A major semantic distinction pervading the core (morpho)syntactic units of language, i.e. the phrase and the clause, is that between arguments and modifiers. While arguments are inherently presupposed by the head of the phrase or clause, modifiers are mere optional additions. Heads that take arguments are semantically relational: they inherently require reference to another item – therefore considered the head’s argument. As such, the head determines the number and type of arguments to be expressed. Typical examples of head-argument relations are those between a verbal predicate and its core argument(s), an adposition and its argument, and a relational noun, such as a kinship term or a body part term, and its possessor. By contrast, modifiers are not part of the head’s lexical specification, but merely supplement it with additional semantic information. Typical examples of head-modifier relations are those between a noun and an attributive adjective, a verb and a (manner or degree) adverb, and a prototypical non-relational noun, such as a noun denoting a concrete inanimate object like ‘book’, ‘pot’ or ‘pen’, and its possessor.

The distinction between the two semantic types of dependency relation is made systematically in Functional Discourse Grammar (henceforth FDG; Hengeveld & Mackenzie 2008), a typologically-based theory of language structure developed on the basis of Dik’s Functional Grammar (1978). In FDG, head-modifier relations and head-argument relations are given a distinct semantic representation, comparable to the use of distinct formulae in predicate logic. The relationship between a relational noun and its possessor argument is represented in FDG as follows:¹

(1)  
the boy’s father  
\( (x: \text{fatherN} (x) \ (x: \text{boyN} (x)))_{\text{REF}} \)
The expression of modifiers and arguments in the noun phrase and beyond

The representation should be read as follows: the referent of the NP \( (x_i) \) has a complex head, given between square brackets, which consists of the noun father, and the possessor argument boy \( (x_j) \). The relationship between the two is semantically one of reference (REF), since it can be paraphrased as ‘an individual \( (x_i) \) that is a father with reference to the boy \( (x_j) \).’ Since relational nouns denote an inherent relationship between two entities, they behave semantically as two-participant predicates. As such, they resemble bivalent verbs, which are given a similar representation. In contradistinction, the relationship between a non-relational noun and its possessor modifier is given the following representation in FDG:

(2) the boy’s book
\[
(x_i: [\text{book} (x_i)] : [(x_i: \text{boy} (x_i))_{\text{ASS}} (x_i)])
\]

The noun book does not have a relational meaning, and therefore functions as the head of the NP \( (x_i) \) on its own. It takes the noun boy \( (x_i) \) as a modifier, as indicated by the colon. Head-modifier relations are given the semantic function of ‘association’ (ASS), since the relationship can receive a range of, pragmatically determined, interpretations; the phrase in (2) may, for instance, refer to a book the boy wrote, a book he owns, one that he is using etc. Since the non-relational noun ‘book’ merely denotes the set of books, it behaves semantically as a one-participant predicate; the modifier further restricts the reference of the noun to a specific subset of items. In this thesis, I adopt the basic distinction between modifiers and arguments so carefully made in FDG, but without its representational formalisms, illustrated in (1) and (2), in order to enhance the accessibility of the present research for those unfamiliar with that framework.

The distinction between modifiers and arguments is well-established as pertaining to verbs: while modifiers (or adjuncts) just provide additional information about the state of affairs expressed by the verb, arguments are semantically entailed by the verbal predicate. However, the relevance of the distinction for nouns goes unnoticed in most current linguistic frameworks (Chomsky 1981, Van Valin & Foley 1980, Bresnan 2001). As shown above, FDG is an exception in this respect, as it recognizes that nouns, like verbs, show a semantic difference in argument structure (or ‘valency’). As such, it makes a

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2 The fact that the properties of ‘fatherhood’ and ‘boyhood’ apply to the respective referents \( (x_i) \) and \( (x_j) \) is indicated by repeating the indexes \( (x_i) \) and \( (x_j) \) after the properties.

3 The fact that the modifier boy \( (x_j) \) applies to the referent book \( (x_i) \) is shown by repeating the index \( (x_i) \) after the modifier.
basic distinction between relational nouns, which take their possessor as an argument, and non-relational nouns, which take their possessor as a modifier.

The existence and nature of the modifier/argument distinction with nouns figures prominently in discussions on the semantics and morphosyntax of possessive NPs. However, most studies focus on the language-specific categorization of nouns, or constructions, as relational (i.e. modifier-taking) or non-relational (i.e. argument-taking) (e.g. Partee & Borschev 2003, Lehmann 2002, Von Prince 2016, Erguvanli Taylan & Öztürk 2016). Many such studies focus on languages that differentiate formally between modifiers and arguments in possessive NPs, traditionally referred to as a distinction between ‘alienable’ and ‘inalienable possession’ (e.g. Chappell & McGregor 1996, Aikhenvald & McGregor 2013). Importantly, in this thesis, the modifier/argument distinction is approached as a universal, semantic opposition, which underlies patterns of morphosyntactic coding in individual languages. The way in which such patterns are affected by the modifier/argument distinction is the topic of this thesis.

The dependency relations investigated in this thesis have been previously investigated by Nichols (1986, 1988, 1992), but from a syntactic perspective. Syntactically, dependency relations consist of a head and a dependent; the head governs, or subcategorizes for, the dependent, and determines the syntactic category and distribution of the constituent as a whole (cf. e.g. Tesnière 1959, Mel’čuk 1988). This thesis, by contrast, relies not on a syntactic but on a semantic notion of dependency, characterized by a functional difference between modifier dependents and argument dependents. Moreover, it recognizes, unlike Nichols, that dependents need not take the form of words (i.e. lexical NPs), but may be represented by person affixes and clitics as well, as further discussed in the next subsection. Importantly, the modifier/argument distinction crosscuts the set of phrasal and clausal dependency relations investigated by Nichols, as it divides these relations into those containing modifiers and those containing arguments.

Although the syntactic distinction between heads and dependents is well-established, the semantic distinction within dependency relations between modifiers and arguments is not. As a result, the effect of the modifier/argument distinction on the formal realization of dependency relations has remained largely unknown. The present thesis aims to fill this gap, by investigating how this basic distinction in dependency relations affects the morphosyntactic expression of such relations, across the world’s languages. The way in which this question is addressed in the thesis is discussed in the next subsection.
1.1 Research topics and thesis outline

The thesis is organized as a collection of three articles, each corresponding to one chapter. Each article (chapter) contains a detailed description of the theoretical background and the relevant research questions. Therefore, in this section, I only give a brief overview of the topics addressed in the chapters to come. These topics are united by an overarching research question, namely: *To what extent does the modifier/argument opposition constrain the expression of dependency relations across the world’s languages?*

This question is investigated from three different perspectives. In Chapter 2, I investigate the relevance of the modifier/argument distinction for locus of marking in possessive NPs. Locus of marking is an influential typological parameter that classifies constituents, as well as entire languages, in terms of the location of morphosyntactic marking of the dependency relation, i.e. the head, the dependent, both or neither. The parameter has gained widespread significance through work by Nichols (1986, 1988, 1992), who showed that it strongly correlates with a range of grammatical features, including the opposition between alienable and inalienable possession, studied in this chapter. In Chapter 3, I again study possessive NPs, but now focusing on person marking. Specifically, I investigate the effect of the modifier/argument distinction on the referentiality of person markers – their functional status as independent referential expressions or markers of agreement – and on their morpho-phonological realization – their formal status as words, clitics, affixes or fused forms. More generally, this chapter focuses on the grammaticalization of possessive person markers in terms of function and form, from a synchronic typological perspective. In Chapter 4, I expand my focus beyond possessive NPs, additionally covering adpositional phrases and one- and two-participant verbal main clauses. In this chapter, I investigate the degree to which languages use the same morphosyntactic forms to mark these phrasal and clausal dependency relations, and the extent to which the modifier/argument distinction constrains such formal identity. In sum, the respective chapters cover four dimensions of expression: (i) locus of marking, (ii) the referential potential of person marking, (iii) the formal realization of person marking, and (iv) identity of marking. Each chapter makes use of a genetically and areally balanced sample of languages, designed specifically for the hypotheses tested. The three language samples show some degree of overlap, such that a number of languages are found in two or all three samples used. In total, 64 unique languages are investigated in this thesis; the sources consulted for these languages are provided in a separate references section.
The first two articles (Chapter 2 and 3) focus specifically on possessive NPs. As shown above, this constituent type is the only domain of phrasal dependency where dependents function as modifiers or as arguments; other phrases have modifiers only, such as NP's containing attributive adjectives, or arguments only, such as adpositional phrases. Moreover, as noted above, while a distinction between modifiers and arguments is well-established for verbs, its existence with nouns is less widely acknowledged, apart from languages with an alienability split. Therefore, significant attention will be given to possessive NPs in this thesis. In Chapter 4, I additionally focus on other basic types of dependency relations: adpositional phrases and verbal main clauses. Like relational nouns, adpositions and verbs take their dependents as arguments. Moreover, each of these dependency relations may, in principle, be expressed with the same three types of coding strategies: flagging, person marking and the absence of both, i.e. zero-coding. As such, they form an interesting testing ground for studying the impact of the modifier/argument distinction on morphosyntactic coding beyond the possessive NP. In the following, I will provide a short summary of each chapter and its main outcomes.

In Chapter 2, I investigate how the modifier/argument distinction impacts locus of marking in a sample of 37 languages with an alienability opposition in NPs with a nominal possessor. It is shown that in head-modifier relations, the possessor modifier tends to be marked – typically through flagging of the possessor nominal – while in head-argument relations, the possesum head tends to be marked – typically through person marking. These preferences yield two generalizations: (i) if in a language the possesum head is marked in head-modifier relations, it is also marked in head-argument relations and (ii) if in a language the possessor argument is marked, the possessor modifier is marked as well. These cross-linguistic tendencies follow from the semantic opposition in dependency relations: since modifiers are functionally marked in providing an optional specification of the head, they call more strongly for morphosyntactic marking than arguments, which are inherently presupposed by their head and are therefore in less need of possessive marking. An important feature of this study is a novel analysis of person markers in terms of locus, which departs from work by Nichols in making a systematic distinction between referential markers and agreement markers, irrespective of their free or bound realization.

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4 The term **flagging** is used for case marking, adpositions and other invariant markers of the dependency relation, while **index(ing)** refers to the use of person markers – irrespective of their status as referential markers or agreement markers. These definitions will be repeated in the individual chapters.
While referential markers themselves represent the possessor, and thus the dependent, agreement markers merely signal the relationship between the possessor and the possessum. It is shown that the modifier/argument distinction not only correlates with locus of marking but also with this distinction between referential markers and agreement markers: across the sample languages, person markers in head-modifier relations are inherently more likely to be referential in nature than those in head-argument relations. This preference yields a third generalization: (iii) if in a language person marking in head-argument relations is referential in nature, person marking in head-modifier relations is referential in nature as well. This tendency can also be attributed to the fact that, as functionally marked optional additions, modifiers are in greater need of a referential expression than arguments. In relation to work by Nichols, the article questions the clear-cut distinction made between head-marking and dependent-marking, by showing that, from a semantic perspective, dependent-marking can also occur on heads. Chapter 2 appeared, with minor modifications, in *Folia Linguistica*.

Chapter 3 provides a more detailed account of the effect of the modifier/argument distinction on the referentiality of possessive person marking. Specifically, I study both the referentiality (function) and the morphophonological realization (form) of possessive person markers in a sample of 39 languages with an alienability split in NPs with a nominal and/or pronominal possessor. Referentiality is measured independently of expression type by applying the typology of referential markers and agreement markers introduced in Chapter 2 to the data. It is shown that, in individual languages, person markers in head-argument relations are at least as referential and formally independent as person markers in head-modifier relations, and often less referential and less independent. This finding supports the widely held claim that possessive marking in inalienable (head-argument) relations tends to show a higher degree of grammaticalization than possessive marking in alienable (head-modifier) relations, but for function and form independently. This finding can again be explained by the functional markedness of modifiers compared to arguments, as a result of which the former are in greater need of a more referential and a more formally independent expression than the latter. Additionally, I show that referential potential strongly correlates with expression type, irrespective of the modifier/argument opposition: in individual languages, markers of a lower degree of referentiality never have a more

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independent expression form than markers of a higher degree of referentiality. This finding supports the unidirectionality of grammaticalization processes, since it suggests that a decrease in referential potential never goes hand in hand with an increase in formal independence. At the same time, I also show that a decrease in referential potential need not go paired with a decrease in formal independence either. Hence, the relationship between referentiality and formal expression type is relative, rather than absolute. From a diachronic perspective, this finding suggests that function and form develop in the same direction, but need not develop at the same pace. Notably, this is a much more specific relationship between function and form than is often presumed in the literature. On a more general level, this article shows that only when dimensions of grammaticalization are carefully separated in synchronic typological work can their precise diachronic interplay be revealed. Chapter 3 appeared, with minor modifications, in *Transactions of the Philological Society*.6

In Chapter 4, I focus not only on possessive NPs, but also on adpositional phrases and one- and two-participant verbal main clauses. The aim of this chapter is to determine to what extent the modifier/argument distinction impacts alignment, i.e. the identity of morphosyntactic coding, of these phrasal and clausal dependency relations. Although alignment is traditionally studied only as a clausal phenomenon, I argue that it applies to both clauses and phrases, since apart from being licensed by verbs, arguments are licensed by adpositions and relational nouns. Moreover, the coding of these dependency relations is often subject to the same referential properties of dependents, such as animacy, definiteness and (pro)nominality – a topic addressed in this study as well. Data from a 39-language sample show that alignment patterns are constrained by the modifier/argument distinction on the one hand, and by the phrasal vs. clausal nature of the dependency relation on the other. Specifically, I show that if, in a language, modifiers in (possessive) phrases receive the same morphosyntactic coding as arguments in (verbal main) clauses, arguments in (possessive and adpositional) phrases receive this means of coding as well. Arguments in phrases thus play a bridging role in terms of alignment, which can be attributed to the fact that they share the phrasal nature of the dependency relation with modifiers in phrases, and their argumenthood with arguments in clauses. In this study, I furthermore show that referential factors not only impact the coding of arguments in clauses, but also play an important – yet understudied – role in

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phrases. Following much recent work in clausal alignment typology, I take into account language-internal variation in alignment conditioned by referential properties. Chapter 4 has been submitted for publication.

Finally, in Chapter 5, I summarize the main findings in light of the central research question: To what extent does the modifier/argument opposition constrain the expression of dependency relations across the world’s languages? It is shown that the expression of dependency relations is highly sensitive to the modifier/argument distinction, in every perspective from which it is studied. This outcome provides strong support for this semantic opposition in dependency relations, and its importance in the expression of such relations across the world’s languages.

1.2 Notational conventions and terminology

A few words on notational conventions and terminology: The numbering of sections, tables and examples in this thesis follows that of the articles as they were published. Each example language is presented together with the first-order subgroup to which it belongs and the country in which it is spoken, between brackets. This information stems from The World Atlas of Language Structures (henceforth WALS; Dryer & Haspelmath 2013), which follows the 14th edition of Ethnologue (Grimes 2000).

Terminology and definitions are kept stable across the three chapters, with two exceptions. First, what I refer to as ‘referential markers’ and ‘agreement markers’ in Chapter 2 are referred to as, respectively, ‘appositional referential markers’ and ‘contextual agreement markers’ in Chapter 3. This is because only in Chapter 3 are two additional types of referential/agreement markers relevant (‘unique referential markers’ and ‘syntactic agreement markers’). The second difference in terminology is that in Chapter 4 the term ‘flagging’ refers to the use of case markers, adpositions and other invariant markers of the dependency relation, while in Chapter 2 this term is also used for the expression of possessor role information on referential markers. The term ‘flagging’ is not used in Chapter 3. Finally, person markers are only referred to as ‘indexes’ in Chapter 4, as in studies on clausal alignment. Definitions and usage of the relevant terms are further discussed in each chapter.