them often being referred to as ‘pronominal’ or ‘definite’. In both Baltic and Slavic languages, this type is characterized by suffixal elements that have

convincingly been traced back to former relative pronouns (Hajnal 1997, Stolz 2010, Zinkevičius 1957), the definite declension thus reflecting the residue of nominal relative clauses with an implicit copula ([the] car that [is] red > the red car). A similar but not identical grammaticalization path can be seen in many Iranian languages where the former relative pronoun has developed into a mere attribute marker, the so-called *ezāfe*; here, too, the starting point must have been nominal relative clauses with an implicit copula (Haider & Zwanziger 1984), but there seems to be no definiteness opposition involved ([the / a] car that [is] red > [the / a] red car). Nominal relative clauses have also been assumed to be the source for definite forms of nouns in some languages of the Indo-Aryan family. On the other hand, the ancient Germanic languages show a definite declension type of adjectives with a different structure, based on stem variation (Ringe 2006: 169–170, 281–286). This opposition has been assumed to have cognates in Greek, Latin, and Tocharian. All of these issues need further investigation in a broader typological framework that comprises non-Indo-European languages such as the Kartvelian language Svan, which has possibly developed a ‘pronominal’ inflection type of adjectives independently from similar developments in Germanic, Slavic etc., or Georgian which possesses comparative formations of adjectives that may be built upon embedded copula clauses (Gippert 1999, Gippert 2000).

The phenomena thus outlined can be summarized under the research question whether the emergence of the so-called „pronominal“ or „definite“ inflection types of Indo-European and Caucasian languages implies a shift from NP-structures towards DP-structures which, in contrast to overt (esp. article-based) structures remain covert. This question is esp. crucial for the Germanic languages which (in parts) developed an article-based DP-system alongside the continuing use of „pronominal“ adjectives while Baltic and most Slavic languages did not develop articles (a special case is provided by the South Slavic languages Bulgarian and Macedonian which do possess an article system today, a phenomenon that is at present being investigated in M. Kofler's thesis concerning the article systems of the Balkan area). In the case of the Kartvelian languages, preliminary work is at present being undertaken in M. Kamarauli's dissertation concerning the question whether the existence of a DP layer can be assumed, at least for historical stages of the Georgian language.

The diachronic and typological issues involved in this setting will be investigated in two or three dissertations to be directed by Gippert and associated researchers (Gelumbeckaitė, Tandaschwili), with the text corpora compiled in TITUS (Thesaurus Indogermanischer Text- und Sprachmaterialien) and other projects serving as the empirical basis.

Dissertation topic VIII (P. Schulz)

“Multiple embedding (‘recursion’) of adjectives, PPs, relative clauses”

Evidence from production studies across several languages (cf. *i.a.* work by Pérez-Leroux et al., 2012) suggests that children avoid recursive structures at least up to age 5. The structures studied so far included possessives, locatives, comitatives, and noun complements. Evidence from comprehension studies (*i.a.* Roeper 2011, Limbach and Adone 2010, Marcilese et al. 2013) indicates that children initially interpret these recursive structures as coordinated (e.g., ‘the bird that is on the crocodile and in the water’). Likewise, recursive possessives have been found to be incorrectly interpreted as coordinated (e.g., Susan’s mother’s game as ‘the game that belongs to Susan and her mother, cf. Limbach & Adone, 2010). First results from a German comprehension study (Lowles, 2016) with 5-year-olds and adults suggest that in German, as in English, PPs constitute the most frequent ‘linking’ strategy, followed by relative clauses. In addition, in multiple embedded structures, children and adults tend to employ two different linking strategies rather than using the same type twice (e.g., the woman [with the baby who has a hat] rather than the woman [with the baby [with a hat]]). A number of issues are still open: Does children’s and adults’ preference for specific linking strategies hold across languages? Do children follow a different developmental path, depending on language-specific properties: languages with more diverse or few different linking strategies (e.g., Romanian PPs with *de*), languages that allow recursive embedding across all linking strategies or not (e.g., possessive *-s* in German)? How do children acquire the meaning of recursive NPs? Is mastery structure-specific or does it arise across structures resulting from discovering or mastering the general property of recursivity? How do bilingual children (successive and simultaneous)

interpret and produce recursive NPs? Can they profit from their knowledge of the L1? Is variation in linking strategies favored across languages?

Dissertation topic IX (H. Weiß)

„Attributive present participles and their almost complete loss in German dialects“

Present participles can be used attributively (*blutstillende Medikamente*) and predicatively (*das Medikament ist blutstillend*) – and they occur in both uses in Standard German. Contrasting significantly to this, the attributive use is almost absent or at least severely restricted in German dialects. Though this fact has long been known (Behaghel 1924: 373, § 755; Schirmunski 1962: 515), there is no explanation for why it is so.

On the one hand, there are many dialects which have completely lost the present participle (see Weiß 2017 for further details). On the other hand there are dialects in which present participles have survived to some extent, but their distribution is rather limited („aber der grammatische Anwendungsbereich ist gewöhnlich begrenzt“, Schirmunski 1962: 515). One such dialect is Bavarian for which Weiß (2017) has provided a first attempt of an explanation. The author proposes three restrictions which are responsible for their limited use as attributes: first, present participles can be built only from morphologically simple verbs (i.e. no compounds or derivations); second, neither present participles of transitive verbs are possible nor, thirdly, unaccusative ones. That transitive verbs are excluded has probably to do with avoidance of complexity, because they can be expanded (*die das Buch lesende Frau*), which seems to be strongly dispreferred in spoken language. Unaccusative verbs are excluded for syntactic reasons, because their grammatical subject is semantically an object, which makes use of an attributive present participle impossible, because present participles predicate over subjects, not objects. The only verbs that are licit as attributive present participles are thus unergative verbs (e.g. Bav. *schreiade und springade Kinda*).

A dissertation on this topic should pursue two goals: an empirical (a data survey in one or more German dialects) and a theoretical one (i.e. reconstruction of the exact conditions of their use and theoretical analysis).

Dissertation topic X (M. Bader)

“Attachment Ambiguities involving Relative Clauses”

(a) Cross-linguistic investigation of the RC attachment ambiguity

As shown by much research (summarized in Hemforth et al. 2015; Grillo und Costa 2014), the preference observed for RC attachment can be modulated by various factors (referentiality, DP versus PP modification, prosody). The question is whether these factors work in the same way across languages. This question could be investigated by a cross-linguistic study taking into account one or more Germanic languages and one or more Romance languages. One would in particular have to look at instances of the RC-attachment ambiguity that do not admit a RP analysis even in languages that in principle provide the RP structure.

(b) The relation between RC attachment preferences and extraposition

So far, it is an open question whether extraposition affects the preferences seen for RC attachment. According to a locality preference, low attachment should be preferred even when the RC is extraposed. However, if the parser is also guided by subjacency, a high attachment preference is to be expected. One question then is how the two opposing constraints – locality versus subjacency – are weighted. This question can be addressed both with regard to language comprehension and language production.

Dissertation topic XI (M. Sailer)

“Obligatory and excluded nominal modifiers”

Typically, nominal modifiers are optional. There are, however, cases in which such a modifier is required or excluded. Several cases have been studied in the literature: (i) obligatory modifiers in concealed questions, *derjenige*-determiners, cognate object constructions, or proper names with article in Standard German; (ii) excluded modifiers in non-decomposable idioms, with articleless predicative nouns, or weak forms of pronouns. Typically, such studies do not take the full variety of modifiers into account and focus on a single phenomenon. In the

proposed dissertation topic, the general question of non-optionality in modification is put in the center. The dissertation will look at cases that have not received much attention and provide detailed studies with formal analyses. The underlying hypothesis of the dissertation would be that optionality is not a defining property of modification but is just compatible with its syntactic conditions and its semantic effect.

Dissertation topic XII (T. E. Zimmermann)

“Non-local adjectival modification”

It has long been known that some (occurrences of) adjectives cannot be interpreted as operating on the meanings of the nouns they modify. The constellations in (54)-(56) are cases in point; further cases can be found in Morzycki (2016):

- (54) *I opened the wrong bottle.* (Schwarz 2009)
‘It was wrong for me to open the bottle I opened.’
- (55) *Solange is staying in an unknown hotel.* (Abusch & Rooth 1997)
‘It is unknown which hotel Solange is staying at.’
- (56) *The occasional soldier strolled by.* (Zimmermann 2003)
‘Occasionally a soldier strolled by.’

As the paraphrases suggest, in each of these cases the underlined adjective semantically interacts with material outside its scope: it is construed *non-locally* (on its most prominent reading). In order to account for these semantic effects in a systematic - and ideally: compositional - way, certain adjectives must be allowed to be interpreted as if they were located in a higher position than the syntactic surface would suggest. These phenomena raise a host of theoretical questions at least some of which should be answered in a dissertation, whose starting point would be the following assumption, investigated and defended in ongoing work by **C. Reinert**:

- (*) Local adjectival modification can be fully captured by type-driven interpretation, on account of it always being either intensional or intersective.

It remains to be seen whether (*) also holds for non-local modifiers once their position (at LF) has been determined or whether some other type-driven treatment can be applied to them. As a first step, the exact boundary between local and non-local modification needs to be determined in both structural (syntactic) terms. Moreover, the various kinds of non-local modifiers observed in (54)-(56) and beyond call for systematic classification according to truth-conditional (semantic) criteria: some adjectives seem to modify whole sentences, others appear to embed indirect questions, some tamper with the meaning of the determiner adjacent to them, etc. Moreover, given that the pertinent constellations, the sources of their different readings would have to be explored in detail.

Dissertation topic XIII (P. Schulz)

“Interpretation of non-local adjectives”

In general, prenominal adjectives modify the noun they precede. However, adjectives like *wrong* (Schwarz, 2006) and *unknown* (Abusch & Rooth 1997) have been argued to be interpreted in a non-local position as well. Following Schwarz (2006) they are referred to as non-local adjectives. Adjectives that allow non-local readings seem to be more widespread than previously assumed. Among them are adjectives like *average* (Kennedy & Stanley 2009), *whole* (Moltmann 1997, 2005, Morzycki 2002), *possible* (Larson 2000, Schwarz 2005, Romero 2013, Leffel 2014), *maybe* *same* and *different* (Beck 2000), as well as potentially novel ones like *unfortunate* (Morzycki, 2014), *restless*, etc. These adjectives seem to exhibit two readings. The external reading of *Sue gave the wrong answer*, for example, is that Sue gave an answer that was wrong of her to give. The internal reading is that Sue gave an answer that was incorrect. (Morzycki 2002, 2014). Morzycki (2002, 2014) suggests that these adjectives fall into three subclasses and that (a subclass of) these adjectives have quantificational determiner denotations of the type $\langle\langle et, \langle et, t \rangle \rangle\rangle$. (cf. the ongoing work by **C. Reinert**). To my knowledge, the acquisition of non-local adjectives has not been studied. Questions to be addressed are:

Which reading is acquired first? If non-local interpretations are initially favored by the child, the external readings should emerge before the internal one. How do the children learn that these adjectives are not of type <et> or <d, <et>> but of the same type as quantificational determiners? Is there evidence from production or comprehension for the assumed semantic type? Which adjectives in which contexts pave the learner's way into this class?

Dissertation topic XIV (M. Sailer)

“Sub-local and supra-local modifiers in underspecified semantics”

Underspecified semantics (Pinkal 1996, Egg 2010) is an approach to the syntax-semantics interface that relates a syntactic structure and a semantic representation (lower-case “logical form”) in a systematic, though not necessarily compositional way. A key property of such systems is that linguistic expression can make discontinuous semantic contributions, which allows for a straightforward modelling of ambiguities. In the version of underspecified semantics pursued at the Institute for English and American Studies (IEAS), Richter & Sailer (2004), there is a distinction between three types of meaning contribution: (i) a conceptual or main lexical semantic content (“sub-local” level) of an expression, (ii) its basic combinatorial (i.e. dependency-satisfying) meaning contribution (“local” level), and (iii) its functional or operator-meaning contribution (“supra-local” level).

Lahm (2016) shows that the distinction between the local and the supra-local semantic aspects of an adjective can lead to an interesting analysis of non-local adjectives such as *different*. In their “local” semantics, they are just like ordinary intersective adjectives, but they contribute additional, “supra-local”, semantic material, which can include quantifiers and other operators. In one part of the proposed thesis project, this approach will be extended to other case of adjectives with quantification, modal, or other kinds of operator-like semantic contribution.

What has been neglected so far, however, is the integration of a growing body of research on the more intimate interactions of the core, non-combinatorial meaning of a head noun and its modifier within *distributional semantics*. Two approaches that are directly relevant for linguistic theorizing are represented by Asher (2011), and McNally & Boleda (2017). Asher proposes a type-theoretical account to distinguish between various systematically related readings of nouns, for whose existence modification is a central test case. McNally & Boleda (2017) integrate vector composition into the inventory of combinatorial mechanisms in semantics. The dissertation will explore how such mechanisms of “sub-local” concept composition can be integrated into the above-mentioned framework of the syntax-semantics interface.

Dissertation topic XV (C. Meier)

“Modification and Relational Nouns”

Type-shifting operations are used in order to guarantee the process of compositional interpretation. In possessive constructions, for example, the operation of existential closure may absorb an argument of a relational noun (the brother “the x: $Ey[\text{brother}(x,y)]$ ”), see Barker (2011). The introduction of a possessor is not necessary anymore.

But type-shifting operations may also serve to relate different shades of meanings of modifiers to each other. Partee and Borshev (1998, example 14) discuss four meanings of new, for example, depending on whether the adjective combines with a sortal noun (CN) or a relational noun (TCN).

- (57) a. [new1] t/e : "hasn't existed long" (a new movie)
 b. [new2] CN/CN: "hasn't been a CN long" (a new movie star)
 c. [new3] TCN/TCN: "hasn't been TCN-of long" (my new friend)
 d. [new4] TCN/CN: "hasn't been (free) Ri-of long" (John's new car is an old car.)

Investigating the restrictions on type-shifting in the nominal domain may turn out to be fruitful. Which elements trigger type shifts? Do semantic type shifts depend on the respective syntactic category as suggested by Bittner and Hale (1995), for example? What is the impact of pragmatics on shifting operations? Answers to these questions then may help to evaluate

previous proposals on the semantics of modified nominals that involve type-shifting. This dissertation topic relates to other work on possessives in the RTG (Greco, Srdanović).

Dissertation topic XVI (C. Meier)

“Inverse Linking”

Complex NPs as in *every politician from a small village* show surface scope readings and so-called inversely linked readings. In inversely linked readings the embedded NP appears to be interpreted outside the scope of the embedding NP. Inverse linking seems to be just another instance of non-local nominal modification.

Inverse linking was used in order to motivate the existence of Logical Form (covert movement), of branching quantifiers or of polyadic quantifiers, but a comprehensive theory on inverse linking is still missing to our knowledge and work on this topic could constitute a promising dissertation project. The role of the semantic relation between the nested NPs (expressed by a preposition or a relational head noun) in licensing inverse linking is still unclear. Syntactic movement approaches are competing with in-situ approaches. Recently, Bumford (2017) rebuts the view that complex NPs are nested constituents when interpreted and proposes an analysis that works with semantic decomposition of the determiner and movement of one of its meaning components. It even seems that there are different kinds of inverse linking in the nominal domain depending on the kind of determiners that are involved in the construction. Pragmatic factors on the interpretation of the readings (e.g., the explanation of the specificity effects) are rather neglected in the literature.