Manner Modifiers as Syntactic Heads

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by Victor Bogren Svensson

LUND
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A doctoral thesis at a university in Sweden takes either the form of a single, cohesive research study (monograph) or a summary of research papers (compilation thesis), which the doctoral student has written alone or together with one or several other author(s). This thesis is a monograph.

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Glossing Abbreviations

In glossed examples from other authors, I have mainly stayed faithful to the original glossings. However, in order to make use of more consistent glossing abbreviations, I have made smaller alternations the choice of abbreviations in some cases.

1 First Person

2 Second Person

3 Third Person

4 Fourth Person

A aspect

ABL ablative case

ABS absolutive

AC anticausative

ACC accusative

ADV adverb

AI animate intransitive

ALL allative case

AP antipassive

APL applicative

ASP aspect

AV actor voice

CAU causative

CNG connegative

CNTR contrastive

CONJ conjunctive

CONT contemporative mood

CPL completive

CV circumstantial voice

DEM demonstrative

DET determiner

DF definite

DEC declarative mood

DIST.PST distant past

DL dual

DSTL distal

DUB dubitative

DUR durative

DS different subject

E epentheic

ERG ergative

FA factive

FM formative

FRQ frequentative

FRS frustrative

FUT future tense

GEN genitive

HAB habitual

HORT hortative

ID indefinite

IMM immediate

IMP imperative mood

IMPF imperfective

INC incompletive

INCH inchoative

IND Indicative Mood

INDEP independent

INST intrumental case

INT intensifier

IP imperfective

IRR irrealis

ITR iterative

ITS incompletive transitive status

LNK linker

LOC locative case

LV locative voice

M masculine

MED medial

MOOD mood marker

NEG negation

NHYP non-hypothetical

NMZ nominaliser

NOM nominative

NP non-past

NPF noun prefix

NV non-verbal

OBJ object

OBL oblique

P plural

PART participle

PIV pivot

PASS passive

PERF perfect

PN personal name

POSS possessive

PROC process

PROSP prospective

PRS present tense

PRX proximative

PRV perfective

PST past tense

PV patient voice

Q question marker

RECIP reciprocal

RED reduplication

REFL reflexive

REP repetitive

RES resultative

R.PST remote past

S singular

SBJ subject

STAT stative

SUB subordinator

TH thematic suffix

TOP topic

TRN transitive

T tense

UV undergoer voice

VBZ verbaliser

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Chapter 1

Introduction

1.1 Research Topics and Aims

In this dissertation, I explore manner modifiers as syntactic heads. Manner modifiers as syntactic heads have at least three different realizations. They can be realized as verbal affixes encoding manner information, as manner modifiers incorporated into verbs, and as auxiliary verbs that encode manner information. An example of an affix encoding manner information, which I refer to as manner affixes, is given in (1). The manner affix is marked in bold. Unless stated otherwise, examples from West Greenlandic are my own.

(1) *West Greenlandic*
atuarusaartariaqarpoq
atuar-**rusaar**-tariaqar-pu-q
read-**slowly**-must-IND-3S
'S/he must read slowly.'

The manner modifier *-rusaar* in (1) is a verbal affix, situated immediately to the right of the verbal root, and to the left of the modality marker. This affix encodes that the reading event unfolded in a slow manner, rendered as 'slowly' in the English translation. In this dissertation, I propose that such affixes are the overt realizations of functional heads ([MN^0]) merged in the clausal spine.

Manner affixes differ from incorporated constituents that encode manner information, which can appear as independent constituents as well as incorporated

into finite verbs, whereas manner affixes only appear as affixes. An example of an incorporated constituent that functions as a manner modifier in Classical Nahuatl is given in (2a), and in (2b) the same manner modifier appears as an independent constituent. The manner modifier is marked in bold. I refer to this type of manner modifiers as incorporated manner modifiers.

(2) *Classical Nahuatl* (Andrews, 2003, pp. 334, 515)

a. ni-**ihciuh**-caa-yauh
1s-**hurry**-ADV-go
'I am going in a hurry.'

b. niman **ihciuh**-caa tlaihuah
immediately **hurry**-ADV send.messengers
'Immediately, he quickly set out messengers.'

In (2a), the manner modifier *ihcuicaa* is incorporated into the finite verb of the clause, and encodes that the event denoted by the verb unfolds in a quick manner, rendered as 'in a hurry' in the English translation. Note also that the manner modifier is morphologically complex, being derived from a nominal stem into an adverb via the affix *-caa*. The same manner modifier is found in (2b), where it fulfils the same function, although it appears as an independent constituent. I propose that incorporated manner modifiers likewise are connected to a manner syntactic head. However, in contrast to manner affixes, I propose that incorporated manner modifiers contain lexical roots, whose function is licensed by the same manner syntactic head ($[[\text{Mn}^0]\ [\sqrt{\text{ROOT}}]]$). I use the term verb-internal manner modifier to refer to both manner affixes and incorporated manner modifiers.

Manner syntactic heads can also appear as auxiliary verbs, where they host the morphology associated with finite verbs and appear in the position associated with finite verbs, while functioning as manner modifiers to the lexical verb of the clause. An example of a modal auxiliary verb encoding 'want' is given in (3a), to be compared to the manner modifier in (3b). Unless stated otherwise, the examples from Takituduh Bunun are my own.

(3) *Takituduh Bunun*

a. asa-un=ku ma-kulut ca nincing
want-PV=1S.ERG AV-cut NOM carrot
'I want to cut the carrot.'

b. **haiv**-un=ku ma-kulut ca nincing
quickly-PV=1S.ERG AV-cut NOM carrot
'I cut the carrot quickly.'

In (3a), the modal auxiliary verb *asa* encoding 'want' hosts the finite morphology of the clause (the suffix *-un*, glossed as -PV for 'Patient Voice'), and it hosts the first-person agent clitic *=ku*. Both of these are properties of finite verbs in Takituduh Bunun, while the lexical verb is instead in the default Actor Voice, glossed as AV. In (3b), the manner modifier *haiv* encoding 'quickly' hosts the same morphology and agent clitic as the modal auxiliary verb, showing that *haiv* likewise can be analyzed as an auxiliary verb. By convention, these are referred to as manner adverbial verbs, and I follow that terminology here. I take manner adverbial verbs to be the analytic counterpart of verb-internal manner modifiers, analyzing them as the overt realization of syntactic heads merged in the clausal spine. I propose that manner adverbial verbs may contain lexical roots, or they might be the overt reflex of a functional head, just like verb-internal manner modifiers.

Both verb-internal manner modifiers and manner adverbial verbs are typologically rare and poorly understood linguistic phenomena. A study into their semantic and morphosyntactic properties are thus important for furthering our understanding of linguistic diversity. Furthermore, they also raise important theoretical issues. Since there are both analytic and synthetic realizations of the same category, the anti-lexicalist claim that morphology mirrors syntax (and vice-versa) can be tested on novel data. Previous research on the topic has primarily focused on tense, aspect and mood markers (Cinque, 1999, Julien, 2002), and on valency changing morphology (Baker, 1985). By introducing a novel kind of data (manner modifiers as syntactic heads), the claims made by previous researchers on the relationship between morphology and syntax can be tested and evaluated.

A related issue is the organization of functional projections in the clausal spine. There are many proposals regarding the ordering of functional projections in the clausal spine, what kind of restrictions there are imposed on this ordering, and to what extent the ordering and inventory of such functional projections can vary across languages. For the clausal spine, previous research has focused on projections in the left periphery related to information structure (Rizzi, 1997), on functional projections related to inflectional categories such as tense, aspect and mood (Cinque, 1999, Julien, 2002), or on functional projections related to argument structure in the lower sections of the clausal spine (Hale and Keyser,

2002, Ramchand, 2008, Harley, 2017). By investigating manner as a functional projection merged in the clausal spine, the claims made by previous researchers can be further tested and evaluated.

Finally, manner modifiers as syntactic heads also raise important issues regarding the distinction between lexical and functional categories. Verb-internal manner modifiers and manner adverbial verbs appear to exhibit both prototypical lexical and prototypical functional properties. Manner affixes and manner adverbial verbs exhibit formal properties associated with functional items since they appear as affixes and auxiliary verbs, while their function and semantic content are associated with lexical items, since they are similar in function and semantic content to manner adverbs, a lexical class. An investigation into these kinds of manner modifiers can therefore further our understanding of the distinction between lexical and functional categories.

In light of this discussion, the key research questions in this dissertation are concerned with where in the clausal spine manner functional heads are merged, whether their distribution on a word level (as verb-internal manner modifiers) reflects their distribution on a clause level (as manner adverbial verbs), what kind of semantic content such manner modifiers can encode, and if they ought to be understood as functional or lexical items. In order to answer these questions, three different studies are conducted: One detailed study of manner affixes in West Greenlandic, one typological survey of verb-internal manner modifiers in a wide set of languages, and one comparative study of manner adverbial verbs in Austronesian languages spoken on Taiwan. The different studies complement each other in breadth and depth, allowing for the detailed data necessary to explore this topic, while still covering data from a broader set of languages.

In the study on West Greenlandic, the semantic and morphosyntactic properties of manner affixes are examined in detail, focusing on the type of manner information that they can encode, their status as functional syntactic heads, and their distribution in the clausal spine in relation to other functional categories. The findings are presented in Chapter 3. For this chapter, I have relied almost exclusively on my own data, which was collected in Copenhagen, Denmark, and Nuuk, Greenland, 2019. Some of the conclusions are that such manner affixes can be analyzed as the overt realizations of functional heads and that their semantic content is very limited, as is expected of a functional category. I also conclude that manner affixes in West Greenlandic are limited to a low position in the clausal spine, and variation in hierarchical position in relation to other functional projections situated in a low position in the clausal spine is possible, which is reflected in the linear order of affixes and in scope interpretation.

In the typological survey, I recreate some of the findings from the study on West Greenlandic on a broader language sample. The aim is to determine if the morphosyntactic and semantic properties found for verb-internal manner modifiers in West Greenlandic are part of a broader pattern, or unique to that language. The findings are presented in Chapter 4. Here I rely exclusively on previously published data, with the exception of some data from West Greenlandic. The findings here also show that manner modifiers are limited to a low position in the clausal spine, while the ordering of other functional projections limited to a low position exhibit a degree of cross-linguistic variation in relation to manner functional heads. The generalisations made of the basis of data from West Greenlandic regarding the position of manner functional heads are thus corroborated in this study. Furthermore, the survey shows that it is necessary to make a distinction between incorporated manner modifiers, which may contain lexical roots, and manner affixes, which only are the overt realizations of functional syntactic heads. However, since both types of verb-internal manner modifiers are related to the same functional head, they have the same restrictions on their hierarchical position in the clausal spine. Furthermore, I show that the semantic content of verb-internal manner modifiers across languages is predictable, with the presence of certain semantic categories implying the presence of other semantic categories. These distributional patterns can be formulated as statistical implicational universals.

In the study of manner adverbial verbs in Austronesian languages spoken on Taiwan (known as Formosan languages), I recreate the findings of Chapter 3 and 4, but on a clause level rather than on a word level. This way, the anti-lexicalist claim that morphological structure mirrors syntactic structure (and vise-versa) can be tested directly using novel data. The findings are presented in Chapter 5. Here I rely on a mixture of already published data and my own data from Takituduh Bunun, collected in Zhongzheng, Nantou County, central Taiwan, 2022. I conclude that the distribution of manner adverbial verbs in relation to other adverbial verbs and verbal morphology shows that they have the same hierarchical distribution as verb-internal manner modifiers. I also propose that manner adverbial verbs can contain lexical roots, or simply be the overt realization of a functional syntactic head. The two types differ in their semantic content and distributional properties.

Now that I have outlined the research topics and aims of this dissertation, as well as the overall approach to these topics, I will briefly summarize the key claims in the next section.

1.2 Summary of Key Claims

A novel proposal in this dissertation is that manner modifiers can be a functional category, in which case they will head their own functional projection. If this syntactic head is concatenated with a lexical verb, it will be realized as a verb-internal manner modifier, and if it is phonologically independent, it will be realized as a manner adverbial verb. The realization of manner functional heads thus mirrors that of other functional categories like tense, aspect and mood, which likewise have analytic (auxiliary verb) and synthetic (affix) counterparts.

(4) Manner modifiers may head their own projections, merged in the clausal spine. Manner syntactic heads can be phonologically independent, or concatenated with lexical verbs.

Another novel proposal is that lexical roots are not limited to the bottom of extended projections, but may also be externally merged with a functional head situated in the extended verbal projection, at least including manner functional heads. This proposal captures the fact that incorporated manner modifiers have richer semantic content than manner affixes, the fact that they can be morphologically complex, and the fact that they can take on the function of other lexical classes, such as verbs and nouns. A similar pattern was found for manner adverbial verbs, with some exhibiting richer semantic content and the ability to appear as independent verbal predicates, while others exhibit more basic and limited semantic content and are limited to function as manner modifiers.

(5) The manner syntactic heads may contain a lexical root. The manner syntactic head and the lexical root are externally merged in a parallel workspace, which is subsequently merged to the clausal spine.

Finally, I propose that manner syntactic heads are limited to a low position in the clausal spine. This falls in line with previous research on manner adverbs, which likewise concludes that they are limited to a low position in the clause (Jackendoff, 1972, Ernst, 2002). The novelty lies in showing that the same generalisation holds for manner modifiers as syntactic heads. The data presented here also shows that the ordering of functional projections is not fixed, and that it is necessary to allow for some degree of variation in the ordering of functional projections, both within and across languages. These findings corroborate the claim that the clause is divided into distinct sortal domains (Ramchand &

Svenonius, 2014), which restrict the distribution of functional projections, while still allowing for variation in hierarchical order within the domains, which affects scope interpretation and (in some cases) linear order.

(6) Manner syntactic heads are limited to a low position in the clausal spine, and variation in height in relation to other functional categories in a low position in the clausal spine is limited by selectional properties on individual functional heads.

1.3 Dissertation Outline

In Chapter 2, I present the theoretical framework adopted in this dissertation, outline the methodology of the different studies as well as provide a summary of previous research. In Chapter 3, I present the findings for the study of manner affixes in West Greenlandic, focusing on their linear distribution in relation to other affixes, their semantic content and their syntactic status. In Chapter 4, I present the findings of the typological survey, focusing on the differences between manner affixes and incorporated manner modifiers, their linear distribution in relation to other affixes and incorporated constituents, and the semantic content of verb-internal manner modifiers across languages. In Chapter 5, I describe the findings of the study of manner adverbial verbs in Formosan languages, focusing on their linear distribution in the clause and their morphology, their semantic content and their syntactic status. In Chapter 6, I discuss and summarize the findings presented in the previous chapters, and give some suggestions for future research.

Chapter 2

Background

This chapter is divided into three sections. First, I outline the theoretical framework of this dissertation (2.1), focusing on the organization of the clausal spine and on the interaction between morphology and syntax. The next section outlines the methodology, describing the language sample, the methods for gathering data and the criteria used to identify the manner modifiers explored here (2.2). The final section presents an overview of previous research on manner adverbial verbs and manner adverbs in mainstream generative grammar (2.3).

2.1 Theoretical Framework

This dissertation is placed within a generative theoretical framework (Chomsky, 1957, 1965, 1981, 1995). I follow the traditional Y-model, where items in a presyntactic lexicon are fed into the narrow syntax, which is responsible for building syntactic structures. Hierarchical syntactic structures are taken to be the output of iterations of the operation *Merge*. The operation *Agree* is responsible for feature checking and valuation. All instances of movement are the output of internal *Merge* (both arguments of the function are already present in the workspace). Internal *Merge* is therefore not formally distinguished from external *Merge* (either one or both of the arguments of the functions were not already present in the workspace, Chomsky, 2001a). The structure generated in the narrow syntax are transferred to the Sensory-Motor Interface for phonetic realization and to the Intentional-Conceptual Interface for semantic interpretation.

The two primary theoretical issues explored in this dissertation are the organization of the clausal spine and the relationship between morphology and syntax. The necessary theoretical background and assumptions are outlined in sections 2.1.1 and 2.1.2, respectively.

2.1.1 The Clausal Spine

Here I outline the conception of the clausal spine as adopted within this dissertation. Put briefly, I follow the proposal that the clausal spine is divided into distinct sortal domains. These sortal domains impose restrictions on the ordering of functional projections, which is one of the central theoretical issues that I explore when discussing manner modifiers as syntactic heads.

Within the Minimalist Program, the clausal spine is relatively reduced, consisting minimally of C-T(-v)-V. There have been many proposals for expanding this minimalist conception of the clausal spine, which has led to a proliferation of functional categories. Since the introduction of the VP-shell hypothesis by Larson (1988), a lot of research has contributed to the expansion of functional projections inside the (Expanded) VP, including Pylkkänen (2008), Ramchand (2008), Travis (2010), Borer (2013). The number of projections dominating the expanded VP has also been expanded greatly, beginning with the splitting of the INFL-node into Tense and Agree by Pollock (1989), and culminating in the Cartographic work by Cinque (1999, inter alia), who argues for the existence of upwards of 40 separate functional projections related to tense, aspect, modality and mood. Similarly, the left periphery has been expanded as well, resulting in a series of functional projections encoding discourse roles like topic and focus (Rizzi, 1997).

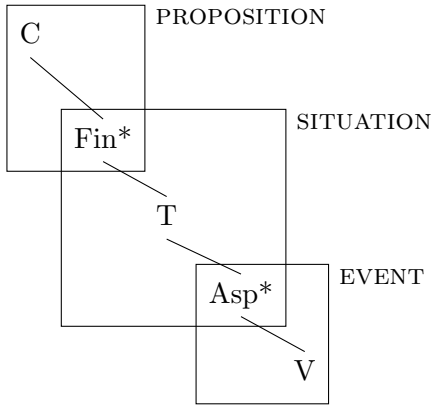
Much of the work on the details of the order and positions of functional projections in the clausal spine has been conducted within a cartographic framework (see Rizzi and Cinque, 2016 for an overview of the research program). Within the cartographic program, it is often argued that both the inventory and sequence of functional projections are part of Universal Grammar (Cinque, 2013). The uncovering of the cartographic hierarchies can rightly be regarded as one of the major achievements of generative grammar (cf. D'Alessandro, 2019). Still, the cartographic program is not without criticism. For instance, there is no plausible evolutionary scenario in which such an elaborate organization and inventory of formal features could have evolved as part of Universal Grammar (UG). If we want to go beyond explanatory adequacy and account for how human linguistic ability could have evolved (Chomsky, 2005, inter alia), a much sparser clause

structure as part of UG should be assumed. However, completely abandoning the findings made within cartography in favour of the simpler clause structure favoured within minimalism (i.e. C-T(-v)-V.), one runs the risk of losing the empirical generalisations that cartography has uncovered.

While the minimalist and cartographic conceptions of the clausal spine differ radically from one another, there are still commonalities between the two. For instance, there is broad consensus that the lowest part of the clausal spine is responsible for encoding eventualities and thematic roles for actants (e.g. theme, agent, goal), and this is also where functional projections related to argument structure are found. The projections immediately dominating this section of the clause are responsible for encoding traditional verbal inflectional categories (e.g. tense) and syntactic roles (e.g. subject), whereas the highest projections in the clausal spine are responsible for encoding discourse functions and discourse-oriented roles for actants (e.g. topic), (cf. Travis, 2006).

An attempt to synthesize cartographic findings with minimalist principles can be found in Ramchand and Svenonius (2014) and Ramchand (2018). I follow their approach to the clausal spine in this dissertation. They divide the clause into three separate domains, namely PROPOSITION, SITUATION and EVENT, roughly corresponding to the traditional CP, TP and vP, respectively, with lower domains being embedded in higher domains. The lowest domain is concerned with encoding the event, the medial domain is an elaboration on the eventualities encoded in the lowest domain, and the highest domain is concerned with relating the EVENT, and SITUATION to the discourse. An aspect projection is taken to be the transition point from EVENT to SITUATION, while also being responsible for existential closure. Fin(ite) is taken to be the transition point from SITUATION to PROPOSITION. Ramchand & Svenonius suggest that this division is not innate to UG, but rather part of our general cognition, although they admit that further research is needed to determine this. Their proposed structure is illustrated in (7), where * marks the transition points between the different sortal domains (Ramchand & Svenonius, 2014, p. 21).

(7)

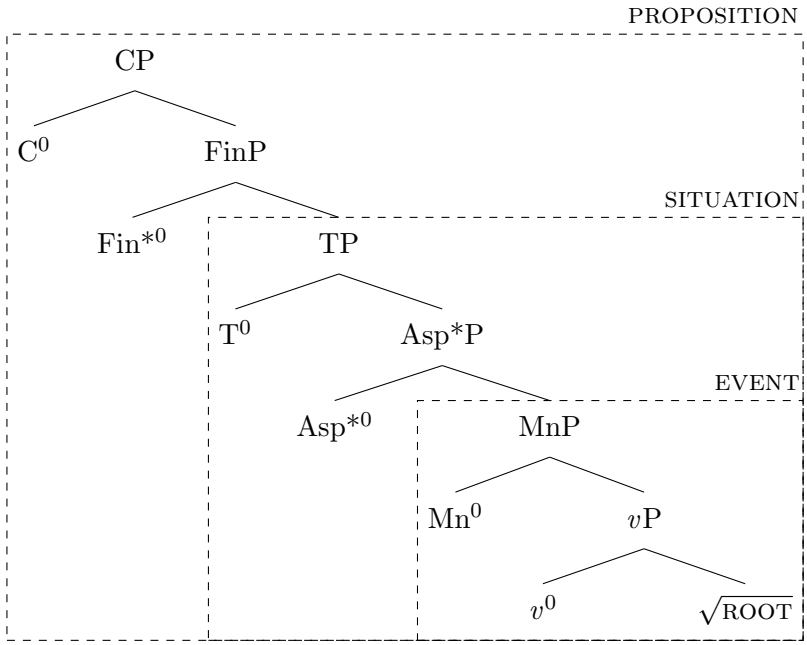


There is a broad consensus that manner adverbs are situated in a low position in the clause, going back to at least Jackendoff (1972) (see 2.3.2 for previous research on manner adverbs), and Ramchand and Svenonius (2014) likewise place manner adverbs in the lowest domain of the clause. Since this dissertation is primarily concerned with manner modifiers, the focus will be on the lowest EVENT domain, and the transition to the medial SITUATION domain. A crucial point within this framework for my argumentation in the upcoming chapters is that adverbs situated within a sortal domain may vary in their hierarchical ordering, giving rise to different scope relations (Ramchand & Svenonius, 2014, p. 32). I adopt this proposal, and I develop it further in order to account for the manner syntactic heads explored in this dissertation.

To reiterate, I assume that the clausal spine is divided into three separate sortal domains, namely PROPOSITION, SITUATION and EVENT, following the terminology of Ramchand and Svenonius (2014). Manner modifiers are limited to the lowest EVENT domain, so the discussion will focus on this part of the clausal spine and its transition point to the medial SITUATION domain. While manner modifiers are limited to the lowest domain, I argue that their position in this domain is relatively free and not limited by any general syntactic constraints, but instead limited by selection restrictions in individual languages. To account for the distribution of manner modifiers, the three domains proposed by Ramchand and Svenonius (2014) is sufficient, so it is not necessary to divide the clausal spine into four different parts as done by for instance Wiltschko (2014). Under parsimony, I have adopted the simpler framework, although future research might show that it is necessary to make more fine-grained distinctions. Furthermore, if it is possible to derive these domains from general cognition, as proposed by Ramchand and Svenonius (2014), rather than having them be hard-wired into the innate language ability, it would be a preferable conclusion

since it adheres to the minimalist maxim of having as little as possible specified in the innate language ability. In (8), I present the representation of the structure of the clausal spine that I adopt here. It is simply a different notation variant of the tree structure in (7) above. I find that this representation provides an easier way to represent the language structures that I explore here.

(8)



The lowest EVENT domain is where we find functional projections related to argument structure, represented by v^0, and this is also where we find manner modifiers, represented by Mn^0. The medial SITUATION domain is home to inflectional categories such as modality, aspect and tense, as outlined above. T^0 is added to the tree structures to represent these inflectional categories. The aspect projection that marks the transition point between the two domains is represented by Asp^{*0}. The highest domain (PROPOSITION) is responsible for placing the utterance in the overall discourse context. Note that this brief description merely functions as an introduction; details and additional arguments for the analysis will be presented throughout this dissertation.

2.1.2 Morphology-Syntax Interface

Here I outline the approach adopted in this dissertation to the relationship between morphology and syntax. The interaction between morphology and

syntax is a complex and contested issue. As a first approximation, the two appear to be independent, the former concerned with the atoms and structure of words, the latter with the atoms and structure of phrases and clauses. The notion that morphology and syntax belong to different grammatical domains is sometimes called lexicalism (Siddiqi, 2014). This position can be divided into strong lexicalism, which states that all morphology is syntax independent, and weak lexicalism, which states that while derivational morphology belongs to a morphological module, inflectional morphology is a property of syntax. Both of these positions can be contrasted with anti-lexicalism, which takes as its starting point the claim that grammatical words are somehow privileged in the grammar.

Since weak lexicalism places inflectional and derivational morphology into distinct domains, the position is dependent upon a strict distinction between the two types of morphology. While it is straight-forward to distinguish between prototypical inflection and derivation, it is difficult to arrive at a strict definition to fully distinguish the two (see Siddiqi (2014) and ten Hacken (2014) for more extensive discussions on the topic). Some of the strongest criteria for distinguishing them, are the following: i) Inflection is fully productive, while derivation is much more limited, ii) derivation results in a change in lexical class, whereas inflection keeps the stem within the same lexical class, and iii) inflection is relevant for the syntax, but derivation is not (Siddiqi, 2014). I discuss these three criteria in detail below.

Regarding the first criterion, there are examples of inflectional morphology that have gaps in productivity, illustrated by defective paradigms. For instance, both Spanish and Portuguese have what is referred to as 'defective' verbs, which have infinitive, participles and preterite forms, but lack several present tense forms (Nevins et al., 2014). On the other hand, the English affix *-ing* is fully productive for deriving gerunds/participles, and the affix *-ly* for deriving adverbs have only a small class of exceptions. Regarding the second criterion, the English affixes *un-* and *re-* are examples of affixes that appear to be derivational, but that do not result in a shift in lexical class. Another example is the West Greenlandic suffix *-lik*, which attaches to a nominal stem and yields a nominal stem with the meaning 'one who has N(oun)'. For instance, *ateq-lik* (name-LIK) means '(the) one who has a name/name-haver' and *illu-lik* (house-LIK) means '(the) one who has a house/house-haver'. The syntactic category is retained after suffixation, meaning that it will exhibit similar distributional patterns to the basic stem (inflectional property), while not entering into a paradigm (derivational property). The same holds for manner affixes, since West Greenlandic *atuar-* 'read' and *atuaqqissaar-* 'read carefully' have the same distributional patterns (inflectional property), while not entering into a paradigm (derivational property).

Regarding the third criterion, both derivation and inflection appear to be relevant for syntax. Causative and applicative affixes manipulate the argument structure of verbs and are thus relevant for the syntactic structure in which the verbal stem can be situated, even though they are traditionally regarded as derivational. This also appears to hold for more prototypical derivational morphology such as verbalisers and nominalisers, since they determine the syntactic environment in which the newly derived stem can appear (verbal and nominal, respectively). In light of these arguments, a strong lexicalist position seems to be more tenable than a weak lexicalist position. However, there are strong arguments against this position as well.

An important concept related to the lexicalist position is the Lexical Integrity Principle (LIP). The idea is referred to by slightly different names (e.g. Anderson (1992) refers to it as the 'Principle of Lexical Integrity', and in Lexical Functional Grammar it is often referred to as 'Lexical Integrity Principle' (cf. Bresnan and Mchombo, 1995), and the exact formulation differs slightly depending on the author and the theoretical framework. Anderson offers the following definition: "The syntax neither manipulates nor has access to the internal structure of words" (Anderson, 1992, p. 84). There are thus two aspects to this principle. Syntax does not have access to the internal structure of words, and syntax does not have the ability to manipulate the internal structure of words. The ability to have access to the internal structure of words is logically independent of the ability to manipulate the internal structure of words, although the reverse is not (the syntax cannot manipulate the internal structure of words if it does not have access to it).

There are plenty of counterexamples to both aspects of the LIP. For instance, ellipsis, usually regarded as a syntactic phenomenon, can target both phrases and subword units. In the examples below, ellipsis can only target a sequence of phonemes that are clearly identifiable as a morpheme (example 9a). If the sequence of phonemes is not clearly identifiable as morphemes, ellipsis is not allowed (examples 9b-c). Since the internal grammatical structures of the words are relevant, it cannot simply be reduced to a phonological phenomenon.

(9) a. pro-choice and -gun control

b. *because he is pro-fessional and -management, he is a valuable member of our team

c. *(both) pro-gressive and -fessional (Chaves, 2008, p. 263)

Incorporated nominals in West Greenlandic (this grammatical pattern in Inuit languages might better be regarded as verbalisation, since the incorporating verbs do not appear without incorporated nouns; this topic will be discussed further in chapter 3) establish a discourse referent, which can be referred back to later in the discourse using agreement morphology. This pattern is illustrated in example (10) below. Note that '4' in the glossing (fourth person) is used for subordinate verbs in West Greenlandic when the third person subject of the subordinate clause is the same as the third person subject in the matrix clause.

(10) *West Greenlandic* (Sadock, 1980, p. 311)

Suulut	timmisartu-lior-po-q.	Suluusa-qar-po-q
NP	airplane-make-IND-3S.ABS.	wing-have-IND-3S.ABS
	aquute-qar-lu-ni	
	rudder-have-CONT-4S	

'Søren made an airplane$_j$. It$_j$ has wings and a rudder'

In example (10), the noun 'airplane' is a unit within the finite verb of the first clause. However, it can still be referred back to in the following discourse, functioning as a subject in the following two clauses, translated as 'it' and overtly referenced to with the agreement marker *-q* and *-ni* for the matrix and the subordinate verb, respectively. Such examples show us that the syntactic structure has access to the internal structure of words, contrary to the Lexicality Integrity Principle.

The Lexicality Integrity Principle also prevents syntactic operations from manipulating the internal structure of words. However, there are several examples of phrases inside compound words across different languages, including English, German, Dutch and Mandarin Chinese (Wiese, 1996). The fact that there are syntactic restrictions on the structure of the phrases inside such compounds suggests that it is syntactic operations that manipulate the internal structure of such compounds. For instance, while *she had that [don't-you-dare! look]* is grammatically acceptable, the compound is ungrammatical if there is no inversion with the negative imperative, as with **she had that [you-don't-dare! look]* (Bruening, 2018, p. 3).

To recap, word ellipsis, word-internal constituents being referential for the syntax and syntactic restrictions in compounds all contradict the predictions made by The Lexical Integrity Principle. This favours the anti-lexicalist position adopted here. Furthermore, there are conceptual advantages behind adopting an anti-lexicalist stance. Since words and phrases are constructed in the same

grammatical module, the same restrictions upon their structure apply. It is therefore possible to generate hypotheses regarding the parallels between morphological and syntactic structure, as is done by the Mirror Principle (Baker, 1985), according to which "morphological derivations must directly reflect syntactic structures and derivations (and vice-versa)". Large-scale typological studies have been done on the topic, showing that the syntactic structure and morphological structure reflect each other for TAM-markers (Cinque, 1999, Julien, 2002). The anti-lexicalist position has stronger predictive force, since it is able to generate such predictions. Furthermore, it also has stronger explanatory force since it directly accounts for parallels between syntactic and morphological structure, whereas a lexicalist position would be forced to say that any such correspondences is just a coincidence, or add some additional conjecture. Additionally, since an anti-lexicalist model only relies on a single module for generating both syntactic and morphological structures, it is simpler than lexicalist models, which postulate separate grammatical domains. If both types of approaches can account for the same linguistic data, under Occam's razor one should adopt the anti-lexicalist position since it relies on the fewest assumptions.

While anti-lexicalist proposals all agree that the syntactic atoms are not words but smaller units, they differ in exactly what these atoms are, and how they are concatenated into grammatically complex words. For the remainder of this section, I outline the key assumptions regarding the basic building blocks that are inserted into syntactic operations and how they can be combined to construct morphologically complex words.

Within the Y-model, the presyntactic lexicon contains the items upon which the syntax operates. Within the anti-lexicalist approach adopted here, these syntactic operations are responsible both for building phrases as well as morphologically complex words. Following basic assumptions within Distributed Morphology (DM), the presyntactic lexicon is divided into functional heads and lexical roots (Halle and Marantz, 1992, 1994; Halle, 1997). In less theory-internal terms, lexical roots are the lexical material that provide the substantive conceptual parts of an expression, whereas functional heads are functional material that provides grammatical information. Lexical roots are taken to be afeatural, requiring a functional item to license their lexical class in any given syntactic context. Lexical roots have the rich, encyclopedic information that allows us to distinguish between for instance deer and elks, while functional heads encode grammatical categories like plural and tense.

A long-standing issue within linguistics is how and where to draw the distinction between lexical and functional material, and how to analyse elements that

appear to fall between these two categories (cf. Klockmann, 2017), or if a distinction can be maintained at all. Even if one accepts such a distinction, there is not always agreement on whether a given morpheme should be analysed as a lexical root or a functional head. As an example, Lowenstamm (2014) proposes that derivational affixes are lexical roots, while Borer (2014) argues that the same affixes discussed by Lowenstamm are better analysed as functional heads.

I maintain that a distinction between lexical roots and functional heads is necessary to account for differences in semantic and morphosyntactic properties for the manner modifiers discussed in this dissertation. I propose that verb-internal manner modifiers may or may not contain lexical roots. Those verb-internal manner modifiers that always appear as affixes on a verbal stem, and never as independent constituents, are taken to simply be the overt realizations of functional manner heads. I refer to these as manner affixes. In contrast, those manner modifiers that can appear both as independent constituents, as well as integrated into verbal stems, are taken to contain lexical roots. The latter also encode richer semantic content that also covers a broader semantic range. I refer to these as incorporated manner modifiers. I develop this proposal in 4.1, but see also 3.3 for a more elaborate discussion of manner affixes. Similarly for manner adverbial verbs, I propose that some of them contain lexical roots, whereas others are simply the overt realizations of functional heads. Those that contain lexical roots are able to appear as independent verbal predicates, and they likewise encode richer semantic content that also covers a broader semantic range. I develop this proposal in chapter 5, sections 5.2-5.4.

Regarding phonological realization, I follow the late insertion model of Distributed Morphology, where phonological information is inserted after the syntactic computation. However, I assume that a single phonological exponent can directly spell-out several syntactic heads, contrary to the traditional Distributed Morphology notion that a phonological exponent can only spell-out a single syntactic head. This can be done via Spanning (cf. Svenonius, 2012; Julien, 2015; Merchant, 2015), which can insert a single phonological exponent for a sequence of syntactic heads, as long as the heads are situated in the same functional sequence and are in a complement relationship with each other. By allowing a single phonological exponent to target several syntactic heads, the post-syntactic morphological operations assumed within Distributed Morphology get a reduced functional load, or can be abandoned altogether (see Siddiqi, 2009, chapter 3, for an overview of such morphological operations within DM).

Now that I have outlined the basic building blocks, I will outline some proposals that have been made in the literature for how these are concatenated to form

morphologically complex words, before outlining the approach to word-building in the syntax that I adopt in this dissertation.

One approach takes morphologically complex words to be the result of head movement in the narrow syntax. Classical works such as that of Travis (1984) and Baker (1988) fall within this approach, and it is the default position within Distributed Morphology (Embick & Noyer, 2007). However, head movement in the narrow syntax has many theoretical problems. For instance, it does not affect interpretation (expected from internal merge), it does not involve an extension of the root (expected from internal merge), and it does not c-command its trace, which would violate the Extension Condition (Roberts, 2011).

An alternative is to rely on phrasal movement. Koopman and Szabolcsi (2000) gave an early outline of this approach, and Cinque (2014) uses this approach to discuss the order of TAM-markers (both independent and affixal). It is assumed as axiomatic within Nanosyntax (Baunaz & Lander, 2018). Within this approach, suffixes are derived via cyclic phrasal movement (with or without roll-up), of the lexical root. These structures are then sent to the Sensory-Motor-Interface, which linearizes the heads accordingly and spell them out as complex grammatical words. For prefixes, no such movement is necessary and it is only required that the heads are in a series of complements with no intervening specifiers or adjuncts.

Another approach is to relegate head movement to the Sensory-Motor interface, treating it as a post-syntactic, phonological phenomenon. This has the advantage of avoiding the theoretical complications associated with having head movement in the narrow syntax. Brody (2000), Chomsky (2001b), Adger et al. (2009), Svenonius (2016) and Harizanov and Gribanova (2019) are important contributors to this approach. These proposals differ in detail, although the key assumption is that syntactic heads are externally merged into the narrow syntax carrying some phonologically relevant features that provide instructions for how these heads interact with each other during linearization. Instructions include which heads are adjoined together and where in the syntactic hierarchy they are linearized.

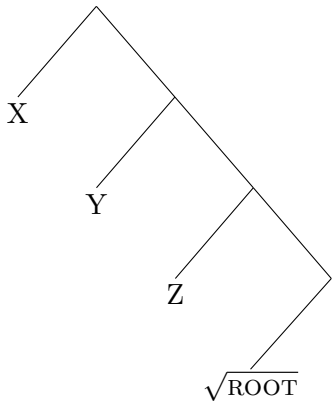
Another approach is to treat head movement as being something akin to agreement. Hale and Keyser (2002) are early proponents of this approach (referred to as conflation in their framework). Pietraszko and Arregi (2021) provide a recent account. Put briefly, Pietraszko and Arregi (2021) propose a distinction between syntactic and morphological features. The latter are the target of Generalized Head Movement, an agree-like operation that functions to bind

together syntactic atoms that contain the relevant morphological features. Several syntactic heads can be combined to form a complex syntactic head, which is linearized in one of the original positions of the syntactic heads. In contrast to phonological approaches, which take the concatenation of syntactic heads to be a post-syntactic phenomenon, the concatenation of syntactic heads in these approaches still takes place in the narrow syntax.

As briefly outlined above, there are several different proposals for how morphologically complex words are built in the syntax, all with their respective strengths and weaknesses. I make no attempt at trying to determine which of the proposals is the correct one, if there even is one. While it would be theoretically desirable to rely on a single apparatus or set of operations to construct grammatically complex words across all languages, it is not necessarily the case that all languages utilize the same operations to do so. For instance, Julien (2002) allows for both head movement and phrasal movement for constructing morphologically complex words. This sentiment is echoed by Fenger (2020), who argues that while 'words' have a place in the linguistic analysis, not all morphologically complex words are constructed the same way. I follow this approach to word-building, and remain agnostic to which of the proposals outlined above is the accurate one. The focus of this dissertation is not to develop a model for how words are built in the syntax, but rather to explore manner modifiers as functional heads. Furthermore, the findings that I discuss are compatible with several of the proposals outlined above, which means that the data discussed here cannot be used to determine which of the proposals outlined above that is correct.

As a methodological maxim, I will assume that The Mirror Principle (Baker, 1985) holds. Thus, affixes situated closer to a lexical root are taken to be merged in a hierarchically lower position than those situated further away from the lexical root, regardless of whether they are realized as suffixes or prefixes. An illustration of how I map the linear order of affixes to a hierarchical order is illustrated with the tree structure in (11) and Table 2.1.

(11)



In (11), $\sqrt{\text{ROOT}}$ represents a lexical root, and X, Y and Z represent functional syntactic heads that are concatenated together with the lexical root. If all the functional heads are realized as prefixes, under the Mirror Principle, the ordering will be X-Y-Z-$\sqrt{\text{ROOT}}$, and if they were all suffixes, the ordering will be $\sqrt{\text{ROOT}}$-Z-Y-X, with the hierarchically lower heads being realized closer to the lexical root. Whether the affixes are realized as prefixes or suffixes is taken to be due to specifications in individual functional heads. It is possible to combine prefixes and suffixes in a single word, yielding 8 possible combinations for the tree presented above. These are exemplified in table 2.1.

Table 2.1: Possible combinations of [X [Y [Z [$\sqrt{\text{ROOT}}$]]]]

X-Y-Z-$\sqrt{\text{ROOT}}$	$\sqrt{\text{ROOT}}$-Z-Y-X
Y-Z-$\sqrt{\text{ROOT}}$-X	X-$\sqrt{\text{ROOT}}$-Z-Y
Z-$\sqrt{\text{ROOT}}$-Y-X	X-Y-$\sqrt{\text{ROOT}}$-Z
Y-$\sqrt{\text{ROOT}}$-X-Z	X-Z-$\sqrt{\text{ROOT}}$-Y

The same basic assumptions hold for adverbial verbs (auxiliary-like verbs that encode, among other, aspectual and manner information), which are phonologically independent. In sequences of adverbial verbs, the same linear restrictions outlined in the table above hold here as well. As such, those adverbial verbs that are linearly situated further away from the lexical root are assumed to be merged in a structurally higher position. Moreover, any adverbial verbs found in the sequence are assumed to prevent any affixes introduced in structurally higher heads from being realized on the lexical verb, a consequence of the Head Movement Constraint (Travis, 1984). As such, in the abstract representation in (12), the syntactic head X and Y will be unable to be realized as affixes on the lexical root. They may only be realized on the adverbial verb (represented as Adv).

(12)

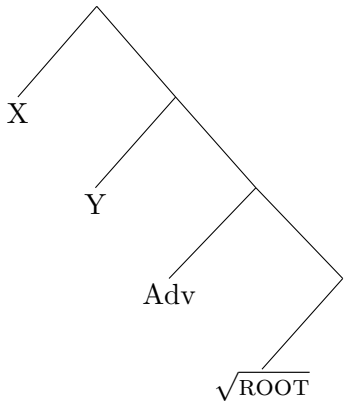


Table 2.2: Possible combinations of [X [Y [Adv [$\sqrt{\text{ROOT}}$]]]]

X-Y-Adv $\sqrt{\text{ROOT}}$	$\sqrt{\text{ROOT}}$ Adv-Y-X
Y-Adv-X $\sqrt{\text{ROOT}}$	$\sqrt{\text{ROOT}}$ X-Adv-Y
Adv-Y-X $\sqrt{\text{ROOT}}$	$\sqrt{\text{ROOT}}$ X-Y-Adv
X-Adv-Y $\sqrt{\text{ROOT}}$	$\sqrt{\text{ROOT}}$ Y-Adv-X

To summarize, I adopt an anti-lexicalist position where both morphological and syntactic structures are generated in the same morphosyntactic module, using the Mirror Principle as a methodological maxim to map the relationship between syntactic and morphological structures. Morphologically complex words are taken to result from the concatenation of syntactic heads. The basic building-blocks for syntactic operations are lexical roots and functional items. I assume that the clausal spine is subdivided into three distinct domains, each with different functions and responsibilities that also serve to restrict the distribution of functional projections in the clausal spine. The predictions made by these theoretical assumptions will be tested throughout this dissertation. In the next section, I will present some methodological considerations.

2.2 Methodology

In this section I outline the methodological approach used in this dissertation. I begin by outlining the language sample, before describing how the data from the different languages was collected. I finish this section by describing the criteria I have used for identifying the manner modifiers discussed in this dissertation.

2.2.1 Language Sample

The main empirical findings are presented in chapters 3-5. While they all are concerned with the same issues, each of the chapters deal with different languages. I outline which languages were include, why they were chosen and how they complement each other.

The West Greenlandic case study (chapter 3) focuses on West Greenlandic, a Unangan-Yupik-Inuit language belonging to the Inuit branch of the language family. Firstly, West Greenlandic has manner affixes, a necessary criterion since this study is concerned with this linguistic phenomenon. Secondly, it has a relatively large inventory of verbal affixes, meaning that the position in the clausal hierarchy where manner affixes are merged can be pin-pointed with relatively high accuracy. Moreover, West Greenlandic has been described as having variable affix ordering (Fortescue, 1980), with the ordering of affixes correlating with scope. West Greenlandic is therefore particularly suitable for a case study on the limitations on the distribution of manner functional heads in the clausal spine.

The West Greenlandic case study is complemented by a typological survey (chapter 4). Like in the case study, the aim is to investigate the semantic and grammatical properties of verb-internal manner modifiers. The languages included in the typological survey are given in Table 2.3. The motivation behind adopting a typological approach was to investigate if the grammatical properties observed for manner affixes in West Greenlandic are part of a broader pattern. As such, it is necessary to use a sample with a broad genealogical variation and geographical distribution. However, the sample is limited by the fact that verb-internal manner modifiers are typologically rare, primarily attested in languages that have been characterized as polysynthetic. Since the overarching goal was to further study the grammatical and semantic properties of such verb-internal manner modifiers, only languages that have this structure were included in the final sample. The goal was to include as many languages with manner modification inside verb complexes as possible while still controlling for genealogical and geographical biases.

Table 2.3: Typology language sample

Area	Family	Genera	Language
N. America	Unangan-Yupik-Inuit	Unangan	*Atkan Aleut*
		Inuit	*West Greenlandic*
	Algic	Algonquian	*Blackfoot, Ojibwe*
	Uto-Aztecan	Nahuan	*Classical Nahuatl*
		Numic	*Ute (C.R.N.)*
	Wakashan	Southern	*Nuu-chah-nulth*
	Kiowa-Tanoan	Kiowa	*Kiowa*
		Towa	*Jemez Towa*
	Sahaptian	Nez Perce	*Nez Perce*
		Sahaptin	*Sahaptin*
S. America	Mayan	Ch'olan	*Ch'ol*
		Yucatecan	*Itzaj*
	Pano-Tacanan	Tacanan	*Cavineña*
	Arawan	Paumari	*Paumari*
	Mixe-Zoquean	Zoque	*Zoque (S.M.C.)*
		Mixe	*Mixe (S.H.)*
	Isolates		*Urarina*
			Puinave
Oceania	Sepik	Sepik Hill	*Alamlak*
		Abau	*Abau*
		Ram	*Awtuw*
	Ramu-Lower Sepik	Lower Sepik	*Yimas*
	Macro-Gunwinyguan	Central gunwinyguan	*Bininj Gun-Wok*
Eurasia	Chukotko-Kamchatkan	Chukotian	*Chukchi*
	Sino-Tibetan	Brahmaputran	*Garo*
		Macro-Tani	*Galo*
	Austroasiatic	Mundaic	*Munda*
	Isolates		*Ainu*
			Nivkh

The language sample includes 31 languages from 21 language families (isolates counted as independent language families), found in all major geographical areas except for Africa. Note that the Mesoamerican languages are classified as belonging to South America, with the exception of Uto-Aztecan languages, which are classified into North America. For languages belonging to the same family, to the largest extent possible, they were taken from different genera. However, it should be stated that this is a convenience sample, presumably with important genealogical and geographical biases. Furthermore, the language sample is much too small to establish any universal patterns with certainty. Instead, the sample might best be regarded as the basis for a preliminary survey and typology of verb-internal manner modifiers.

Chapter 5 is concerned with the use of auxiliary verbs to encode manner information (referred to as manner adverbial verbs). In this chapter, I discuss Austronesian languages spoken on Taiwan (also known as Formosan languages). Data from 9 different language varieties are discussed, across 8 different branches of the Austronesian language family. The internal classification of the language family is illustrated below (see 5.1.1 for more details), with the language varieties cited in the chapter written in italics.

- Austronesian
  - Paiwan (*Paiwan*)
  - Bunun (*Takituduh, Isbukun*)
  - Tsouic (*Tsou*)
  - Northwest Formosan (*Saisiyat*)
  - Atayalic (*Seediq*, *Mayrinax Atayal*)
  - East Formosan (*Kavalan*)
  - Puyuma (*Nanwang Puyuma*)
  - Western Plains (*Thao*)
  - Rukai
  - Malayo-Polynesian

The motivation behind studying manner adverbial verbs was to further test the proposal that syntax mirrors morphology (and vice-versa, as discussed in the previous section), and to see if the patterns found for verb-internal manner modifiers can also be found among manner adverbial verbs in Formosan languages. The Formosan languages exhibit a relatively large inventory of such manner adverbial verbs, in addition to a sizable inventory of other adverbial verbs and auxiliary verbs. This inventory enables a detailed analysis of the relative position of manner adverbial verbs. Furthermore, the Formosan languages included here also exhibit relatively rich verbal morphology, providing additional data for exploring the grammatical properties of manner functional heads and how they interact with other functional categories. Moreover, it has been suggested previously that the order of adverbial verbs is variable to some extent (Holmer, 2012), thereby creating challenges for many conceptions of the organization of the clausal spine. These languages therefore constitute an important source of data for the empirical and theoretical issues outlined above.

2.2.2 Data Collection

For the West Greenlandic case study (chapter 3) I conducted linguistic fieldwork to obtain the relevant data. The fieldwork was conducted in 2019, in Copenhagen, Denmark and Nuuk, Greenland. Five primary language consultants were interviewed, three in Copenhagen, two in Nuuk. No significant differences were observed for the speakers in the two different areas. The interviews were primarily conducted with one speaker at a time. The data was obtained primarily by using acceptability judgements, and to a lesser extent translation elicitation. Language examples were presented in both written and spoken form. For the most part, sentences were presented as minimal pairs, often with a difference in morpheme order in the finite verb. The language consultant was then asked which of the two sentences appeared more natural, if there was a difference in meaning between the two, if the speaker would have preferred another formulation, etc. This way, it was also possible to avoid vague and unfamiliar notions like 'acceptability' and grammaticality', which is preferable when relying on these kinds of methods (Crowley, 2007). The judgements were corroborated between the speakers. While there was some inter-speaker variation, all the sentences that form the basis for the analysis were corroborated by multiple speakers.

I also conducted linguistic fieldwork to collect data for Takituduh Bunun, presented in chapter 5. The fieldwork was conducted in 2022 in Qatu (Zhongzheng), located in central Taiwan. Five primary language consultants were interviewed. The data was primarily elicited using acceptability judgements and translation elicitation, and to a lesser extent visual stimuli. Language examples were presented in spoken form. As with West Greenlandic, when possible, minimal pairs were presented together and the language consultants were asked which of the two appeared more natural, if there were any differences in interpretation between the two, etc. The judgements were corroborated between the speakers. While there was some inter-speaker variation, all the sentences that form the basis for the analysis were corroborated by multiple speakers.

Arguments against using acceptability judgements are often rooted in its unreliability. For instance, it has been argued that there is no reliable way of determining why a speaker has accepted a given sentence as grammatical. It could reflect tiredness, a lack of focus, a wish to please the linguist, or a feeling that it is inappropriate to refute the linguist on behalf of the language consultant (Sakel & Everett, 2012, p. 117). Similarly, there is no reliable way of determining why a speaker has rejected a given sentence. It could be because it is pragmatically or semantically inappropriate, because of the linguists poor pronunciation, or because of a prescriptive norm (Bowern, 2008).

Precautions were taken to minimize the potential drawbacks of relying on acceptability judgements. For instance, speakers were asked across different sessions, and several speakers were interviewed, in order to avoid the uncertainty of why a speaker might reject a sentence. Furthermore, by presenting the speakers with minimal pairs and opening up for a discussion of their meaning, it was possible to determine their exact meaning and why the speakers accepted them. By also allowing the speakers to make their own suggestions for alternative formulations if a given sentence was rejected, it was possible to determine why the sentence was regarded as unacceptable. Moreover, speakers often gave their own explanation for why they thought a sentence sounded strange.

There are also arguments in favour of adopting this method. Acceptability judgements is a means of gathering negative data (examples of structures that are ungrammatical), which is of paramount importance for this study. Furthermore, such elicitation tasks constitute a convenient way of investigating subtle semantic distinctions created by variations in the positioning of affixes and adverbial verbs, which otherwise would have been difficult to gather information about. Since the productive powers of language are unlimited, a corpus, no matter how large, will not contain all possible structures for a given language, and a linguist will therefore have to rely on the intuition of native speakers to reach a more complete understanding of the grammatical structure of the language. Since the semantic differences induced by variations in affix ordering in West Greenlandic and the position of affixes and ordering of adverbial verbs in Takituduh Bunun can be quite subtle, it was necessary to rely on acceptability judgements, including a discussion of the exact meaning of the composition of a given sentence. This sub-type of acceptability judgements is referred to as interpretation tasks by Baker (2013). This added discussion in relation to the acceptability judgements was essential, since it is one of the primary methods for eliciting how variation in linear order can influence scope and semantic interpretations.

For the typological survey in chapter 4, I rely on already published data. The data was primarily taken from reference grammars of the different languages included in the sample. While this has the advantage of covering a much broader range of genealogically and geographically diverse set of languages, it does lack some of the precision and depth that I was able to explore for West Greenlandic and Takituduh Bunun, were I could rely on my own data. Similarly, data from other Formosan languages than Takituduh Bunun, as discussed in chapter 5, were also taken from previous published works, either grammatical descriptions or research articles.

2.2.3 Identifying Manner Modifiers

In this subsection I outline how I define and identify verb-internal manner modifiers and manner adverbial verbs. In order to do so, I have relied on semantic, formal and functional criteria, which will be outlined below, beginning with the semantic criterion.

The simplest semantic analysis of manner adverbs is to treat them as simple one-place predicates scoping over the eventuality denoted by the verb, given a Neo-Davidsonian conception of verb semantics (Parsons, 1990). The sentence *Peter sings loudly* would be represented as $\exists e$ [AGENT(e,peter) & SING(e) & LOUD(e)], where the manner adverb simply takes the eventuality denoted by the verb (e) as its argument. It has the advantage of capturing the correct entailment, since the sentence 'Peter sings loudly' does entail 'Peter sings'.

A drawback behind this analysis is that it treats manner adverbs as being on par with lexical verbs, since it directly takes the eventuality as its complement, just like the verb. Another short-coming is that it fails to capture that *loudly* in the example above specifies a specific aspect of the event denoted by the verb, namely its loudness (Maienborn & Schäfer, 2011).

Later approaches to the semantics of manner adverbs have attempted to capture how manner modifiers can access the conceptual properties of the eventualities denoted by verbs (cf. Schäfer, 2008; Maienborn and Schäfer, 2011). This property of manner adverbs has been crucial for the semantic criterion adopted here. Here I only briefly outline the proposal made by Maienborn and Schäfer (2011). One way of allowing manner modifiers to access the conceptual properties of events denoted by verbs is to assume that manner adverbials are actually predicates onto the manner of the event denoted by the verb, which can be done by coordinating the manner of the event in question and the event. A formal representation is given below, where R stands for an unspecified relation. $\exists$m [R(e, m) & BEAUTIFUL (m)] can be read as 'There exists an m(anner), such that m stands in an (unspecified) relation to e(vent) and m is beautiful' (Based on an analysis from Fodor, 1972, as adopted in Maienborn and Schäfer, 2011).

(13) a. 'Peter danced beautifully.'

b. $\exists e$ [AGENT(e,peter) & DANCE(e) & $\exists$m [R(e, m) & BEAUTIFUL(m)]

This analysis assumes manner as an ontological entity, which is supported by sentences like 'I saw how Peter dances', where the manner appears to be the

object of the event denoted by the seeing. It also explains how we get the paraphrases 'in an X manner' (Peter sang loudly = Peter's singing was in a loud manner). The noun 'manner' in the paraphrase is referential and the adjective predicates on this noun. However, this account raises the ontological question of what manner actually is, and what it means for manner to be coordinate with events.

In light of the aforementioned formal analysis of the semantics of manner modifiers, the criterion I adopt in order to semantically differentiate manner modifiers from other types of verbal modifiers is that manner modifiers select a specific aspect of the eventuality denoted by the verb and assign some attribute to said aspect. This is the semantic criterion used to identify manner modifiers. A functional criterion is necessary as well. This criterion is that the function of manner modifiers is to modify verbs, thereby allowing us to distinguish them from adjectives. This criterion is adopted from Hallonsten Halling (2018), who builds upon the work on word classes conducted by Croft (2001). Both adjectives and adverbs function prototypically as modifiers. What distinguishes the two is that the former modifies nouns, their latter modifies verbs.

Finally, for the purposes of this dissertation, it is necessary to adopt some formal criterion as well, otherwise it would be impossible to distinguish manner modifiers inside finite verbs and manner adverbial verbs from adverbs, adpositional phrases and converbs, all of which may meet the semantic and functional criteria outlined above. Furthermore, it would also be impossible to distinguish verb-internal manner modifiers from manner adverbial verbs, since they have the same function and semantic content, but differ in their respective formal, morphosyntactic properties.

The formal criterion for manner adverbial verbs is that they must be able to host the morphology associated with finite lexical verbs in the language. Since the morphology (if any) that is associated with finite lexical verbs differs from language to language (e.g. tense in Swedish, agreement and mood in West Greenlandic), the exact implementation of this criterion differs from language to language. The details of how this is implemented for the different Formosan languages included in this study is outlined in detail in chapter 5. Examples briefly outlining the grammatical pattern are given in example (14) below.

(14) *Takituduh Bunun*

a. kulut-un=ku ca nincing
cut-PV=1S.ERG NOM carrot
'I cut the carrot.'

b. asa-un=ku ma-kulut ca nincing
want-PV=1S.ERG AV-cut NOM carrot
'I want to cut the carrot.'

c. **haiv**-un=ku ma-kulut ca nincing
quickly-PV=1S.ERG AV-cut NOM carrot
'I cut the carrot quickly.'

In (14a) it is the lexical verb that hosts the distinctive voice morphology of the clause (PV) as well as the agent clitic, two properties associated with finite verbs in the language. In (14b), it is instead the modal auxiliary verb 'want' that hosts the distinctive voice morphology and the agent clitic, while the lexical verb has the default actor voice morphology. The modal auxiliary verb is the finite verb of the clause. In (14c), it is the manner modifier 'quickly' that hosts both the distinctive voice morphology and the agent clitic, while the lexical verb has the default actor voice morphology. In this sentence, the manner modifier is the finite verb of the clause. The examples are included here for expository purposes, and will be reproduced and discussed further in chapter 5.

The formal criterion for identifying manner modifiers found inside verbs is that they must be able to be integrated into finite verbs. Simply based on distributional factors, this means that there are two types of verb-internal manner modifiers, namely those that are only ever found attached to verbs, and those that can appear both as independent constituents and as morphologically and phonologically integrated into finite verbs. I refer to the previous category as manner affixes, and the latter as incorporated manner modifiers. Differences and similarities between the types of verb-internal manner modifiers are discussed in 4.1. These two types are illustrated below, with Classical Nahuatl exhibiting an incorporated manner modifier, while Atkan Aleut exhibits manner affixes. Example (15a) shows the manner adverbial *ihciuhcaa* as an independent constituent, whereas it in (15b) is incorporated into a finite verb (examples from Classical Nahuatl). In contrast, the manner modifier in (15c) *-du* only appears as an affix, thus illustrating the other type of verb-internal manner modifier (example from Atkan Aleut).

(15) a. *Classical Nahuatl* (Andrews, 2003, pp. 525, 334)
niman **ihciuh**-caa tlaihuah
immediately **hurry**-ADV send.messengers
'Immediately, he quickly sent out messengers.'

b. n-**ihciuh**-caa-yauh
1s-**hurry**-ADV-go
'I am going in a hurry.'

c. *Atkan Aleut* (Bergsland, 1997, p. 120)
tunuxˆta-**du**-za-laka-ting ii
talk-**fast**-HAB-NEG-CNJ.1S Q
'Do I talk slowly enough?'

To further clarify how manner modifiers are distinguished from other types of verbal modifiers, I include examples of verb-internal modifiers that appear similar to verb-internal manner modifiers but that crucially lack one or more of the three properties outlined above and thus cannot be classified as manner modifiers. Firstly, affixes that encode degree (e.g. intensifiers) are not included, as they do not assign an attribute to a specific aspect of the verb event. Examples from West Greenlandic are given in (16). For a modifier to be classified as a manner modifier it must select an aspect of a verbal event and assign some attribute to it. Since intensifiers (and their semantic opposites) modify the degree of the verbal event, rather than assigning an attribute to the event, they fail the **meaning** criterion, while fulfilling **form** and **function** criteria, as illustrated in (16)

(16) *West Greenlandic*

a. ani-suar-po-q
exit-INT-IND-3s
'He really went out (probably not coming back).'

b. neri-miner-po-q
eat-little-IND-3s
'He ate a little.'

Affixes that modify some participant related to the event are not included as manner modifiers. They do not directly modify the verb event by assigning a property to it, but rather they provide additional information related to some participant related to the event. As such, they do not fulfil the **function** or **meaning** criterion, as they do not modify verbs (or arguably only do so indirectly), and they do not assign a property to the verb event itself. They include denotations of the position of a participant (17), body parts of a participant (18), mental state of a participant (19), manner-of-motion of a participant (20)

as well as resultatives (21). Resultatives denote a property of a new state for a participant and do not directly modify the verb event, and are therefore distinct from manner modifiers.

(17) *Misantla Totonac* (MacKay, 1999, p. 225)
ut ɬtata-ta-wila
3s sleep-INC-seated
'S/he sleeps sitting.'

(18) *Pipil* (Campbell, 1985, p. 96)

a. tan-kwa
tooth-eat
'to bite'

b. mu-tankwa-ketsa
REFL-knee-stand
'to kneel'

c. ikxi-ahsi
foot-find/arrive
'to reach, to catch up with'

(19) *Classic Nahuatl* (Sullivan et al., 1988, p. 220)
tla-ilihuiz-nequi
OBJ-madly-want-
'to want something madly'

(20) *Chukchi* (Dunn, 1999, p. 231)
kəɣətnt-akwat
run-go.away
'to run away'

(21) *Huasteca Nahuatl* (Beller & Beller, 1979, p. 231)

a. ø-qui-iyoca-tlali
3s-3s-apart-put
'He separates it/puts it apart.'

b. -kek-chiwa
-good-make
'To make something good/to fix.'

While directions and locations do meet the **form** and **function** criteria, they do not assign a property to an aspect of the verb event, thus failing the **meaning** criterion. Instead, they rather describe the spatial circumstances in which the events unfold.

(22) *Classical Nahuatl*, (Sullivan et al., 1988, p. 221)
ø-mech-hual-cui in tlaxcalli
3s-1s-hither-take the tortillas
'He brings me tortillas (takes hither).'

Verb-internal instrument modifiers are not included as manner modifiers. They only indirectly modify the event denoted by the verb by adding an additional non-core argument to the verb.

(23) *Huasteca Nahuatl* (Merlan, 1976, p. 185)
ya? ø-qui-kochillo-tetehki panci
3s 3s-3s-knife-cut bread
'He cut the bread with the knife.'

Finally, evaluative markers do not assign a property modifying how an event unfolds, but rather expresses the subjective attitude of the speakers towards a given event, and are therefore excluded in this study.

(24) *West Greenlandic*
sinig-ler-soor-po-q
sleep-begin-unfortunately-IND-3s
'He unfortunately fell asleep/it is bad that he fell asleep.'

This brief excursion into other types of verb-internal modifiers provides an illustration of how the formal, functional and semantic criteria introduced above can be applied to a wide range of grammatical phenomena to distinguish them from the types of manner modifiers explored in this dissertation. This concludes the methodology section, where I outlined the details of the languages sample

used in this dissertation, the methods for collecting the data, and the criteria used to distinguish the manner modifiers explored here. In the next section I will outline previous research on manner adverbial verbs and manner adverbs within the generative tradition.

2.3 Previous Research

In this section I briefly summarize some of the relevant previous research on adverbial verbs and on manner adverbs within a generative framework. Within the overview of previous research on adverbial verbs, the focus will be on manner adverbial verbs, but other types of adverbial verbs will be discussed as well. The discussion of manner adverbs will focus on how they have been analysed in different generative frameworks, but the different analyses are also related to the treatment of adverbs more broadly. While verb-internal manner modifiers (both affixes and incorporated) have been described in individual grammars, no systematic attempt has been made to provide a formal analysis of the phenomenon, and their inclusion in the typological survey of manner adverbs by Hallonsten Halling (2018) is the only previous attempt (to my knowledge) at a typological study of such manner modifiers. Her sample includes eight languages, and she notes that like independent manner adverbs, the most common type of semantic category is SPEED. She does not attempt to distinguish between affixal and incorporated manner modifiers. Due to the lack of research on verb-internal manner modifiers, they are not given a separate subsection here.

2.3.1 Adverbial verbs

Adverbial verbs have been extensively studied in Formosan languages, the aboriginal languages of Taiwan. H. Y. Chang (2006) writes that the verbal properties exhibited by many adverbials in these languages was first noted by Starosta in 1980s, and subsequently this phenomenon has been discussed extensively, both in grammatical descriptions of individual languages (for instance Holmer (1996) for Seediq, A. H.-C. Chang (2006) for Paiwan, Teng (2008) for Puyuma and De Busser (2009) for Takivatan Bunun) as well as in articles dedicated to specifically discussing this topic. Here I limit the discussion to central formal analyses, and I not include descriptive work in reference grammars.

H. Y. Chang (2006) argues that adverbial verbs encoding frequency and manner information in Kavalan form a complex predicate together with a lexical verb,

which they take as their complement. I use the term 'lexical verb' to denote the verb that encodes the event of the clause, in contrast to adverbial and auxiliary verbs. The two verbs jointly license the arguments present in the clause, and exhibit important parallels to more prototypical serial verb constructions. Chang argues that this allows us to account for syntax-semantic mismatches (for instance, why the clitic arguments and inflectional morphology of the lexical verb are realized on the adverbial modifier), and it also accounts for why frequency adverbial verbs can modify lexical verbs with the distinctive voice morphology of the clause and the aspect morphology. Both consequences follow from the fact that the two constituents together form a complex predicate. The inability of manner adverbial verbs to modify non-actor voice lexical verbs is attributed to the fact that manner modifiers must take a smaller complement (i.e. a bare VP), whereas frequency adverbial verbs have the ability to take a larger complement. Chang notes that this hierarchical difference between the two corresponds to the hierarchies proposed by Cinque (1999) and Ernst (2002) in their analysis of adverbs. C. Wu (2006) investigates adverbial verbs in Paiwan, showing that the analysis developed by Chang can be extended to this language as well. Like in Kavalan, C. Wu (2006) argues that manner adverbial verbs in Paiwan form a tight bond with their lexical verb complements to form complex predicates. Interestingly, Wu argues that most adverbial verbs are 'semi-lexical', only assigning their own theta roles when in non-actor voice. This is also taken as an argument against reducing them to be the overt realizations of the simplex functional heads in a cartographic hierarchy (C. Wu, 2006, p. 26).

In examples (25a-b) below, it is illustrated how manner adverbial verbs in Kavalan can host the distinctive voice morphology of the clause, while the clause would be ungrammatical if it was hosted by the lexical verb. The parallel in the syntax-semantic mismatches are illustrated for more prototypical serial verb constructions in examples (26a-b), where it is shown how the intransitive verb 'go' can host the distinctive PV morphology of the clause, showing parallels between manner adverbial verbs and serial verb constructions.

(25) *Kavalan* (H. Y. Chang, 2006, p. 47)

a. paqanas-an=ku tayta ya sulal
slowly-PV=1S.GEN <AV>see NOM book
'I read the book slowly.'

b. *paqanas=iku tayta-an ya sulal
slowly.AV=1S.NOM see-PV NOM book

(26) *Kavalan* (H. Y. Chang, 2006, p. 69)

a. m-atiw-ti=iku m-ara tu sunis.
AV-go-ASP-1S.NOM AV-take OBL child
'I went to bring a child back.'

b. qatiw-an=ku m-ara ya sunis
go-PV-1S.GEN AV-take NOM child
'I went to bring my child back.'

The examples in (27) illustrate how frequency adverbial verbs in Kavalan can modify lexical verbs that are inflected for the distinctive voice morphology of the clause, host pronominal and aspectual clitics, which was shown to be ungrammatical for manner adverbial verbs.

(27) *Kavalan* (H. Y. Chang, 2006, p. 69)

a. pataz-an=ku=ti supas ya qRitun
often-PV-1S.GEN-ASP <AV>buff NOM car
'I often buffed my car.'

b. pataz supas-an=ku=ti ya qRitun.
often.AV buff-PV=1S.GEN=ASP NOM car
'I often buffed my car.'

C.-L. Li (2007) argues against a complex predicate analysis of adverbial verbs in Puyuma. As is illustrated in example (28), it is possible for the VP complement of manner adverbial verbs to be topicalized, which Li argues should be impossible under a complex predicate analysis.

(28) *Puyuma* (C.-L. Li, 2007, p. 69)

a. patawar=ku m-aip dra trilin
slowly=1S.NOM AV-read OBL book
'I read books slowly.'

b. m-aip dra trilin i, patawar=ku
AV-read OBL book TOP slowly=1S.NOM
'As for reading book, I do so slowly.'

Restricting the discussion to manner and frequency adverbial verbs, C.-L. Li (2007) argues that they are restructuring verbs, taking a defective TP (non-

finite TP) as their complements. As such, they are similar in structure to obligatory control constructions in Puyuma. Clitic climbing (clitics are realized on the adverbial verb, not the lexical verb, see example (28a above) and their monoclausal status are taken as the primary arguments for this analysis (C.-L. Li, 2007).

For Isbukun Bunun, L. L.-Y. Li (2017) proposes that manner adverbial verbs take the lexical verb as their complement, but that only non-actor voice adverbial verbs are restructuring verbs. Adverbial verbs in the actor voice do not trigger a restructuring. They either do not exhibit any restructuring effects (i.e. no clitic climbing, no undergoer movement), or undergoer movement is attested but no clitic climbing, thus exhibiting some but not full restructuring effects. The examples in (29) illustrate the absence of undergoer movement of AV manner adverbial verbs (the internal argument stands to the right of the lexical verb), and the examples in (30) illustrate the absence of clitic climbing (the oblique clitic must be placed on the lexical verb) for AV manner adverbial verbs.

(29) *Isbukun Bunun*(L. L.-Y. Li, 2017, p. 12)

a. ma-nanulu'=ik saipuk saitia' tu 'uvaz
STAT-careful=1S.NOM take.care.of.AV that.OBL LNK child
'I take/took care of that child.'

b. *ma-nanulu'=ik saitia' tu 'uvaz saipuk
STAT-careful=1S.NOM that.OBL LNK child take.care.of.AV

(30) *Isbukun Bunun* (L. L.-Y. Li, 2017, p. 13)

a. kali-daukdauk=ik ma-ludah=su' habas
HIT-light=1S.NOM AV-hit=2S.OBL before
'I hit you lightly before.'

b. *kali-daukdauk=ik=su' ma-ludah habas
HIT-light=1S.NOM=2S.OBL AV-hit before

In contrast, manner adverbial verbs that are marked with non-actor voice morphology exhibit both undergoer movement, where the nominative argument is not limited to be positioned after the lexical verb, as in (31a), but can move to a position to the left of the lexical verb, as in (31b). These grammatical

structures also exhibit clitic climbing (32), where the agent clitic is attached to the manner adverbial verb, rather than to the lexical verb.

(31) *Isbukun Bunun* (L. L.-Y. Li, 2017, p. 16)

a. ka-nanulu-un=ku saipuk (a') 'uvaz
STAT-careful-PV=1S.GEN take.care.of.AV (NOM) child
'I take/took care of that child.'

b. ka-nanulu-un=ku (a') 'uvaz saipuk
STAT-careful-PV=1S.GEN (NOM) child take.care.of.AV
'I take/took care of that child.'

(32) *Isbukun Bunun* (L. L.-Y. Li, 2017, p. 13)
kali-daukdauk-un=ik=su' ma-ludah takna'
HIT-light-PV=1S.NOM=2S.OBL AV-hit yesterday
'You hit me lightly yesterday.'

A third analysis for adverbial verbs is a functional head analysis, where adverbial verbs are argued to be the overt realizations of functional heads in the clausal spine. This analysis has been proposed for Seediq (Holmer, 2006, 2010, 2012), Tsou (H. Y. Chang, 2009) and Isbukun Bunun (H.-H. I. Wu, 2019). The primary arguments for adopting this position are the fact that in clauses where there is a sequence of adverbial verbs, their relative ordering reflect the syntactic hierarchy proposed by Cinque (1999), and the fact that the lower in the proposed syntactic hierarchy an adverbial verb is found, the more morphology the adverbial verb will be able to host.

The examples in (33) below illustrate the differences in verbal morphology for a frequency adverbial modifier (33a) and a discourse-oriented adverbial modifier (33b). The frequency modifier is able to host the distinctive voice morphology of the clause, also preventing said morphology from being hosted by the lexical verb, which is instead marked in the default actor voice morphology. The discourse-oriented adverbial cannot host the distinctive voice morphology, but only clitics.

(33) *Seediq* (Holmer, 2012, 909f)

a. pcnga-un=mu m-ekan ka blebun
seldom-PV=1S.ERG AV-eat NOM banana
'I seldom eat bananas.'

b. soo=ku hari uka pila
like=1S.NOM a.bit not.have money
'Apparently I don't have money.'

H.-H. I. Wu (2019) adopts a functional head analysis for adverbial verbs in Isbukun Bunun. The examples below illustrate how modal-related adverbials ('intentionally' in the examples below) must be situated above aspect-related adverbials ('again' in the examples below). Example (34) shows that the adverbial *kamananu* can be situated to the left of the adverbial *muhna*, but if the ordering is reversed the structure is ungrammatical.

(34) *Isbukun Bunun* (H.-H. I. Wu, 2019, p. 13)

a. kamananu sa'ia mu-uhna kantundah zaku.
AV.intentionally 3S.NOM AV-again AV.kick 1S.ACC
'He intentionally kicked me again.'

b. *mu-uhna sa'ia kamananu kantundah zaku.
AV-again 3S.NOM AV.intentionally AV.kick 1S.ACC

H.-H. I. Wu (2019) provides a much more exhaustive inventory of examples illustrating the syntactic hierarchy for Isbukun Bunun adverbials (explored further in chapter 5), showing that the hierarchy reflects the syntactic hierarchy of functional projections proposed by Cinque (1999). However, arguments have also been raised against the functional head analysis. Chang (2010) argues that adverbial verbs exhibit lexical properties, since they can host causatives, they appear to license arguments and a subset of them can act as independent verbal predicates. Furthermore, both Holmer (2012) and H.-H. I. Wu (2019) point out that cartographic models struggle with accounting for some of the variable ordering found in sequences of adverbial verbs, and that such a model has relatively little explanatory value in terms of accounting for why the observed pattern holds.

Frequency and manner adverbial verbs are also found outside of Taiwan, as shown by Holmer (2010, 2012) and Bogren Svensson (2017). They speculate that one of the reasons why adverbial verbs are over-represented in the Formosan languages is related to their verb-initial basic constituent order. Verb-initial languages tend to place their verbal inflection on elements in the beginning of the clause, and if such languages place adverbials before the finite verb of the clause, it is likely that an initial adverbial is reanalysed as an adverbial verb.

To summarize this brief overview, a few conclusions can be drawn. Verbal properties are found among adverbials in several Formosan languages, and they have been known at least since the 1980s. While frequency and manner adverbial verbs are found outside of Taiwan, both within and outside of the Austronesian language family, they are over-represented on the island. Whether or not this should be regarded as a genealogical or area feature (or perhaps a mixture of both) remains an open question. While the proposals outlined above differ in details in their analyses, there are important commonalities between them. They all agree that adverbial verbs are syntactic heads that take some kind of complement, rather than being adjoined to the structure as specifiers or adjuncts. It is from the ability to directly take a complement that many of their verbal properties arise. Moreover, they also agree on some of the important challenges for analysing adverbial verbs using a generative framework. This includes the fact that adverbial verbs tend to exhibit both lexical and functional properties, the fact that arguments appear to be licensed by both the adverbial verb and the lexical verb, and the fact that the ordering restrictions on adverbial verbs remains unexplained.

2.3.2 Manner adverbs

Within Mainstream Generative Grammar, two approaches to the analysis of adverbs, and therefore by extension manner adverbs, have become dominant. These are commonly referred to as the adjunct approach, spearheaded by Ernst (2002), and the cartographic approach, spearheaded by Cinque (1999). According to the cartographic approach, adverbs are specifiers of functional heads that are situated in the clausal spine. These functional heads serve to license the adverb in its specifier, thereby establishing a close relation between the functional head and semantic interpretation of adverbs and their respective positions. One of the primary arguments for this position is the correlation between the scope and position of adverbs on the one hand and auxiliary verbs and affixes on the other, the latter two are taken to be the overt realizations of the heads that license their corresponding adverbs. According to Cinque (1999), these functional heads and their ordering are part of Universal Grammar. Later proposals, such as that of Holmer (2012) and Ramchand and Svenonius (2014), have made attempts to combine the two approaches in order to account for the distribution of adverbs.

The adjunct approach instead proposes that adverbs are part of adverb phrases that are adjoined as optional adjuncts to the various projections found in the clausal spine (VP, vP, TP, CP). The relative height of the different adverbs

is reflected by the position in which they are adjoined. The fact that adverbs (mostly) are optional and that the relative height of certain adverbs can vary are easily captured using the adjunct approach, while also constituting important weak points for a cartographic approach. Moreover, since an adjunct approach does not have to assume on the same kind of large universal inventory found with Cartography, it can be argued that this approach relies on much simpler theoretical assumptions, while still being able to account for the same generalisations as a cartographic framework.

Within cartographic approaches there is an intimate relationship between the semantic content encoded by an adverb and the corresponding content encoded by their respective functional heads. An exception is manner adverbs, which Cinque (1999) argues are licensed by the voice head, rather than a manner functional head. (Cinque, 1999, 102f) provides a few arguments for this conclusion. Firstly, there is a close link between 'Middle Voice' and manner adverbs. Secondly, Cinque claims that there is a special morphological relation between manner adverbs and passive voice. He gives Maori as an example, where manner particles appear to show agreement in the passive voice marking with the lexical verb, illustrated in (35).

(35) *Maori* (Bauer, 1993, p. 92)
i peehi-a rawa-tia ngaa waahine
T/A oppress-PASS intens-PASS the.P woman
'The women were severely oppressed.'

However, important objections can be raised against the conclusions that Cinque draws from this Maori example. The word *rawa-* in the Maori example appears to be an intensifier, not a manner modifier. Furthermore, aspectual modifiers can also agree with lexical verbs in voice, as shown in the example in (36) below.

(36) *Maori* (Bauer, 1993, p. 435)
...ka taka-hia noa-tia e au teethe ngarara...
...T/A step-PASS sudden-PASS by 1S a snake...
'...[and] suddenly I stepped on a snake...'

Even if one were to provide clear-cut examples of manner modifiers in Maori that agree in passive voice with the lexical verbs, the two examples discussed here clearly show that this is not a property restricted to manner modifiers. Rather, it appears to be a property of modifiers more broadly that are merged in a relatively low position, not something exclusive to manner modifiers. This discussion also highlights the importance of relying on careful and precise semantic definitions when discussing manner modifiers.

Chomsky (1965, p. 103) likewise observes that there is a special relation between passive and manner adverbs, indicated by the following quote "The verbs that do not take Manner Adverbials freely Lees has called 'middle verbs' [...] these are, characteristically, the Verbs with following NP's that do not undergo the passive transformation". This is taken by Cinque to support his claims. Verbs of this category include *resemble*, *have*, *marry*, *fit*, *cost*, *weigh*. Differences in the relative order between manner adverbs and active and passive past participles in Italian are given to provide further support for a relation between passives and manner adverbs (Cinque, 1999, p. 102).

Having briefly outlined the cartographic analysis of manner adverbs and some of the reasoning behind placing manner adverbs as specifiers of a Voice phrase, I move on to outline how adjunct approaches analyse manner adverbs.

A common assumption within adjunct approaches is that the clause is divided into different zones that are hierarchically ordered. The distribution of adverbs is primarily determined by scope (or semantic selectional) requirements, with adverbs with wider scope like speaker-oriented adverbs taking scope over subject-oriented and manner adverbs and are thereby merged in a higher position in the clause. The number of zones into which the clause should be divided differs from author to author, as does the names given to the different domains. For instance, Haider (2000) divides the clause into three zones [PROPOSITION [EVENT [PROCESS]]] while Ernst (2002) uses five zones [SPEECH ACT [FACT [PROPOSITION [EVENT [SPECIFIED EVENT]]]]]. However, they all agree that manner adverbs are limited to the lowest zone, i.e. the zone related to the encoding of the specific verbal event. The lowest domain here approximately corresponds to the traditional VP, to the exclusion of the vP. Again, the exact details between proposals differ, but a generalisation that can be made is that manner adverbs are situated below the agent and should be asymmetrically c-commanded by it. For instance, Ernst (2002) places manner inside the specified event, which he corresponds to the VP, whereas Adger and Tsoulas (2004) place manner adverbs in the specifier of an iterated vP. Still, the two analyses both place the manner adverbs in a projection below the agent. Placing manner

adverbs in such a low position captures the fact that manner adverbs scope below speaker- and subject-oriented adverbs, and in terms of linear order manner adverbs will appear closer to the verb than both speaker- and subject-oriented adverbs, regardless of whether they are pre- or postverbal.

In this brief overview, I have outlined two of the major approaches to adverbs in the generative framework, focusing on how they analyse manner adverbs. Neither of the two broad approaches discuss the possibility of manner modifiers as functional syntactic heads. In an adjunct approach there would be no obvious connection between manner modifiers as syntactic heads and manner adverbs, since the latter are simply adjoined as adjuncts. For the cartographic approach, manner adverbs are situated in a Voice projection, rather than in a functional projection headed by a manner functional head. I will be returning to both of the approaches throughout my analysis of manner modifiers as syntactic heads, the topic to which I now turn.

Chapter 3

Manner Affixes in West Greenlandic

In this chapter I focus on discussing affixes that encode manner information (manner affixes) in West Greenlandic. An example of a manner affix from the language is given in (37). The manner affix, marked in bold, is situated immediately to the right of the lexical root, and to the left of the affix encoding deontic modality. Unless stated otherwise, the examples in this chapter are from West Greenlandic and they are my own.

(37) atuarusaartariaqarpoq
atuar-**rusaar**-tariaqar-pu-q
read-**slowly**-must-IND-3S
'S/he must read slowly.'

In the anti-lexicalist approach adopted here, both morphologically complex words and phrases are taken to be constructed in the same grammatical domain, the narrow syntax. According to this approach, morphologically complex words are the result of a concatenation of syntactic heads. In this chapter, I will explore the consequences of these assumptions for manner affixes. I propose that manner affixes are the overt realization of functional heads merged in the clausal spine. I also propose that the position of manner affixes in relation to other verbal affixes can be captured in a straight-forward manner by the anti-lexicalist approach adopted here.

The claim that the order of verbal affixes reflects a hierarchical syntactic structure is a much-explored topic. However, previous research has focused primarily on tense, aspect and mood markers (Cinque (1999), Julien (2002)), or on valency changing morphology (Baker, 1985). By using the same approach but for manner affixes instead, I can test the predictions made by the frameworks developed by previous researchers.

The distribution of manner affixes in West Greenlandic is discussed in section 3.2. I show that functional categories that are associated with either a high or medial position in the clausal spine, such as mood, modality and most aspect markers, are consistently situated further away from the lexical root than manner modifiers. However, some aspect markers, as well as some valency changing morphology, can vary in their linear order in relation to manner affixes, with predictable differences in scope.

I propose that by dividing the clausal spine into distinct sortal domains, it is possible to capture the fact that most other verbal affixes are situated further away from the lexical root than manner affixes, while some vary in their ordering. Manner modifiers are limited to the lowest domain of the clause, which is reflected in the ordering of affixes in West Greenlandic. Any affixes that are the overt realization of functional projections merged in either the medial or the highest domain must appear further away from the root than manner affixes. For affixes merged in the lowest domain, there are no inherent restrictions imposed on their hierarchical ordering. Some of the affixes merged in this domain can vary their position in relation to other affixes, while others cannot. I propose that this can be reduced to selectional restrictions on individual functional heads. The ordering of West Greenlandic verbal affixes is thus taken to directly reflect a syntactic hierarchical sequence. Affixes situated closer to the lexical root are merged in a lower position than those situated further away from the lexical root. As such, the position of manner affixes follows directly from the syntactic hierarchy, and it is not necessary to make any additional assumptions to account for their linear distribution.

In 3.1, I give a brief introduction to West Greenlandic, including genealogical affiliations and an introduction to its grammatical structure. I present an overview of manner modifiers in West Greenlandic in 3.1.1, and I give an overview of some previous analyses of verbs in West Greenlandic and closely related Inuit languages in 3.1.2. In 3.2, I discuss the distribution of manner affixes inside verb complexes in relation to other verbal affixes. 3.3 deals with the syntactic status of manner affixes. In 3.4, I provide an analysis that captures the distributional properties of manner affixes. Concluding remarks are found in 3.5.

3.1 Introducing West Greenlandic

West Greenlandic is a language variety within the Unangan-Yupik-Inuit language family spoken in Greenland. It is also often referred to using the endonyms *Kalaallisut* and *Kalaallit oqaasii* (lit. 'like Greenlanders(' speech)' and '(the) Greenlanders' language', respectively). It is spoken primarily in Western Greenland and it forms the basis for standard Greenlandic. Greenlandic also includes Tunumiit oraasiat/Tunumiisut (also known as East Greenlandic) spoken in eastern Greenland and Inuktun (also known as Polar Eskimo) spoken in North-Western Greenland. Greenlandic is part of the Inuit branch, which consists of a group of closely related language varieties (Proto-Inuit is reconstructed to approximately 1000 C.A., Dorais, 2010). Inuit is traditionally classified into four branches, namely Greenlandic Inuit, Eastern Canadian Inuit (Inuktitut), Western Canadian Inuit (Inuvialuktun) and Northern Alaskan Inuit (Inupiaq). The Inuit languages together with the Yupik languages form the Yupik-Inuit branch of the language family (Proto-Yupik-Inuit reconstructed to approximately 2000 B.C.). The Yupik-Inuit branch together with the Aleut languages form the highest node on the family tree.

West Greenlandic has SOV as its basic word order. The unmarked position for time and place adverbials is before the subject. Oblique arguments are often placed in the position immediately before the verb. Since all arguments are case marked and the verb exhibits both subject and object agreement, word order can be quite flexible. The language has postpositions (formally they are case-marked possessed nominals) while relative clauses and other nominal modifiers follow the head noun. Demonstratives can both precede and follow the head. Case marked nominal modifiers precede head nouns.

West Greenlandic nouns inflect for case, number and possession. Nominal inflection distinguishes between two numbers (singular and plural, the dual having been lost, although it is still present in other varieties of Inuit), four persons for possession (first, second, third and 'reflexive', often referred to as fourth person in grammatical descriptions) and eight cases (absolutive, ergative, locative, allative, absolutive, instrumental, prosecutive and equative). These categories often form portmanteau morphemes.

West Greenlandic verbs obligatorily inflect for absolutive (and when present, ergative) arguments and mood. There are eight mood markers, four for main clauses (declarative, interrogative, optative and imperative) and four for subordinate clauses (conditional, causative, contemporative and participle). Like in

the nominal domain, certain portmanteau morphemes are found in the verbal inflection as well. These markers are always realized as suffixes.

Beyond nominal and verbal inflection, West Greenlandic also has an inventory of what is traditionally described as a set of derivational affixes. A common term for this category used by researchers working on the language family is 'post-bases', a term that I will use throughout this chapter to refer to the entire set of these affixes. Within the Yupik-Inuit branch of the language family, these tend to number around 500 in any given language at any given time (Dorais, 2010) and are the source of the polysynthetic profile of the languages. These affixes are situated between the lexical root and the final inflectional suffixes. A useful way of classifying them is depending upon whether they attach to a nominal or verbal stem (generally speaking these affixes are limited to one category, although there are exceptions) and whether the resulting stem is a verb or a noun. They can thus be understood as a function that takes either a noun or a verb as input and returns either a noun or a verb as output. We thus get four different types of affixes, namely those which take a nominal and return a nominal (N-N), those which take a nominal and return a verb (N-V, often described as noun incorporation in the descriptive literature), those which take a verb and return a nominal (V-N), and those which take a verb and return a verb (V-V). The latter will be the focus of this chapter.

The N-N affixes can be described as nominal modifiers and many of them can be categorized under the term 'evaluative morphology'. They include affixes like *-taaq* 'new', *-toqaq* 'old', *-araq* 'small', *-rsuaq* 'big', *-ralak* 'bad' and *-gik* 'good', to give a few examples. The V-N affixes can be understood as nominalisers. Examples include the (active) participle *-toq*, locative nominaliser *-vik* and comitative nominaliser *-qat*. The verbal root *atuar* (to read/study) can be used to illustrate their functions, as in *atuartoq* 'student', *atuaqat* 'classmate/fellow student' and *atuarfik* 'school'. These often combine with other affixes in more or less lexicalised expressions, as with *sinif-fik* (sleep-place, i.e. bed) and *sinit-tar-fik* (sleep-habitual-place, i.e. bedroom).

The N-V affixes can best be described as verbalisers. At any given time in any Inuit language, there are around 50 productive affixes of this type (see Trondhjem (2017) for a list of verbalisers found in West Greenlandic, classified according to lexical aspect). The relatively small number and general semantic content have led researchers to propose that they are the realization of a small v, which takes a sub-part of an extended nominal projection as their complement (see 3.2.8 for discussion). In contrast, West Greenlandic lacks prototypical noun incorporation, in the sense of a nominal root that is concatenated together with

a verbal root. The N-V affixes cannot appear as independent constituents but must always attach to a nominal stem. They are also clearly distinct in form from independent lexical verbs (cf. *ujaar*, the lexical verb meaning 'look for' and *-sior*, the verbaliser meaning 'look for').

The V-V affixes are the most heterogeneous of the subcategories, at least when considering how they would be classified using more general linguistic terminology. They include Tense-Aspect-Mood (including modality) markers, valency changing morphology (causatives, applicatives, antipassives etc.), additional events (think that, say that, go to, etc.), intensifiers and, most importantly for this dissertation, manner modifiers.

3.1.1 Manner Modifiers in West Greenlandic

West Greenlandic has three primary means of encoding manner information. The language uses active participles in the instrumental case, subordinate clauses in the contemporative mood as well as a closed class of manner-modifying affixes. The active participles, formally indistinguishable from what in traditional grammars is classified as participle mood, have several functions. They are used to form complement subordinate clauses, relative clauses as well as agent nouns. They can also be used as manner modifiers, illustrated in (38). In (38a), the verbal stem consisting of the verb root ajor-, meaning 'be.bad' and the negation marker is used as a participle (nominalised with the affix *-su*) in the instrumental case and takes the function of a manner modifier towards the finite verb of the clause. Note that it takes scope over the causative affix, modifying the entire complex event. A similar structure is found in (38b). As mentioned above, the unmarked position for oblique constituents is the immediate preverbal position. Unless otherwise stated, the examples in this chapter are from West Greenlandic and are my own.

(38) a. ajunngitsumik anisippai
ajor-nngit-su-mik ani-tit-pa-i
bad-NEG-PART-INST exit-CAU-IND-3P.ABS.3S.ERG
'S/he, in a good (i.e. friendly) manner, made them go out.'

b. poortugaq sukkasuumik ammarsimavaa
poortugaq sukka-suuq-mik ammar-sima-va-a
package fast-PART-INST open-PRF-IND-3S.ABS.3S.ERG
'S/he opened the package quickly/with haste.'

Manner information can also be encoded by using contemporative mood. Contemporative mood is used to signal that the subject of the superordinate verb is the same as the subject of the subordinate verb, and it can also express that two events occur simultaneously (hence the term 'contemporative'). One such example can be found in (39) below, where contemporative mood functions to encode that the two verbs have the same subject (first person singular) and that the event encoded by the two verbs unfold at the same point in time.

(39) siggartarlunga atilerpunga
siggartar-lu-nga ater-ler-pu-nga
whistle-CONT-1S descend-begin-IND-1S
'I started going down (while) whistling.' (Fortescue, 1984, p. 20)

In the example above, manner is understood in a broader sense than how I use the term in this dissertation. The subordinate verb does not assign an attribute to an aspect of the event denoted by the matrix verb, but rather encodes that two events occur simultaneously (i.e. a whistling event and a descending event). Still, I have included the example above for the sake of giving a broader overview of the language.

West Greenlandic also encodes manner information via a closed set of manner-modifying affixes, which is the primary topic of this chapter. These affixes belong to the V-V category, since they are attached to verbal stems and the verbal category is retained. Their morphosyntactic and semantic properties are explored at length in this chapter. An example is given below for illustrative purposes. The manner modifier is marked in bold.

(40) atuagaq tikiupallappaa
atuagaq tikip-uti-**pallag**-pa-a
book.ABS arrive-APL-**fast**-IND-3S.ABS.3S.ERG
'She arrived with the book quickly.'

Finally, a combination of the aforementioned strategies can be used. For instance, a 'dummy stem' (*pi*) can function as the stem of manner-modifying affixes. The resulting complex stem can then function as a manner modifier if it is used as a participle in the instrumental case or if it is used in the contemporative mood, as the two examples in (41) illustrate, respectively. Note that the two manner modifiers in example (41b) yield an intensive reading (really quickly).

(41) a. poortugaq pigasuartumik ammarsimavaa
poortugaq pi-**gasuar**-tu-mik ammar-sima-va-a
package stem-**quickly**-PART-INST open-PRF-IND-3S.ABS.3S.ERG
'S/he opened the package quickly.'

b. pipallalluni igapallappoq
pi-**pallag**-lu-ni iga-**pallag**-po-q
stem-**quickly**-CONT-4S cook-**quickly**-IND-3S.ABS
'S/he cooks really quickly.'

As outlined in the methodology section (2.2), I rely on three primary criteria for identifying verb-internal manner modifiers, namely i) they functional as modifiers to the event-denoting verb (functional criterion), ii) they assign some property to an aspect of the verbal event (semantic criterion), and iii) they must be morphologically integrated into finite verbs (form criterion). Applying these criteria to the V-V affixes discussed above, a fairly small set of affixes are found. They are given in the table below. I use the four basic semantic categories proposed by Hallonsten Halling (2018) for manner adverbs in her typological survey, but I add the category of STRENGTH to this inventory. The latter category is also found in many other languages (see 4.2 in the next chapter), so there is a strong empirical foundation for adding an additional category.

Building on the work of Hallonsten Halling (2018), I propose that each of the five basic semantic categories can be assigned a positive and a negative value, thus yielding the basic contrasts between 'slowly' and 'quickly' for the category SPEED, 'quietly' and 'loudly' for the category NOISE, 'well' and 'badly' for the category VALUE, and so on. This results in an inventory of 10 basic manner modifiers. All categories except for NOISE are present in West Greenlandic, and the manner affixes in the language are presented in the table below.

Table 3.1: Semantic classification of manner affixes in West Greenlandic

Semantic class	+	-
SPEED	*-pallag*, *-gasuar* 'quickly'	*-rusaar* 'slowly'
VALUE	*-lluar* 'well'	*-nerlug*, 'badly'
CARE	*-qqissaar* 'carefully'	*-arsug* 'half-heartedly'
STRENGTH	*-pilug* 'hard'	-
NOISE	-	-

All manner affixes in West Greenlandic appear to have the same restrictions upon their distribution, provided that the structure is semantically coherent. For instance, manner affixes encoding [SPEED] cannot directly modify stative

verbs, as is shown in example (42a) below, while the same verb can be modified by a [CARE] manner modifier, illustrated in (42b).

(42) a. *nikorfagasuarpoq
*nikorfa-**gasuar**-po-q
stand-fast-IND-3S.ABS

b. nikorfaqqissaarpoq
nikorfa-**qqissaar**-po-q
stand-**carefully**-IND-3S.ABS
'She stands carefully.'

I have at most found three manner affixes modifying a single verb stem. Regarding their distribution in relation to each other, no overarching structural restriction has been observed, although it should be noted that this conclusion might be premature, since I have not explored this topic in any great detail. Some preliminary results for the affixes 'well', 'fast' and 'carefully' are given below.

(43) a. suli-**pallag-lluar-qqissaar**-pu-q
work-**quick-well-carefully**-IND-3S.ABS
'She works quickly well carefully.'

b. suli-**qqissaar-lluar-pallag**-pu-q
work-**carefully-well-quickly**-IND-3S.ABS
'She works carefully well quickly.'

c. suli-**lluar-pallag-qqissaar**-pu-q
work-**well-quickly-carefully**-IND-3S.ABS
'She works quickly well carefully.'

It should be noted that these examples are fairly unnatural (just like their English translations). While in principle the outer affixes should take scope over the inner affixes, any potential differences in interpretation in the examples above are difficult to interpret. These results should be taken as preliminary.

Taking a diachronic perspective, most of the manner affixes listed above are reconstructed as affixes in Proto-Yupik-Inuit. Fortescue (1999) argues that the overall polysynthetic profile of the modern languages of the Yupik-Inuit Branch was already present for the reconstructed Proto-Yupik-Inuit-Aleut. Fortescue

(1992) argues that there is virtually no trace of any lexical source for the affixes found in the modern Yupik-Inuit languages. This is also the case for manner affixes in West Greenlandic, which cannot be traced to any lexical sources. The majority of the affixes can be reconstructed to at least Proto-Inuit (PI), while some of the affixes can be reconstructed to the Proto-Yupik-Inuit (PE) forms. Many of the affixes can be traced to an earlier source where they come from a combination of two affixes that resulted in a new affix. This is a relatively common source of new grammatical material in the Yupik-Inuit languages, and it is still an ongoing process in West Greenlandic (see 3.2.3 for examples). All the data below is taken from the Comparative Eskimo Dictionary with Aleut cognates (Fortescue et al., 2011). Note that the dictionary uses the term Eskimo instead of the term Yupik-Inuit adopted here.

The sources for the manner affixes of the category SPEED are the following: *-gasuar* 'quickly' is reconstructed to the PI affix **nasuk / *nasuaq* meaning 'try to'. A possible source of this affix is the combination of the affixes **na* 'might or so as to' and either **yuɣ*, 'want or tend to' or *yu(C)a*ʀ 'might or be liable to'. *-pallag* is reconstructed to the PE affix **vaɬɬaɣ*, meaning 'very much'. This affix might have as its source a combination of *vaɣ, 'big or much' and *ɬɬaɣ*, 'abruptly'. *-rusaar* is reconstructed to the PI affix *nuða*ʀ*a*ʀ 'leisurely or not seriously'.

The sources for the manner affixes of the category VALUE are the following: *-lluar* is reconstructed to the PE affixes *l(l)ul(C)a*ʀ and *l(l)u(C)ata*ʀ 'well'. Note that the affix *-lluar* is also found in the word *iluar*, meaning 'be good/correct/holy'. However, the affix is not derived from the lexeme via grammaticalization. The word *iluar* is reconstructed to PE as **ət-l(l)u(C)ata*ʀ 'be correct or right', with **ət* being a reconstructed copula. It is a combination of the affix and the copula that have resulted in a new lexeme. *-nerlug* 'badly' is reconstructed to the PE affix **nə*ʀ*ɬuɣ* 'badly'. It might have developed from a combination of the affixes **nə*ʀ 'nominaliser' and **ɬuɣ* 'have a bad'.

The sources for manner affixes of the category CARE are the following: *-arsug* 'half-heartedly' is reconstructed to the PI affix **-a*ʀ*zuk-* 'little', a nominal modifier (it still functions as a nominal modifier in West Greenlandic with the meaning 'poor, useless'). A possible source in PE is the combination of the affixes **a*ʀ, 'thing resembling s.th' and **yuɣ*, 'thing resembling s.th.'. *-qqissar* is derived from PE affixes **nqiɣ*$_1$ and **nqiɣ(C)a*ʀ, meaning 'be good at or do well'. A possible source of this affix is the combination of the affixes **nə*ʀ 'nominaliser' and **kiɣ* 'have a good'.

3.1.2 Previous Analyses of Yupik-Inuit Post-bases

An important description of West Greenlandic verb complexes is that of Fortescue (1980). He makes a distinction between 'external syntax', which operates upon words, and 'internal syntax', which includes an inventory of rules used to create morphologically complex words in the language. Some of these rules are recursive in nature, helping to account for the enormous complexity of West Greenlandic words. De Reuse (1994) adopted Fortescue's system into an Autolexical Syntax framework to analyse the related Central Siberian Yupik language. Both authors have made important contributions to our understanding of the polysynthetic nature of Yupik-Inuit languages, and the framework functions well as a descriptive device. However, a consequence of this framework is that it treats the Yupik-Inuit languages and their rules as completely distinct from all other languages, making comparisons to other language families difficult, and it obscures potential similarities.

Within a generative framework, Cook and Johns (2009) argue that Inuit 'post-bases' (both those in the nominal and verbal domain) are syntactic functional heads. Many of the 'post-bases' fall under what is treated as functional heads from a generative perspective (e.g. TAM-markers, voice markers etc.). The affixes with 'adverbial' meaning are analysed as the overt realization of different functional heads in the cartographic functional hierarchy. Verbs incorporating nouns are taken to be light verb (i.e. v), building upon Johns (2007) analysis of 'noun incorporation' in Inuit. Cook and Johns argue that there are no affixes that encode specific emotions (e.g. happily) or those describing situation with specific and vivid content (e.g. thirstily). As such, the affixes appear to lack the rich encyclopaedic knowledge that we expect from lexical items. Furthermore, the relative ordering of these correspond to the hierarchy presented by Cinque (1999, pp. 53–8), which they take as further corroboration of their functional nature.

A phase-based analysis of Inuit word-formation was employed by Compton and Pittman (2010). An important advantage of this analysis is that there is no need for idiosyncratic marking on functional heads to derive their status as affixes or their ordering. Their status as affixes is derived from the spell-out restrictions found in the language, and their ordering follows from the syntactic structure. However, they leave open the question whether 'adverbial' affixes are syntactic heads or adjoined as adjuncts. Compton (2012) builds upon this framework further, and argues that 'adverbial' affixes are the realization of adjoined phrasal modifiers in a right-headed structure. He thus argues that adverbs (and adjectives) are a lexical class in Inuktitut, and it is simply due to the constraints

on spell-out that they are realized as affixes rather than as independent constituents. Since their relative ordering can vary, Compton argues against a cartographic analysis of Inuit word-formation, instead adopting a framework based on an adjunct analysis of adverbs (Ernst, 2002).

The controversy regarding the analysis of Inuit word-formation within a generative framework can be seen as a local manifestation of the broader controversy between a cartographic analysis of adverbs and an adjunct-based analysis of adverbs (or even more broadly, between the rich structure of the Cartographic Program and the impoverished structures of the Minimalist Program). In my discussion on verb-internal manner modifiers in West Greenlandic, I attempt to capture the strengths of both accounts, namely accounting for the restricted semantic content and syntactically predictable ordering of post-bases (cartographic account) on the one hand and variable ordering (adjunct account) on the other. By showing how a synthesis between the two broad frameworks can be adopted to West Greenlandic word formation, I hope to capture the best of the two frameworks. Finally, while both Compton (2012) and Cook and Johns (2009) mention manner affixes in their discussions, they do not focus on them nor do they provide an account of their distributional properties, a gap in our knowledge that I will attempt to fill.

3.2 Linear Distribution of Manner Affixes

In this section I discuss the distribution of manner affixes in relation to other verbal affixes in West Greenlandic. As outlined in the previous chapter, I assume the Mirror Principle (Baker, 1985) as a methodological maxim. Put concretely, an affix that is situated further away from the lexical root than another affix is assumed to have been merged in a position asymmetrically c-commanding affixes closer to the lexical root. In an abstract representation of this, the linear order $\sqrt{\text{ROOT}}$-X-Y-Z is assumed to reflect the hierarchical order [[[[$\sqrt{\text{ROOT}}$] X] Y] Z]. All the affixes discussed here are suffixes.

I use the example in (44) as concrete illustration of this logic. Since the irrealis marker *-ssa* is situated further away from the root than the aspect marker *-tar*, I can draw the conclusion that the irrealis marker asymmetrically c-commands the aspect marker in the hierarchical structure. Similarly, the affix meaning 'go thither' is situated closer to the lexical root than the aspect marker, allowing us to draw the conclusion that it is merged in a position below the habitual aspect marker. This linear order also reflects the relative scope of the affixes,

where the habitual aspect marker scopes over the 'go to work', and where the irrealis marker scopes over the habitual aspect, resulting in the interpretation 'will habitually go to work'.

(44) suliartortassaaq
suli-artor-tar-ssa-a-q
work-go.thither-HAB-IRR-MOOD-3S.ABS
'S/he will habitually go to work.'

I begin by looking at the distribution of manner affixes in relation to Modality, Negation and Mood (3.2.1), followed by a discussion on aspect markers (3.2.2), before discussing valency changing morphology, including applicatives, causative, antipassives and passives (3.2.3-3.2.7), and complex predicates (3.2.8).

3.2.1 Modality, Negation, Mood and Manner affixes

The marker *-ssa* in West Greenlandic is analysed as a future tense marker by Fortescue (1984). However, Shaer (2003) and Bittner (2005) reject this analysis. Bittner proposes that it rather encodes an expected prospective state (she glosses the marker as 'expect(ed)'). The marker is often used in clauses that refer to future events, but is not limited to such a distribution. It is not the goal of this dissertation to provide an analysis of tense and modality of West Greenlandic verbs. Instead, I will use the broad label 'irrealis' in the glossing, since it is the label that appears to me to be the most appropriate, considering the distribution and semantics of the affixes, but I leave the topic for future search. The marker *-ssa* must always be merged further away from the root than any manner modifiers. This pattern is illustrated in (45), where (45a) is grammatical but (45b) is ungrammatical. To reiterate, unless stated otherwise, the examples in this chapter are from West Greenlandic and are my own.

(45) a. allalluassaaq
allag-**lluar**-ssa-pu-q
write-**well**-IRR-MOOD-3S.ABS
'S/he will write well.'

b. *allassalluarpoq
*allag-ssa-**lluar**-pu-q
write-IRR-**well**-IND-3S.ABS

Modality markers are consistently situated further away from the lexical root than manner affixes. This is illustrated in example (46) below, where if the manner modifier is situated closer to the lexical root, the structure is grammatical, but if the deontic modality affix is situated closer to the lexical root than the manner modifier, the structure is ungrammatical.

(46) a. atuarusaartariaqarpoq
atuar-**rusaar**-tariaqar-pu-q
read-**slowly**-must-IND-3S
'S/he must read slowly.'

b. *atuartariaqarusaarpoq
*atuar-tariaqar-**rusaar**-pu-q
read-must-**slowly**-IND-3S

An apparent exception to this generalisation is the ordering of the dynamic modality marker *-sinnaa* and the manner modifier *-lluar*, which can appear in either order, as illustrated in (47). However, if *-lluar* is placed in a position further away from the root than the modality affix, it can only have an intensifier interpretation. Fortescue (1984) speculates that the combination *-sannalluar* is due to Danish influence, corresponding to 'kan godt' (can well). It does not constitute an exception to the generalisation that manner affixes are situated closer to the lexical root than modality markers. I have thus glossed *-lluar* as an intensifier in the second example.

(47) a. atuarluarsinnaavoq
atuar-**luar**-sinnaa-vu-q
read-**well**-can-IND-3S
'S/he can read well.'

b. atuarsinnaalluarpoq
atuar-sinnaa-lluar-vu-q
read-can-INT-IND-3S
'S/he really can read.'

If *-lluar* is merged outside of a modality marker, it cannot receive a manner interpretation and only an intensifier interpretation is possible. Regarding mood, as can be seen in the examples above, the indicative mood marker is situated further away from the root than the manner affixes. The same generalisation holds for the other mood markers in the language.

This is an expected pattern for several reasons. In typology of West Greenlandic affixes developed by Fortescue (1980), manner affixes are subsumed under the category of 'verbal modification', which is situated closer to the verbal root than 'sentential' verbal affixes (like the irrealis marker above). The ordering pattern also follows from the general propensity of affixes in West Greenlandic verbs to reflect their relative scope, with affixes further to the right taking scope over those further to the left. For instance, presumably the manner in which an event unfolds must be established before one can encode deontic modality. From a semantic point of view, this is also the expected distribution, since manner affixes modify verbal events while modality markers provide information regarding the possibility and necessity of events, presumably the event along with participants, location, and the manner in which it unfolds must be established before modal information can be added and interpreted.

Manner affixes must also consistently be situated closer to the lexical root than negation. This is illustrated in example (48a), where the manner modifier is closer to the root and the word is judged to be grammatical, whereas the opposite ordering in (48b) is regarded as ungrammatical.

(48) a. allalluanngilaq
allag-**lluar**-nngil-a-q
hear-**well**-NEG-IND-3S.ABS
'She did not write well.'

b. *allanngilluarpoq
*allag-nngila-**lluar**-pu-q
hear-NEG-**well**-IND-3S.ABS

Maienborn and Schäfer (2011) show that a property of manner adverbs is that they scope below negation. Given the assumption that the clausal spine is mirrored in the structure of West Greenlandic verb complexes, it comes as no surprise that manner affixes must appear closer to the root than the negative marker. It is only when manner adverbs trigger an event coercion that they can scope over negation. As such, they require the interpolation of an event that possibly can be associated with the negation of the proposition. For instance, in the example 'Klogman skilfully didn't answer the questions' (Maienborn & Schäfer, 2011, p. 9) the coerced interpretation is that Klogman upheld the non-answering of the questions in a skilful manner, i.e. he avoided answering the questions in a skilful manner. I have not found any such coercion effects with manner affixes and negation in West Greenlandic.

Summarizing the findings so far, the irrealis marker, dynamic and deontic modality, mood markers and negation must appear further away from the root than manner affixes. In the next subsection, I discuss the linear order of manner affixes in relation to aspect markers.

3.2.2 Aspect and Manner affixes

West Greenlandic has a large inventory of verbal affixes that all can be classified under the label of 'aspect'. Here I focus primarily on the relative linear order of aspect and manner affixes to determine the relative height of manner affixes. With this goal in mind, I divide aspect markers in West Greenlandic into two categories. 'High Aspect' markers are consistently situated further away from the lexical root than manner affixes, and are thus taken to appear higher in the syntactic hierarchy. The aspect markers belonging to the other category, labelled here as 'Low Aspect', exhibit variation in terms of linear order. They can be situated both above and below manner modifiers, which is reflected in the linear order.

I do not claim that high aspect and low aspect form homogeneous or natural classes, neither typologically nor in West Greenlandic. This classification is only a useful expositional device for outlining the distributional patterns of manner affixes in West Greenlandic. However, there is clear precedence in the literature on aspect markers and aspectual adverbs to distinguish different types of aspects depending on where they are merged in the clausal spine (cf. Cinque (1999), Ramchand (2018)). Moreover, Trondhjem (2017), using a descriptive approach, argues that West Greenlandic makes a distinction between different types of aspect markers, which she calls 'inner phasal aspect' and 'outer phasal aspect', the former being closer to the verb root. 'Inner phasal aspect' would then roughly correspond to low aspect, and 'outer phasal aspect' would roughly correspond to high aspect.

I begin by looking at high aspect. High aspect markers consistently appear further away from the root than manner modifiers, and in terms of semantic interpretation they always take scope over manner modifiers. As can be seen in example (49), perfective aspect must appear further away from the lexical root than the manner modifier.

(49) a. sananerloreerpoq
sana-**nerlug**-reer-pu-q
make-**badly**-PRV-IND-3S.ABS
'She built badly.'

b. *sanareernerluppoq
*sana-reer-**nerlug**-pu-q
make-PRV-**bad**-IND-3S.ABS

The following aspect markers (at least) can be classified as high aspect markers, in the sense that they always appear further away from the root than manner affixes: Frustrative aspect (*-lussinnar*, example (50)), proximative aspect (*-nialer*, example (51)), continuous aspect (*-juaannar*, example (52)), terminative aspect (*-junnaar* and *-ssaar*), perfective aspect (*-reer*, example (49)) and habitual aspect (*-tar*).

(50) a. aalisarlualussinnarpoq
aalisar-**lluar**-lussinnar-pu-q
fish-**well**-FRS-IND-3S.ABS
'She fished well in vain (i.e. did not catch any fish).'

b. *aalisalussinnarluarpoq
*aalisar-lussinnar-**lluar**-pu-q
fish-FRS-**well**-IND-3S.ABS

(51) a. allalluarnialeraq
allag-**lluar**-nialer-a-q
write-**well**-PRX-IND-3S.ABS
'She will write well soon.'

b. *allannialerluarpoq
*allag-nialer-**lluar**-pu-q
work-PRX-**well**-IND-3S.ABS

(52) a. sulilluaruaannarpoq
suli-**lluar**-juaannar-pu-q
work-**well**-ALWAYS-IND-3S.ABS
'She always works well.'

b. *suliuaannarluarpoq
*suli-juaannar-**lluar**-pu-q
work-ALWAYS-**well**-IND-3S.ABS

As is illustrated in the example above, high aspect markers consistently appear further away from the lexical root than manner affixes. From this data I draw the conclusion that these aspectual markers must always merge in a position asymmetrically c-commanding manner affixes. I present my attempt at capturing these distributional patterns in 3.4.

I now move on to discuss what I refer to as low aspect. These aspect markers can appear both closer to and further away from the root than manner modifiers. The differences in linear order also reflect different semantic interpretations, with the affix appearing further away from the root taking scope above affixes closer to the lexical root. This is illustrated fairly clearly in (53), where the repetitive aspect marker can scope both above and below the manner modifiers.

(53) a. allaqqilluarpoq
allag-qqig-**lluar**-pu-q
write-REP-**well**-IND-3S.ABS
'She wrote again well (having not written well previously).'

b. allalluaqqippoq
allag-**lluar**-qqig-pu-q
write-**well**-REP-IND-3S.ABS
'She wrote well again (having written well previously also).'

In example (53a), the aspect maker is situated closer to the verb root than the manner affix. The interpretation is that the event denoted by the verb is repeated and that this time it is done in the manner encoded by the manner affix. In contrast, when repetitive aspect is situated further away than the manner affix (53b), it encodes a repetition of the verb event in the manner in which it was performed previously. I have found this type of distributional pattern for the following aspect markers: repetitive (*-qqig* and *-tar*), completive aspect (*-vig*), frequentative aspect (*-kulaar/-kula*, example (54)), inchoative aspect (*-ler*), celerative aspect (*-jaar*, example (55)) and prospective aspect (*-ngajag*, example (56)), the variation in linear order illustrated in the examples below.

(54) a. nerilluakulaarpoq
neri-**lluar**-kulaar-po-q
eat-**well**-FRQ-IND-3S.ABS
'He eats well frequently.'

b. nerikulaarluarpoq
neri-kulaar-**lluar**-po-q
eat-FRQ-**well**-IND-3S.ABS
'He eats frequently well.'

(55) a. makiaarusaarpoq
makig-jaar-**rusaar**-pu-q
get.out.of.bed-early-**slowly**-IND-3S
'S/he gets out of bed early slowly.'

b. makerusaaraappoq
makig-**rusaar**-jaar-pu-q
get.out.of.bed-**slowly**-early-IND-3S
'S/he gets out of bed slowly early.'

(56) a. pisorusaangajappoq
pisug-**rusaar**-ngajag-pu-q
walk-**slowly**-almost-IND-3S
'S/he almost walked slowly (i.e. did not succeed in walking slowly).'

b. pisungajarusaarpoq
pisug-ngajag-**rusaar**-pu-q
walk-almost-**slowly**-IND-3S
'S/he almost walked slowly (i.e. her almost-walking (e.g. limping) was slow).'

(57) a. ilikkarluavippaa
ilikkar-**lluar**-vig-pa-a
learn-**well**-CPL-IND-3S.ABS.3S.ERG
'He learned it well completely.'

b. ilikkavilluarpaa
ilikkar-vig-**lluar**-pa-a
learn-CPL-**well**-IND-3S.ABS.3S.ERG
'He learned it completely well.'

The difference in the ordering of the affixes yields a difference in scope interpretation in predictable ways, where affixes further from the root take scope over those closer to the root. The affixes individually do not appear to exhibit different interpretations, suggesting that it is the same affixes that can appear in different positions, not different affixes merged in different position that have the same phonological realization.

To reiterate, I do not claim that high and low aspect in West Greenlandic (or any other languages) form a natural class, or that they ought to be treated as basic theoretical constructs. I simply claim that it is a useful distinction to make to account for the distribution of manner affixes in the language. However, there is plenty of support in the literature for the claim that aspect markers do not all have the same distribution. For instance, Cinque (1999), Travis (2010), Wiltschko (2014), Ritter (2014), and Ramchand (2018) argue that at least some aspect markers can be merged in relatively low positions in the clause. I discuss this topic in further detail in 3.4 below.

While the distinction between high and low aspect is useful for describing the linear distribution of manner affixes, it is complicated by lexicalised combinations of affixes and lexical roots. Examples of such lexicalised combinations in the nominal domain include *illoqarfik*, literally 'the place of houses', which has the idiomatic interpretation 'city', and *mittarfik*, literally 'place of often descending', which has the idiomatic interpretation 'airport'. Examples in the verbal domain include *ilinniar*, literally 'intends to learn', which simply means 'to study', and *ilinniartig*, literally 'to cause to intend to learn', which simply means 'to teach'. These lexicalised combinations can lead to idiosyncratic patterns in the distribution of manner affixes, slightly complicating a description of their distribution. I discuss one such example in detail below, to outline how this might work. The distribution of manner affixes in relation to the resultative aspect marker *-sima* constitutes a good illustration of this.

The combination the verb root for 'to go home' *angerlar* and the resultative aspect marker *-sima* has become lexicalised to mean 'to be at home' (*angerlar-sima*). Manner affixes can combine with the lexicalised stem, resulting in the interpretation that one is at home in the manner encoded by the manner affixes. This can be seen in example (58b). A manner affix can also intervene between the verbal root and the affix, instead modifying the way in which the subject made his or her way home. This is illustrated in example (58a).

(58) a. angerlarnerlussimavoq
angerlar-**nerlug**-sima-vu-q
go.home-**badly**-RES-IND-3S
'She went home badly (and is now at home).'

b. angerlarsimanerluppoq
angerlar-sima-**nerlug**-vu-q
go.home-RES-**badly**-IND-3S
'She is at home badly (not really sure what she is doing, not getting anything done, etc.).'

The variation illustrated above is not available for all verbs. In example (59a) below, the manner affix is situated between the aspect marker and the lexical root, and it only modifies the process in which the subject closed a door, not the resultant state. However, when the manner affix is situated above the resultative aspect marker, it can only receive an intensifier interpretation, suggesting that it has been merged outside a domain where manner modification is possible.

(59) a. matulluarsimavaa
matu-**luar**-sima-va-a
close-**well**-RES-IND-3S.ABS.3S.ERG
'S/he closed the door well (and it is now closed).'

b. matusimalluarpaa
matu-sima-luar-pa-a
close-RES-INT-IND-3S.ABS.3S.ERG
'S/he is keeping the door closed (i.e. pushing it, holding it closed).'

So far, I have not found any aspect markers that obligatorily appear closer to the lexical root than manner affixes. Either they will always appear further away than manner affixes, or variation in linear order is possible. However, in certain aktionsart alterations there are what appears to be fossilized affixes that

must be situated closer to the lexical root than manner affixes. An example of this is given in (60), with the alternation between the semelfactive verb *allor* and the activity verb *allorar*.

(60) a. allorusaarpoq
allor-rusaar-po-q
step-slowly-IND-3S.ABS
'She takes one step slowly.'

b. allorarusaarpoq
allorar-**rusaar**-po-q
step.repeatedly-**slowly**-IND-3S.ABS
'She takes several steps slowly.'

c. *allorusaararpoq
*allor-**rusaar**-ar-po-q
step-**slowly**-ASP?-IND-3S.ABS

The alternation between the semelfactive and the activity interpretation appear to be encoded via *-ar*. A manner affix cannot intervene between *-ar* and the lexical root (60c). However, this is not a productive affix in the synchronic grammar. It could therefore be argued that it is not an affix at all anymore, but instead there are two separate lexical roots, *allor* and *allorar*. Example (60c) would thus be ungrammatical because the manner affix is inserted into the lexical root.

To summarize so far, the distribution of manner affixes in relation to aspect markers is fairly complex. A subset of aspect markers is consistently situated above manner affixes and must appear further away from the root than manner affixes. In contrast, some aspect markers can be situated both above and below manner affixes (which is reflected in linear order), thereby yielding different scope interpretations. I now move on to discuss valency changing morphology, including applicatives, causatives, antipassives and passives, as well as complex predicates.

3.2.3 Applicatives and Manner affixes

West Greenlandic has an inventory of three affixes that can be argued to encode applicative voice, namely *-uti*, *-vigə* and *-qatigə*. I begin by discussing *-uti*.

The applicative *-uti* must appear closer to the lexical root than manner affixes. This is illustrated in (61) below, where the structure is ungrammatical if the manner affix is situated between the applicative voice and the lexical root, as in (61b).

(61) a. atuagaq tikiupallappaa
atuagaq tikip-uti-**pallag**-pa-a
book.ABS arrive-APL-**fast**-IND-3S.ABS.3S.ERG
'She arrived with the book quickly.'

b. *atuagaq tikipallagutivaa
*atuagaq tikip-**pallag**-uti-pa-a
book.ABS arrive-**fast**-APL-IND-3S.ABS.3S.ERG

The thematic role of the applicative object does not appear to affect this distributional restriction. The thematic role of the applicative object introduced by the applicative voice marker *-uti* varies and is determined by the verbal stem to which it attaches. In example (61) above, the applicative object (book) has a theme thematic role, and in example (62) below, the applicative object (woman) has a benefactive thematic role. Still, manner affixes must appear further away from the lexical root. Note that West Greenlandic only allows for one absolutive argument per clause, so the original absolutive object (house) of the verb (build) in the example below is demoted to an oblique object marked in instrumental case.

(62) a. arnaq illumik sannalluarpaa
arnaq illu-mik sana-uti-**lluar**-pa-a
woman.ABS house-INST build-APL-**well**-IND-3S.ABS.3S.ERG
'S/he built a house for the woman well.'

b. *arnaq illumik sanalluarutivaa
*arnaq illu-mik sana-**lluar**-uti-pa-a
woman.ABS house-INST build-**well**-APL-IND-3S.ABS.3S.ERG

Within the typology of applicatives developed by Pylkkänen (2008), *-uti* would be classified as a high applicative. In structural terms, this means that that *-uti* is merged in a position above the projection introducing the internal argument. This stands in contrast to low applicatives, which are merged below the lexical verb. Pylkkänen (2008) gives the Transitivity Condition and the Verb Semantics Criterion as tests for determining whether an applicative is low or high. The

applicative *-uti* meets both of these criteria. Firstly, it fulfils the Transitivity Condition since it can combine with unergative verbs (e.g. *suli-uti* work-APL ('work for')). Secondly, it also fulfils the Verb Semantics Criterion since it can be combined with stative verbs (e.g. *kamag-uti* be.angry-APL ('be angry with')).

My interpretation of the examples above is that manner affixes are situated above the applicative voice marker *-uti*. The hierarchical order is thus [Manner [Applicative [VP]]], whereas *[Applicative [Manner [VP]]] is ungrammatical. This pattern is interesting, since there appears to be no a priori restrictions preventing a high applicative from being merged above manner modifiers. However, there might be factors specific to West Greenlandic that are behind these restrictions on linear order. The applicative voice marker *-uti* is not fully productive, and it is often involved in lexicalised expressions (Fortescue, 1984, p. 90). Furthermore, the phonological realization is irregular, and it often affects the realization of the stem (for instance, it triggers gemination in (62). This restricted productivity and phonological irregularity might be what is behind the inability of the applicative to attach to stems with manner affixes.

Another relevant factor might be the idiomatic interpretation of the thematic role of the applicative object introduced by *-uti*. The interpretation appears to be determined by the lexical root that hosts the applicative. Under the assumption that such idiomatic interpretations are local (cf. Kratzer (1996), Marantz (1997)), it follows that the applicative must be situated in close proximity to the lexical root to yield this idiomatic interpretation. Moreover, there are other languages that do not follow this restriction on the ordering of manner modifiers and applicatives, as I discuss in 4.3.2 and 5.2.1. This further suggests that the restriction found in West Greenlandic is not the result of a broader pattern, but rather due to selectional and interpretational restrictions associated with the applicative *-uti*. I leave the issue presented by this applicative suffix for future research, and move on to discuss the other two applicatives found in the language.

The two transparently diachronically complex applicative morphemes are *-qatigə* and *-vigə*. They can be positioned linearly to both the right and the left of manner affixes, as shown in (63) below. Diachronically they are derived from a combination of the nominalisers *-vik* ('time', 'place') and *-qat* ('fellow') with the verbaliser *-gi* ('have as'), respectively. All three are still productive as affixes by themselves. Combinations of affixes are a common way in which new affixes develop West Greenlandic, and in Yupik-Inuit languages in general. For instance, *-riataar* 'suddenly' has developed from *-riar* 'set about/intense state' and *-ataar* 'intensely' and *-sinnaa* 'can' developed historically from a combina-

tion of *-(s)innaq* 'only' and *-u* 'be'. Both of them are fully grammaticalized. In contrast, *-nngortit* 'make into/appoint' is derived from *-nngor* 'become' and *-tit* 'causative', and is only semi-grammaticalized (Fortescue, 1984).

The distribution of *-qatigə* and manner affixes is illustrated in example (63) below, showing that it can be situated both to closer to the root (63a) and further away from the root (63b) than manner affixes. In the examples below, *-qatigə* is glossed as morphologically complex, consisting of a nominaliser followed by a verbaliser.

(63) a. suleqatigipiluppaa
suli-qat-gi-**pilug**-va-a
work-NMZ-VBZ-**hard**-IND-3S.ABS.3S.ERG
'S/he works with him hard.'

b. sulipiloqatigivaa
suli-**pilug**-qat-gi-va-a
work-**hard**-NMZ-VBZ-IND-3S.ABS.3S.ERG
'S/he works with him who works hard.'

I propose that from a synchronic perspective, in the examples above *-qatigə* ought to be analysed as morphologically complex, consisting of a nominaliser and a verbaliser, (as in the glossing above), and not as an applicative. One argument in favour of this analysis is the fact that the nominaliser *-qat* can be attached to a verbal stem with a manner affix. For instance, *suli* 'to work' can be nominalised to become *suleqat*, meaning 'co-worker'. Similarly, *sulipilug* 'to work hard' can be nominalised to become *sulipiloqat*, meaning 'hard-working co-worker'. This structure is then subsequently verbalised. This structure more closely mirrors the semantic interpretation of the structure. In (63b), the interpretation is that the subject has the object as a hard-working co-worker. This interpretation follows naturally from the analysis of *-qatigə* as being morphologically complex.

A consequence of this analysis is that the manner affix *-pilug* is really situated in different extended verbal projections in examples (63a) and (63b). In (63a), it is situated in the extended verbal projection projecting from the lexical root *suli*, whereas in (63b), it is situated in the extended verbal projection projecting from the verbaliser *-gi*, yielding the differences in interpretation.

To summarize, the applicative *-uti* must consistently be situated closer to the root than manner affixes. I speculate that this might be rooted in selectional

and interpretational restrictions on the applicative, although this remains to be determined. For the other 'applicatives', I propose that they are better analysed as synchronically complex, rather than as applicatives. I now move on to discuss causatives.

3.2.4 Causatives and Manner affixes

The causatives *-tit* 'CAU' and *-qqu* 'ask to' can be situated both closer to and further away from the lexical root than manner affixes, yielding different scope interpretations. Here I focus on the causative *-tit*. The examples in (64) illustrate this pattern, showing that manner affixes can be situated both below (64a) and above (64b) the causative *-tit*, as well as and on both sides simultaneously (64c).

(64) a. anipallatsippai
ani-**pallag**-tit-pa-i
exit-**quickly**-CAU-IND-3S.ERG.3P.ABS
'She made them go out quickly (She made them go out and they went out quickly).'

b. anisipallappai
ani-tit-**pallag**-pa-i
exit-CAU-**quickly**-IND-3S.ERG.3P.ABS
'She made them, in a quick manner, go out.'

c. atuapallatsipallappakka
atuar-**pallag**-tit-**pallag**-pa-kka
read-**quickly**-CAU-**quickly**-IND-1S.ERG.3P.ABS
'I made them, in a quick manner, read quickly.'

Pylkkänen (2008) also develops a typology of causatives. The typology is based on the size of the complement they can take, and whether or not they bundle together with the Voice head responsible for introducing external arguments. The West Greenlandic causative *-tit* can be situated above high applicatives (*aqqutitit*, *ater-uti-tit*, 'descend-APL-CAU-' Fortescue, 1984, p. 91), which shows that the causative is phase-selecting (the causative with the largest scope in her typology). Furthermore, it is possible to causativise unaccusative verbs (*orlu-tit* 'fall-CAU'), meaning that the causative *-tit* does not bundle together CAUSE and Voice. In her typology, the *-tit* causative would thus be classified as a non-bundling phase-selecting causative.

A key point in her typology that is relevant for the discussion on manner modifiers is the size of the complement that the different causative can take. Phase selecting causatives (like *-tit*) have the largest complement in her typology, and they can scope over manner adverbs. Pylkkänen provides examples of causatives that scope over verb-oriented modifiers, such as manner adverbs. In such structures, the adverb modifier presumably is merged in a position between the verb and the causatives, allowing the causative to scope over it.

(65) *Bemba* (Pylkkänen, 2008, p. 115)
naa-butwiish-ya Mwape ulubilo
1S.PST-run-CAU PN fast
'I made Mwape run quickly.'

With the assumption that syntactic structure mirrors morphological structure, it is expected that a manner modifier realized as a verbal affix (as in West Greenlandic) likewise can be situated between the verbal root and the causative affix, with the causative scoping over the manner modifier. As can be seen in example (64a) above, this prediction is borne out in West Greenlandic.

Given Pylkkänen's analysis of the semantics of causatives, it is also no surprise that manner affixes can be situated above causatives as well. Causatives are responsible for introducing an additional event, which takes the event denoted by the verb as its argument. Since a new event is introduced, we also expect it to be possible for manner modifiers to target the combination of the added event and the event denoted by the verbal root. Below follows Pylkkänen's formal definition of the universal causative element.

(66) **Universal Causative Element:** CAUSE: λP.λe. [($\exists$e') P(e') & CAUSE(e,e')] (Pylkkänen, 2008, p. 75)

This analysis of causatives provides a framework for understanding how manner modifiers can be situated both above and below a causative within a single verb complex, and how the two structures are interpreted. The causative and the verb root denote two separate events, and we therefore expect it to be possible for manner to modify the conjoined structure of the two separate events. The variable pattern illustrated above is therefore expected. Furthermore, this model likewise allows for manner modification both above and below the causative simultaneously, since the causative introduces an additional event that can be modified independently of any manner modification of the event denoted by the verb.

An illustration of the semantic interpretation when the manner modifier is situated above the causative is provided in (67). The manner modifier targets the causation event (e) and assigns the value 'fast' to said event, thereby yielding the interpretation that the causing of the exiting was done in a fast manner. In (68), the semantics of the reverse order of the causative and the manner affixes is illustrated. Here the manner modifier targets the event denoted by the lexical verb 'exit' and assigns it the value 'fast'. This event is the assigned causative semantics, and the causative event is not modified by the manner affix.

(67) The Semantics of Manner<Causative

a. ani-tig-**pallag**-
exit-CAU-**fast**-

b. λe.$\exists$e'[exit(e') & CAUSE(e,e')] & $\exists$m[R(e,m) & fast(m)]

(68) The Semantics of Causative<Manner

a. ani-**pallag**-tig-
exit-**fast**-CAU-

b. λe.$\exists$e'[exit(e')& $\exists$m[R(e',m) & fast(m)] & CAUSE(e,e')]

3.2.5 Interim Summary

To summarize the findings so far, I have shown that mood, modality and negation are always situated further away from the lexical root than manner affixes. Regarding aspect, I proposed that in relation to manner affixes, aspect markers can be divided into high and low aspect, with high aspect always being situated further away from the lexical root than manner affixes, and low aspect being able to appear both closer to and further away from the lexical root than manner affixes, with differences in scope interpretation. No productive aspect marker obligatorily appears closer to the lexical root than manner affixes. Furthermore, applicatives in West Greenlandic must appear closer to the lexical root than manner modifiers, whereas causatives can appear both closer to and further away from the lexical root, with expected difference in scope interpretation.

(69) Interim Summary

a. **Always further away from lexical root:** Mood, Irrealis, Deontic and Dynamic Modality, Negation, High Aspect

b. **Variable Order:** Low Aspect, Causatives, Manner

c. **Always closer to lexical root:** Applicative, Fossilized Aspect Markers

3.2.6 Antipassives and Manner affixes

West Greenlandic has several different overt exponents for marking antipassive voice. The phonological form of the antipassive morpheme is determined by the stem to which it attaches. Fortescue (1983) treats *-si* and *-i* as allomorphs, and Oqaasileriffik (The Greenlandic Language Secretariat) classifies *-si*, *-i*, *-nnip* and *-ller* as allomorphs of the morpheme *-HTR*. I assume that they are different allomorphs of a single antipassive morpheme.

Verbs with manner affixes intervening between the antipassive marker and its verbal stem are judged as ungrammatical. The pattern remains the same regardless of the phonological realization of the antipassive. This pattern is illustrated below, with examples (70a) and (70b) having a different realization of the antipassive marker than (70c) and (70d), while the relative distribution in relation to manner affixes remains the same.

(70) a. tiguserusaarpoq
tigu-si-**rusaar**-pu-q
take-AP-**slowly**-IND-3S
'She takes (something) slowly.'

b. *tigorusaarsivoq
*tigu-**rusaar**-si-vu-q
take-**slowly**-AP-IND-3S

c. aallerusaarpoq
aa-ller-**rusaar**-pu-q
fetch-AP-**slowly**-IND-3S
'S/he fetches (something) slowly.'

d. *aarusaarlerpoq
*aa-**rusaar**-ller-pu-q
fetch-**slowly**-AP-IND-3S

An exception to this pattern was found for a combination of the verb for 'to use' with the antipassive marker. The combination *ator-lluar* (use-well) has become lexicalised and means 'to use in a sensible way' and the antipassive *-i* can be situated further away from the root than the manner affix in this instance. However, it is only in this lexicalised structure that the antipassive marker can be situated further away from the root than the manner affix. If the manner affix is situated further away from the root than the antipassive marker, the idiomatic interpretation is not available. If another manner affix is used, the manner affix cannot be situated between the lexical root and the antipassive. Examples (71a) and (71b) illustrate the lexicalised structure, whereas examples (71c) and (71d) illustrate that such variation is not possible when a manner affix that has not lexicalised together with the verbal root is present in the structure.

(71) a. atuilluarpoq
ator-i-**luar**-pu-q
use-AP-**well**-IND-3S
'S/he uses (something) well.'

b. atorluaavoq
ator-**luar**-i-vu-q
use-**well**-AP-IND-3S
'S/he uses (something) in a sensible way.'

c. atuigasuarpoq
ator-i-**gasuar**-vu-q
use-AP-**quickly**-IND-3S
'S/he uses (something) quickly.'

d. *atorasuaavoq
*ator-**gasuar**-i-vu-q
use-**quickly**-AP-IND-3S

Like in the instance with the resultative aspect marker discussed in 3.2.2 above, lexicalised structures yield unexpected ordering patterns. Since manner affixes cannot appear closer to a verbal root than an antipassive marker outside of lexicalised structures, the antipassive marker is presumably merged in a very low position in the clause. This appears to be inside the domain where idiomatic interpretation is possible, since when the manner affix is situated outside the antipassive marker, the idiomatic interpretation is not available. In examples (71a) and (71b) above, it can be said to mark the edge where such idiomatic interpretation is possible. This is in line with much work done within Distributed

Morphology, which has shown that idiomatic interpretations of verbal constructions only include the verbal root together with potential internal arguments and verbal particles, while excluding the external argument (Marantz, 1997). This also patterns with the function of the antipassive, namely to demote or delete an internal argument, which would place it in a low position in the structure and inside the idiomatic domain.

Baker (1988) analyses antipassive morphemes as the overt realization of an abstract nominal first merged in the direct object (theme) position that has been incorporated into the verb via head-movement. It can satisfy uninterpretable (accusative) features and thus yield a (seemingly) intransitive verb. Spreng (2012) presents an alternative analysis of the Inuit language Inuktitut. Discussing the interaction between antipassives and viewpoint aspect in Inuktitut, she shows that antipassive morphology yields an imperfective aspect interpretation for verbs that are perfective by default. Spreng argues that the antipassive marker in Inuktitut is related to a functional v-head in the lowest domain, which is related to licensing objects. This proposal conforms to the findings discussed above, where the antipassive is situated in close proximity to the verbal root. A generalisation that can be drawn based on the data discussed so far is that a manner affix must take at least the verb together with any internal arguments as its complement. It cannot intervene between the verbal root and the internal argument. There are thus interesting parallels between the antipassive marker and the applicative marker in terms of their distribution in relation to manner modifiers. Manner modifiers cannot intervene between the two functional projections that are related to the licensing and manipulation of internal arguments. This suggests that the overall pattern for West Greenlandic is that the verb and any internal arguments, including those introduced via applicatives, must form a constituent to the exclusion of manner modifiers, which in turn is reflected in the ordering of the relevant affixes.

The antipassive, the causative and manner affixes interact in interesting ways, and I will discuss this briefly. Antipassive markers can be placed on either side of the causative, yielding different argument structures. A verb with an antipassive marker is found in (72a), with the theme argument in the instrumental case. In (72b), the same verb root is causativised and the causee is marked in the allative case and the causand in the absolutive case. In (72c), the causative is attached to the verbal stem of (72a), which yields a structure where causand is in the instrumental case, causee in the absolutive case and the causer in ergative case. In (72d), the verb stem in (72c) is antipassivised, resulting in a structure where causand is in the instrumental case, the causee in the allative case and the causer in the absolutive case.

(72) a. Arnaq (aviisimik) tigusivoq
Arnaq (aviisi-mik) tigu-si-vo-q
woman.ABS (newspaper-INS) take-AP-IND-3SABS
'The woman took (a newspaper).'

b. Arnap meeqqanut aviisi tigutippaa
Arna-p meeqqa-nut aviisi tigu-tig-pa-a
woman-ERG childr-ALL.PL newspaper take-CAU-IND-3SABS.3SERG
'The woman made children take the newspaper.'

c. Arnap meeraq (aviisimik)
Arna-p meeraq (aviisi-mik)
woman-ERG child (newspaper-INS)
tigusitippaa
tigu-si-tig-pa-a
take-AP-CAU-IND-3SABS.3S.ERG
'The woman made the child take (a newspaper).'

d. Arnaq (meeqqat-nut) (aviisi-mik) tigu-si-tit-si-po-q
woman (children-ALL) (newspaper-INS) take-AP-CAU-AP-IND-3S.ABS
'The woman made children take a newspaper.'

Interestingly, the antipassive and its event-encoding projection (CAUP when it takes a causativised stem as its complement, vP when it attaches directly to a verb) form a tightly bound structure where no other overt morphology can intervene (i.e. neither manner nor low aspect). The latter pattern was illustrated in (71) above, and additional examples are given below where the antipassive has been added closer to the verbal root than a causative. Example (73a) below is ungrammatical since the manner modifier stands between the antipassive and the verbal root, whereas the two other possible positions are acceptable, with the predictable difference in interpretation (i.e. the manner modifier either scoping below or above the causative).

(73) a. *tigu-**gasuar**-si-tit-pa-a
take-**quickly**-AP-CAU-IND-3S.ABS.3S.ERG

b. tigu-si-**gasuar**-tit-pa-a
take-AP-**quickly**-CAU-IND-3S.ABS.3S.ERG
'She made him take (something) quickly.'

c. tigu-si-tit-**gasuar**-pa-a
take-AP-CAU-**quick**-IND-3S.ABS.3S.ERG
'She quickly made him take (something).'

The same restriction for antipassives taking a causative as its complement is illustrated below. Example (74b) is ungrammatical, since the manner modifier intervenes between the antipassive and its event-encoding projection (CAUP in this instance). The two other possible positions for the manner affix ((74a-b)) are both grammatical, with predictable differences in interpretation.

(74) a. ilinniar-**lluar**-tit-si-po-q
learn-**well**-CAU-AP-IND-3S
'She teaches (students) to learn well.'

b. *ilinniar-tit-**lluar**-si-po-q
learn-CAU-**well**-AP-IND-3S

c. ilinniar-tit-si-**lluar**-po-q
learn-CAU-AP-**well**-IND-3S
'She teaches well.'

The distribution of manner modifiers in relation to antipassives and verbs is very similar to their distribution in relation antipassives and causatives. In both instances, manner modifiers can only take as their complement a unit denoting an event (be it a verbal root or a causative) together with its internal argument (be it the internal argument of a verb, or the causee of a causative). Any morphology manipulating the internal argument (here, the antipassive) must be merged below any manner affixes.

To summarize the discussion on valency changing morphology so far, both applicatives and antipassives must form a constituent with their event-denoting complement (be it a verb or a causative) to the exclusion of manner modifiers and low aspect. At least for the applicative *-uti*, there appear to be independent motivations for this pattern, although it might also be a reflex of objects and verbs forming a tight bound unit in the language. In contrast, causatives can be situated both above and below manner modifiers, yielding different interpretations that are also reflected in the linear order. A similar pattern has been attested for passives, which I turn to now.

3.2.7 Passives and Manner affixes

The passive discussed here in West Greenlandic is *-neqar*, which transparently is derived from the nominaliser *-neq* and the existential/possessive verbaliser *-qar*. The function of the former can be illustrated with the following two examples: *atuarneq* 'reading' from the verb *atuar* 'to read' and *ulalinneq* 'busyness' from the verb *ulalig* 'to be busy'. The function of *-qar* can be illustated using the following example: *illoqarpoq* 'there exists a house/he has a house', from the noun *illu* 'house'. In the other varieties of Inuit (e.g. Inupiaq, Eastern Canadian and Western Canadian) the passive morpheme *-jau* is found (Fortescue, 1983). When *-neqar* is added to a transitive verb, the external argument is demoted to an optional oblique argument marked with the ablative case, or it is simply deleted. The passive voice marker can appear both closer to and further away from the root than manner affixes. The variation in linear order is illustrated in example (75) below.

(75) a. tiguneqarluarpoq
tigu-neqar-**lluar**-po-q
take-PASS-**well**-IND-3S
'It was taken well.'

b. tigulluarneqarpoq
tigu-**lluar**-neqar-po-q
take-**well**-PASS-IND-3S
'It was taken well.'

I have not been able to determine any difference in interpretation between the two examples. For the closely related language Inuktitut, Compton (2012) likewise provides examples of verbal affixes (although not of the manner type) whose order can vary without any discernible differences in interpretation. Moreover, it is also possible to passivize a causative stem, as is illustrated in the examples below. A manner affix can appear in all three possible positions. Like in the two examples above, there was no discernible difference in meaning when the ordering of the passive and the manner affixes varied (examples (76b-c)).

(76) a. taku-**lluar**-tit-neqar-po-q
see-**well**-CAU-PASS-IND-3S
'It was caused so that (someone) saw it well.'

b. taku-tit-**lluar**-neqar-po-q
see-CAU-**well**-PASS-IND-3S
'It was caused in a good manner so that (someone) saw it.'

c. taku-tit-neqar-**lluar**-po-q
see-CAU-PASS-**well**-IND-3S
'It was caused in a good manner so that (someone) saw it.'

One possible analysis would be to take *-neqar* to be a passive marker and the overt realization of Voice^0, which is responsible for demoting the external argument. The variation in order then follows from the framework adopted here, where there are no inherent restrictions on the ordering of the functional heads in the EVENT domain. Another possible explanation is that the passive marker is synchronically complex, not only diachronically. If this is the correct analysis, then the examples including the passive morpheme above ought to have been glossed as *-neq-qar* '-NMZ-VBZ', parallel to the structure discussed for the applicative *-qatigə*. Under this analysis, the manner affixes in (76b-c) are actually situated in different extended verbal projections. In (76b), the manner affix is situated in the extended verbal projection projected from the lexical root *taku*, whereas in (76c), it is situated in the extended verbal projection projected from the verbaliser *-qar*. Therefore, it is not the kind of variable ordering found for low aspect and causatives with manner affixes, where the sequence of affixes within a single extended verbal projection is variable. The data that I have discussed here is compatible with both analyses, and I have no independent support for either analysis.

In the next subsection, I discuss complex predicates and the distribution of manner affixes within them. This includes verbs that have an added event encoded via verbal affixes, as well as the so-called noun incorporation structures found in West Greenlandic.

3.2.8 Complex Predicates and Manner affixes

West Greenlandic has a set of verbal affixes that serve to add an additional event to the structure. The ones I discuss here are 'go (thither)' and 'say'. The verbal affixes *-giartor* 'go (thither)' is not simply a directionality marker encoding

'thither' since a manner affix added to the right of it encodes that a going event unfolded in the way encoded by the manner affix. Furthermore, the same manner affix can be iterated on either side of *-giartor*, further suggesting that it introduces an additional event. The affix is analysed as the overt realization of a v head that can take at least a vP as its complement.

(77) nerilluariartorluarpoq
neri-**lluar**-giartor-**lluar**-po-q
eat-**well**-go-**well**-IND-3S.ABS
'S/he went well (thither) to eat well.'

The affix *-giartor* differs from the causative in that it does not add an additional argument to the structure. This stands in contrast to *-nerar* 'to say', which introduces an additional argument to the structure. Since the 'saying' can be modified by a manner affix, and the affixes expands the argument structure of the verb, I analyse this as the realization of a v that introduces an additional event to the structure. It is not a quotative marker (the West Greenlandic quotative marker *=gooq* is realized as an enclitic).

(78) arpapallannerapallappaa
arpap-**pallag**-nerar-**pallag**-pa-a
run-**fast**-say-**fast**-IND-3S.ABS.3S.ERG
'She quickly said that he runs fast.'

Both of these affixes presumably are the realization of a verb head introducing an additional event (v_e). Considering their limited number (compared to open word classes like verbs and nouns) and rather limited semantic content, it is plausible to assume that they are light verbs, rather than lexical roots. It also patterns with the overall morphological profile of West Greenlandic, which only allows one lexical root in each verb complex (see discussion below). This conclusion is also supported by the fact that they cannot appear as independent constituents (which one would expect from lexical verbs). Since they all introduce separate events, it comes as no surprise that manner affixes can be situated both above and below them.

The next type of complex predicate to be discussed is what is often referred to as 'noun incorporation'. This is a much-discussed issue for Inuit languages in general, both within the more generative oriented literature as well as the more functionalist oriented literature, primarily focusing on whether the languages

have noun incorporation or not. Much of the controversy stems from the fact that the languages have no minimal pairs with incorporated and unincorporated nominals, as can be presented in languages that are generally regarded as having noun incorporation (cf. Baker, 1996). This pattern is illustrated in (79), where the morpheme encoding 'eat' is different for the two different structures (*neri* and *-sor*), and they are not etymologically related.

(79) a. neqi neri-nngisaannar-pa-t
meat eat-never-IND-2S.ERG.3S.ABS
'You never eat meat.'

b. neqi-sor-juaannar-pu-nga
Eat-consume-always-IND-1S.ABS
'I always eat meat.'

Since noun incorporation is taken to be the integration of a lexical noun into a lexical verb, and no such structures are found in Inuit languages, it can be argued that the languages lack noun incorporation, at least in the prototypical sense (Baker, 1996). In light of this, Johns (2007, 2009) argues that so-called 'noun-incorporating constructions' in the closely related language Inuktitut simply consist of a verbaliser and its nominal complement. The fact that incorporated nouns lack both case and number is taken to support the claim that they are NPs and not full DPs. Furthermore, incorporated nominals do not agree with verbs, further suggesting that they are relatively reduced. However, they show that it is not simply a bare root that is verbalised, but that there is more structure present. This is illustrated in the two examples below.

(80) *Inuktitut, South Baffin* (Compton & Pittman, 2010, p. 10)

a. iglu-jjua-liu-lauq-tuq
house-big-make-PST-DEC.3S
'He/she made a big house.'

b. angi-jur-mi iglu-liu-lauq-tunga
big-DEC-OBL.S house-make-DIST.PST-DEC.1S
'I made a big house.'

In example (80a) above, a noun-modifying affix appears on an incorporated noun, (the affix glossed as 'big'). Furthermore, stranded modifiers suggest that there is more structure present than a simple lexical root. Stranded modifiers

appear in an oblique case (the instrumental case in West Greenlandic), in contrast to caseless 'incorporated' nouns, while still agreeing with the head noun in number.

I adopt the analysis developed by Johns (2007) and take 'noun incorporation' to be verbalisers (overt reflexes of v) that take a reduced NP as their complements. The fact that these verbalisers are rather limited in number (approximately 50 at any given point in time for any Inuit language Dorais, 2010) and that they have rather general semantic content further suggests that these are functional items rather than lexical. With this analysis in mind, it is possible to make relatively straight-forward predictions regarding the relative order of nominal roots, verbalisers and manner affixes.

Since manner affixes are a part of the extended verbal projection, and they take a verbal constituent as their complement, it is predicted that they cannot intervene between the verbaliser and the nominal stem. If they would be able to appear between the verbalising affix and its nominal complement, they would be situated in an extended nominal projection. Since they are limited to modifying verbal elements, it is predicted that such a position would be ungrammatical, which is also borne out in the data, as illustrated below.

(81) a. illuliorluarpoq
illu-lior-**lluar**-pu-q
house-build-**well**-IND-3S.ABS
'He built the house well.'

b. *illullualiorpoq
*illu-**lluar**-lior-pu-q
house-**well**-build-IND-3S.ABS

In (81a), the manner affix follows the verbaliser *-lior*, and the structure is grammatical. In contrast, in (81b) the manner affix intervenes between the nominal root *illu* and the verbaliser *-lior*, and the structure is ungrammatical. It is ungrammatical because the manner affix is situated in the extended nominal projection, while being a verbal affix.

3.2.9 Summary of linear Distribution of Manner Affixes

In this section, I have provided an extensive discussion in the linear distribution of manner affixes in West Greenlandic. I have shown that mood, modality, high

aspect and negation are always situated further away from the lexical root than manner affixes. In contrast, low aspect and causatives (and arguably passives) were shown to be able to be situated both closer to and further away from the lexical root than manner affixes, with differences in scope interpretation reflected in the linear order. In contrast, applicatives, antipassives and fossilized aspect markers were shown to obligatorily appear closer to the lexical root than manner modifiers. A summary is given in (82) below.

(82) Summary of Linear Distribution

a. **Always further away from Lexical Root:** Mood, Irrealis, Deontic and Dynamic Modality, Negation, High Aspect

b. **Variable Order:** Low Aspect, Causatives, Manner, (Passives)

c. **Always closer to Lexical Root:** Applicative, Antipassives, Fossilized Aspect Markers

For the valency changing morphology, there appears to be a contrast between the passive and the causative on the one hand, and the antipassive and the applicative on the other. For the former two, manner modifiers can appear closer to the verbal root. For the latter two, manner modifiers must appear further away from the root. Both passives and causatives are related to external arguments (either introduction or demotion), whereas the antipassive and the applicative are related to internal arguments (either introduction or demotion). This pattern can therefore be construed as falling under a broader subject-object asymmetry, where internal arguments form a constituent together with the verb to the exclusion of external arguments. One way in which this asymmetry is reflected in West Greenlandic is by disallowing manner and aspectual morphology from intervening between a verb and antipassive and applicative voice (both related to internal arguments). A similar parallel can be drawn to verbalisers, which likewise form a constituent with their internal argument (the nominal stem) to the exclusion of manner affixes. This pattern is not carried over to causatives and passives, as they are related to external arguments. However, as will be discussed in the next chapter, this is not a general pattern, as data from other languages do not fully conform with this generalisation.

Looking at the distribution of manner affixes in relation to other functional categories, I draw the conclusion that manner is merged in a relatively low position in the clausal spine. Categories that we expect to be found in a medial or high position in the clausal spine (e.g. mood, modality, viewpoint aspect) consistently appear further away from the lexical root than manner affixes. Contrary,

functional categories expected to be found a lower position in clausal spine (valency changing morphology, certain aspect markers) may appear closer to the verbal root than manner affixes. Under the assumption that the morphological structure of West Greenlandic verbs mirrors a hierarchical syntactic structure, the conclusion is that manner affixes are situated in a low position in the clause.

I now move on to present an analysis that attempts to capture the distributional properties of manner affixes as have been outlined in this chapter. This consists of a discussion on their syntactic status (3.3), and a discussion on how the limited but productive variation in linear order and scope discovered in this chapter can be captured in the theoretical framework adopted in this dissertation (3.4).

3.3 Syntactic Status of Manner Affixes

I argue that manner affixes in West Greenlandic are the overt realization of syntactic functional heads merged in the clausal spine. I thus essentially follow the proposal made by Cook and Johns (2009) for verbal affixes in the closely related Inuktitut language, although I adopt it to West Greenlandic and develop it in greater detail for manner affixes. I begin by outlining and discussing the arguments developed against such a position by Compton (2012), before presenting argument in favour of my analysis and outlining in greater detail the featural decomposition of manner affixes.

Compton (2012), discussing the closely related Inuktitut language, outlines several arguments in favour of treating 'adverbial affixes' as syntactic adjuncts. 'Adverbial affixes', as used by Compton, are affixes with semantic content that fall under the broad category of 'adverbial', and this category would include the manner affixes discussed here, but also aspect markers, degree markers, as well as epistemic and evaluative markers. The primary arguments in favour of Compton's position that I discuss here are the following: i) Adverbial affixes can vary in their ordering; ii) Adverbial affixes are optional; iii) Adverbial affixes are stackable; iv) (some) Adverbial affixes can function both as nominal and verbal modifiers. Compton argues that these are properties associated with adverbs, and that adverbial affixes ought to be analysed as lexical adverbs adjoined as adjuncts. Constraints on the mapping between syntactic phases and phonological words lead to these adverbs being spelled-out together with the lexical verb (outlined in detail in Compton and Pittman, 2010).

These arguments do not conclusively show that adverbial affixes, and by extension, manner affixes, are adverbs adjoined as adjuncts. Compton (2012) takes the variable ordering found for adverbial affixes as an argument against a functional head analysis. However, this argument is based on the cartographic assumption that functional heads in extended projections always appear in the same order, universally. It is thus rather an argument against cartography, not against a functional head analysis. Moreover, there are plenty of examples of syntactic heads that can vary in their linear order. Indeed, from the very inception of the Mirror Principle (a primary methodological assumption used by Compton to argue against a cartographic analysis), Baker (1985) outlined how the order of valency changing morphology can vary to yield different interpretations. Under the current understanding of such morphology, where they are the overt realization of functional heads, they are examples of variable order for functional syntactic heads. Consider the examples in (83) below from Quechua.

(83) *Quechua* (Baker, 1985, p. 392)

a. maqa-naku-ya-chi-n
beat-RECIP-DUR-CAU-3S
'He_j is causing them_i to beat each other_i.'

b. maqa-chi-naku-rka-n
beat-CAU-RECIP-PL-3S
'They_i let someone_j beat each other_i.'

In the Quechua examples, the variation in order for the causative marker and the reciprocal marker yields different interpretations. Similar examples can also be produced for West Greenlandic, as is seen below with variation in the order of the causative and the passive marker. The semantic interpretation differs, as does the argument structure in examples (84a) and (84b). In (84a), the causative is added to the transitive stem, resulting in the causee (children) being in the allative case, while the causer is in the ergative case. The passive is then added to this stem, resulting in the ergative causer being in the ablative case (case marker used for agents in passive clauses). In (84b), the transitive stem is passivized, with the agent in the ablative case. This passivized structure is then causativised, introducing the causer in the ergative case. Differences in semantics are reflected in the different translations.

(84) a. (ilinniartitsisu-mit) meeqqa-nnut filmi taku-tit-neqar-po-q
(teacher-ABL) child-ALL.PL film see-CAU-PASS-IND-3S.ABS
'The children were made to see the film (by the teacher).'

b. ilinniartitsisu-p (meeqqa-nnit) filmi
teacher-ERG (child-ABL.PL) film
taku-neqar-tit-pa-a
see-PASS-CAU-IND-3S.ABS.3S.ERG
'The teacher caused the film to be seen (by the children).'

Variability in linear order can thus not be taken as arguments against an analysis of manner affixes (and 'adverbial affixes' more broadly) as syntactic heads. In 3.4, I describe in detail how the framework adopted here can account for variable order for manner affixes, while still treating them as functional heads.

Optionality is likewise not a strong argument. Obligatory can be understood in two ways here, namely that something obligatorily selects for something, and that a particular grammatical feature is obligatory in a particular grammatical structure. The former notion of being obligatory does not extend to manner affixes, as manner affixes are not necessary to form a finite clause in West Greenlandic. However, neither are applicatives nor causatives, but we should not therefore draw the conclusion that applicatives and causatives in West Greenlandic are not syntactic heads. The latter sense of being obligatory depends on what is meant by 'grammatical structure'. One could claim that the causative is obligatory in causative structures, but then one would also be forced to admit that manner affixes are obligatory in manner-modifying structures in West Greenlandic. While intuitively plausible, optionality is not a convincing argument for establishing the syntactic status of manner affixes, nor that of adverbial affixes more broadly. Optionality rather reflects the modification function inherent to manner modifiers, not their morphosyntactic status.

The fact that adverbial affixes are stackable does not show that they are adjunct. There are other grammatical structures that are standardly analysed as syntactic heads that still allow for stacking. Examples include auxiliary verb stacking in Germanic languages, for instance English and Swedish, and the stacking of applicative voice morphology in Tswana (Cole, 1955, p. 431), which can be used to introduce several additional objects. The latter would be iterations of the same syntactic head. 'Stacking' is thus possible for syntactic heads, as long as one allows for more than one syntactic head with the same category to be merged in a single sequence (see example (85) and discussion below).

Another property of adverbial affixes highlighted by Compton (2012) is the ability of some of them to function both as nominal and verbal modifiers, another property associated adverbs. This argument illustrates a property shared by

adverbial affixes and adverbs, but it does not show that they are the same. Multifunctionality is not something that is restricted to lexical items. It is also found for functional items. Wiltschko (2014) discusses the multifunctionality of functional items 'that' and the auxiliary verb 'to have' in English, and Biberauer and Roberts (2015) discuss the multifunctionality of modal auxiliary verbs in English. We therefore need a syntactic model where multifunctionality is not restricted to lexical items, but that encompasses multifunctionality for functional items as well. Thus, the multifunctionality of certain adverbial affixes in Inuit languages cannot be taken as a strong argument in favour of their status as adjoined adverbs.

The arguments presented by Compton (2012) do not show that adverbial affixes in Inuktitut are adjuncts rather than syntactic heads. By extension, the arguments do not show that the manner affixes explored here should be analysed as adjuncts. Instead, I propose that they should be analysed as the overt realization of functional syntactic heads. Treating them as syntactic heads allows us to arrive at a more coherent view of affixation in West Greenlandic, since many other verbal affixes in the language are uncontroversial syntactic heads, such as valency changing morphology, verbalisers (Johns, 2007), aspect, mood and modality markers (Cook & Johns, 2009). Furthermore, treating them as functional heads rather than as lexical items better coheres with the overall morphosyntactic profile of West Greenlandic, where finite verbs at most contain one lexical root (see discussion in 3.2.8 above, and the discussion in 4.1 in the next chapter). Moreover, treating affixation as adjunction also runs the risk of treating affixation in Inuit languages are inherently distinct from word building on other languages. Such a position would require very strong empirical evidence.

Another argument in favour of treating manner affixes as syntactic heads rather than adjuncts comes from semantics. A similar argument was presented by Cook and Johns (2009) for Inuktitut, where there are no affixes that encode specific emotions (e.g. happily) or those describing situation with specific and vivid content (e.g. thirstily). The same argument can be extended to manner affixes in West Greenlandic. If manner affixes are functional syntactic heads, we would expect them to be unable to encode the rich encyclopaedic semantic content associated with lexical roots. I believe that this prediction is borne out, since the inventory of manner affixes and their semantic content is very restricted. The inventory are manner affixes are reproduced in Table 3.2.

Table 3.2: Semantic classification of manner affixes in West Greenlandic

Semantic class	+	-
SPEED	*-pallag*, *-gasuar* 'quickly'	*-rusaar* 'slowly'
VALUE	*-lluar* 'well'	*-nerlug*, 'badly'
CARE	*-qqissaar* 'carefully'	*-arsug* 'half-heartedly'
STRENGTH	*-pilug* 'hard'	-
NOISE	-	-

The semantic content of manner affixes corresponds to the basic semantic categories for manner adverbs found across the languages of the world (Hallonsten Halling, 2018). Moreover, these categories are also found across other languages with manner affixes (see section 4.2 in the next chapter). If these manner affixes were adjoined as adjuncts, we would rather predict that would be able to encode richer and a broader range of semantic content. I thus take their semantics as an argument in favour of analysing them as syntactic heads. I now move on to discuss the featural decomposition of manner affixes in greater detail.

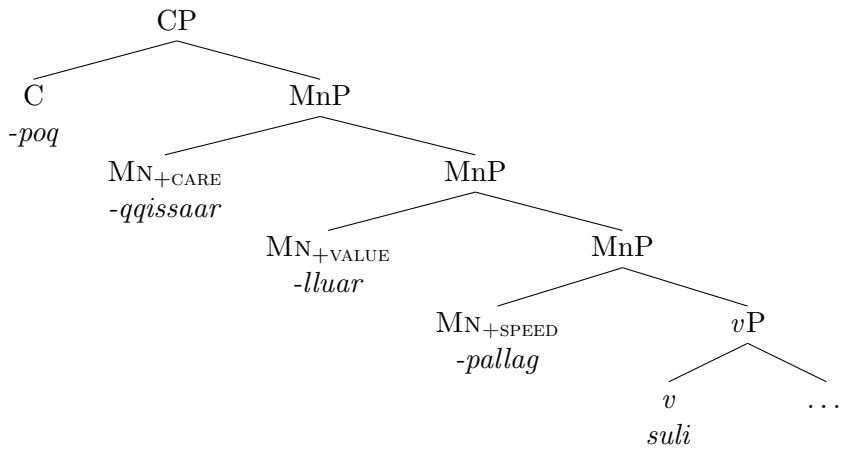
If manner-modifying affixes in West Greenlandic are functional syntactic heads, they must be available as atoms in the presyntactic lexicon that the narrow syntax operates upon. Moreover, they must also project and head their own phrases, which are situated in the clausal spine as these functional heads take other functional projection as their complements. West Greenlandic permits more than one such manner modifiers per finite verb, meaning that it must be possible to iterate this functional head. An example of three iterated manner-modifying heads is given in example (85) below, reproduced from (43). The featural decomposition of manner affixes are illustrated in the third line of the glossing.

(85) suli-**pallag-lluar-qqissaar**-pu-q
work-**quick-well-carefully**-IND-3S.ABS
VERB-$\text{MN}_{+\text{SPEED}}$-$\text{MN}_{+\text{VALUE}}$-$\text{MN}_{+\text{CARE}}$-C-AGR
'She works quickly well carefully.'

Moreover, I propose that there are at least five different semantic features that can be assigned to the functional heads in order to match basic semantic categories of manner affixes. The semantic content is specified via second-order features (e.g. [SPEED]) on the syntactic head, which in turn itself is a feature (e.g. [Manner^0]). I represent these second-order features as subscripts to the primary feature. A functional head encoding the speed in which an event unfolds is therefore represented as MN_{SPEED}. The second-order feature can be assigned a

positive and a negative value, yielding all the 10 basic semantic interpretations of verb-internal manner modifiers discussed above. The third line in example (85) shows the functional heads corresponding to the manner affixes. A hierarchical representation of the same example is given below. The structure is simplified for expository purposes, so I have only included functional heads with an overt phonological realization. Indicative mood and agreement are taken to be situated in C (cf. Compton and Pittman, 2010 on closely related Inuktitut).

(86)



Another interesting topic is that of the category selection of manner affixes in West Greenlandic. In the previous section, I showed that the stem of a manner affix may include applicatives, antipassives, causatives, aspect markers and manner affixes. Beyond these, it can also be a basic lexical verb, or a verbalised nominal. Under the basic Distributed Morphology assumption that lexical root must always be categorized by a syntactic head (e.g. v for verbs, n for nouns, etc.), the categorical complement of both lexical verbs and verbalised nominals should the same. Similarly, one could argue that causatives, applicatives and antipassives are different flavours of v-heads (although Voice might be a more appropriate label for some). However, even with these assumptions, it would still be necessary to allow Manner affixes to select three different categories as their complement, namely v, aspect and manner. Selectional features on manner affixes, as well as selectional features on other syntactic heads merged in close proximity to manner affixes, are one of the key factors determining their distribution, alongside the sortal domain in which manner affixes are merged. This is the topic to which I turn in the next section.

3.4 Capturing the Distribution of Manner Affixes

In this section, I outline how the model developed in this dissertation can be used to capture the distribution of manner affixes in West Greenlandic. A summary of the findings from section 3.2 is repeated below.

(87) Summary of Linear Distribution

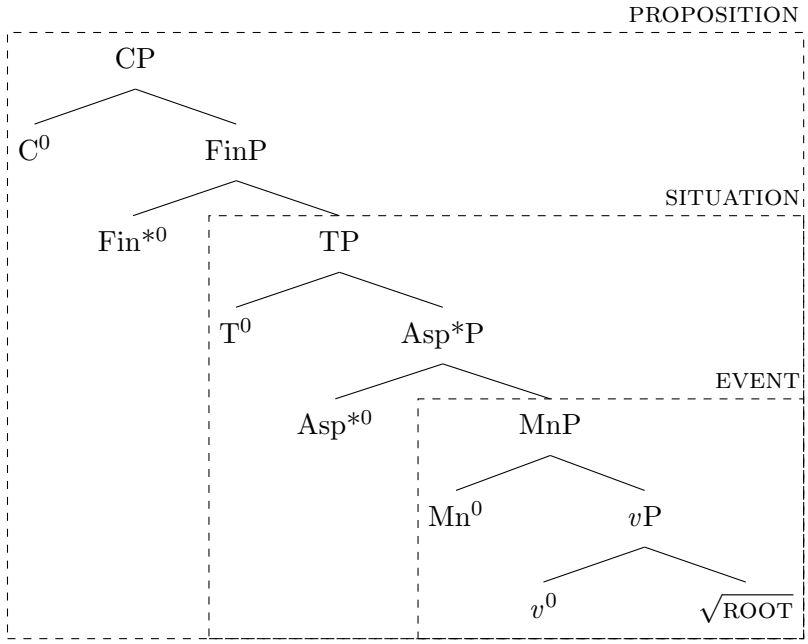
a. **Always further away from Lexical Root:** Mood, Irrealis, Deontic and Dynamic Modality, Negation, High Aspect

b. **Variable Order:** Low Aspect, Causatives, Manner, (Passives)

c. **Always closer to Lexical Root:** Applicative, Antipassives, Fossilized Aspect Markers

I follow the proposal of Ramchand and Svenonius (2014) and take the clausal spine to be divided into three distinct sortal domains. The three domains are EVENT, corresponding roughly to the expanded VP, SITUATION, corresponding roughly to the expanded IP/TP, and PROPOSITION, corresponding roughly to the expanded left periphery. For manner affixes, it is primarily the lowest EVENT domain and the transition point to medial SITUATION domain that are of interest. The EVENT domain is where the event is encoded. It is also in this domain that participants are introduced, as well as functional heads related to the manipulation of argument structure. Viewpoint Aspect is given as a transition point between the SITUATION domain and the EVENT domain (this is also where existential closure occurs). In the SITUATION domain grammatical information such as tense, modality and syntactic roles are encoded (i.e. functions traditionally found in the expanded IP/TP). The * in Fin^{*0} and Asp^{*0} shows that they are the transition points between the different sortal domains.

(88)



Under the assumption that morphology and syntax belong to the same domain, finite verbs in West Greenlandic should correspond to functional projections of the entire clausal spine since they always begin with a lexical root and end with a mood marker and agreement, presumably corresponding to a C-head. West Greenlandic verbs can thus be mapped to the three sortal domains of the clause, each embedded under the next, with the structure [[[EVENT] SITUATION] PROPOSITION]. Applying the same semantic categories used for auxiliary verbs and adverbs in Ramchand and Svenonius' analysis of English, we expect valency changing morphology, manner modifiers and low aspect markers to be limited to the EVENT domain, and modality markers to be limited to the SITUATION domain, and speaker and discourse-oriented affixes should be limited to the PROPOSITION domain.

High aspect, in the terminology used above, either represent the Asp* that marks the transition point between EVENT and SITUATION, or they are merged above the transition point, in the SITUATION domain. The semantic content of high aspect markers matches the expected semantic content of situation-oriented modifiers. They can thus be contrasted with low aspect markers, which are merged in the EVENT domain, the domain where we also find manner modifiers. Ramchand and Svenonius (2014) mention the manner adverb *well* as a kind of verb-phrase adverbial that is limited to the lowest domain. Moreover, in

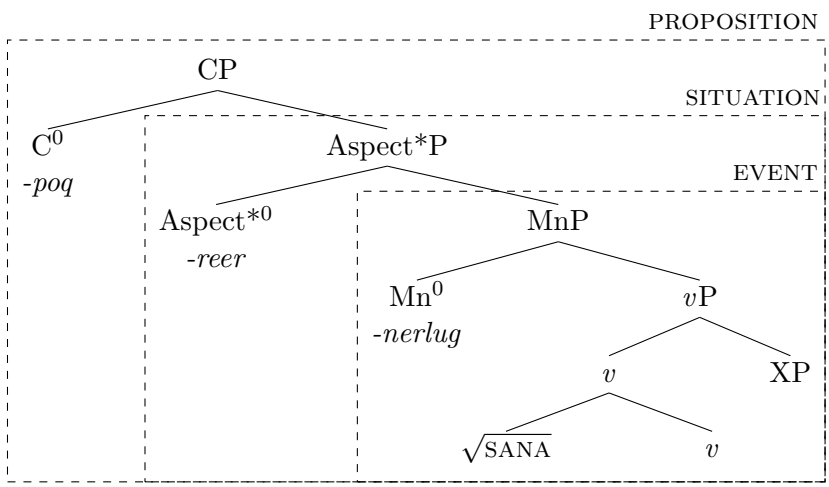
order to modify the manner in which an event unfolds, presumably existential closure (the operation that introduces existential quantification) cannot have already occurred, because if the event and its relevant participants have already been established, it cannot be subject to further modification (for instance via manner modifiers). Finally, the West Greenlandic data shows that manner-modifying affixes are limited to a relatively low position, not far away from the verb root itself. The distribution of manner affixes in West Greenlandic follows naturally from this understanding of the clausal spine, as applied to morphologically complex words in West Greenlandic.

I illustrate this line of reasoning using the minimal pair given in (49), reproduced below. Example (89a) is illustrated in the tree structure in (90). The indicative morphology and agreement is situated in C^0. In this clause, the manner modifier is situated inside the event domain, below the perfective aspect marker. The manner-modifying function can thus be interpreted, and the structure is grammatical. Compare this to example (89a), which is ungrammatical. This structure is illustrated in (91).

(89) a. sananerloreerpoq
sana-**nerlug**-reer-pu-q
make-**badly**-PRV-IND-3S.ABS
'She built badly.'

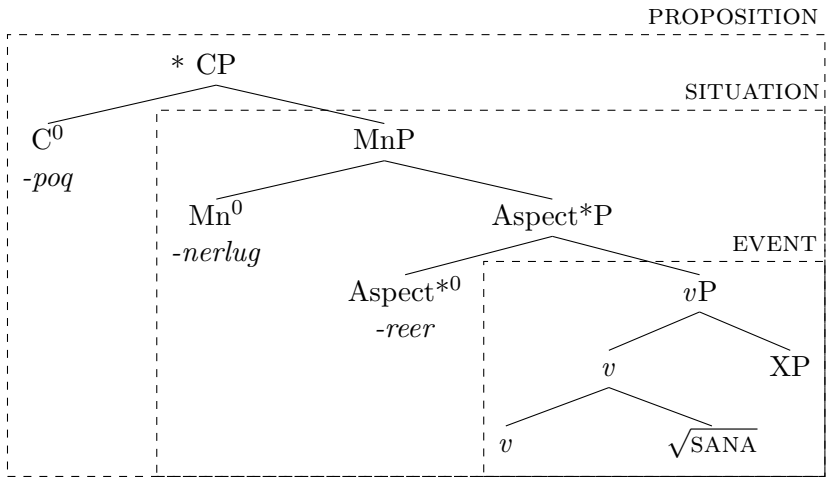
b. sanareernerluppoq
*sana-reer-**nerlug**-pu-q
make-PRV-**bad**-IND-3S.ABS

(90)



The tree structure in (91) illustrates limitations on hierarchical variation. Here the manner modifier is introduced after existential closure. This structure is ungrammatical. This is the case because manner modifiers assign properties to events, and adding such modification is not possible after existential closure. Ramchand and Svenonius (2014) likewise place manner adverbs in the lowest domain, stating that they cannot be merged in the medial domain after existential closure. Like in the tree structures above, the complement of Asp* is marked with a square, outlining the EVENT domain. The manner modifier is merged outside of this domain, a position where its event modification cannot be licensed, and the structure becomes ungrammatical. The star next to the highest nodes marks that the structure is ungrammatical.

(91)



While the tree structures above focus on the position of high aspect in relation to manner affixes, the same model likewise captures the distribution of manner affixes in relation to mood and modality as well. Modality is introduced in the medial domain, and mood in the highest domain. In both cases, they will be situated in a higher position in the clause spine than manner affixes, which is then reflected in their linear position further away from the lexical root than manner affixes.

By dividing up the clausal spine into distinct domains, and mapping these domains directly onto West Greenlandic verb complexes, the inability of functional categories like mood, modality and high aspect to appear closer to the lexical root than manner affixes follows naturally, without any additional stipulations. It also highlights the close correlation between the syntactic hierarchy and semantic scope, and how this is closely reflected in the linear order of verbal affixes

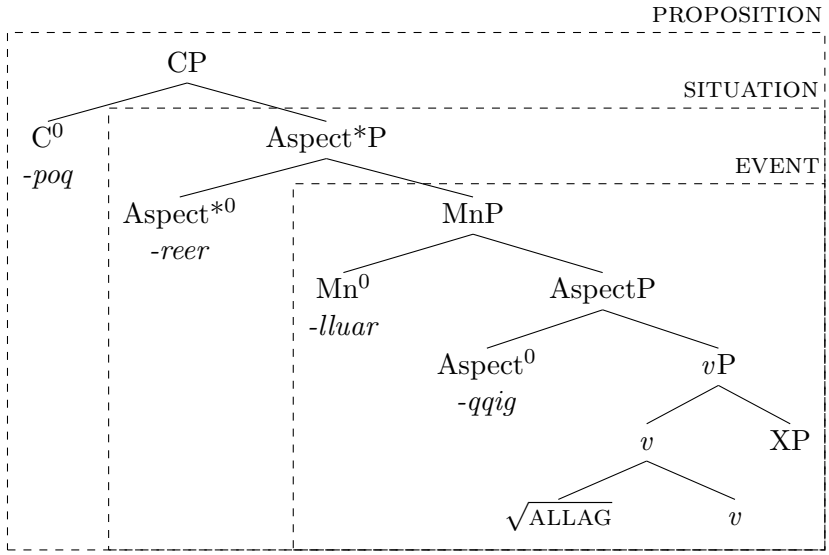
in West Greenlandic. This division into distinct domains can also capture the limited but productive variation in linear order and scope interpretation found for low aspect and manner, a topic that I turn to now.

Low aspect is situated inside the EVENT domain, just like manner affixes, since low aspect markers can be merged below both manner affixes and causatives, both of which are situated inside the EVENT domain. Since both affixes are merged inside the same domain, there are no a priori restrictions on the relative ordering of the two, allowing for variation in hierarchical order, which is then reflected in the linear order and scope interpretation. I illustrate this variation using the examples in (92). The hierarchical structure for (92a) is illustrated in (93). Here, the manner affix is situated higher than the low aspect marker (*-qqig*), but lower than the high aspect marker *-reer*), and it is still situated in the EVENT domain, and it can still fulfil its function as a manner modifier. The repetitive aspect marker combines first with the lexical root, and it is this combination that is modified by the manner affix, thereby yielding the interpretation that the repetition of the event was done in a good manner, but not that the previous writing event was done well. The structure for (92b) is illustrated in (94).

(92) a. arpaqqilluareerpoq
arpag-qqig-**lluar**-reer-pu-q
run-REP-well-PRV-IND-3S
'He ran again well (having not run well previously).'

b. arpalluaqqereerpoq
arpag-**lluar**-qqig-reer-pu-q
run-well-REP-PRV-IND-3S
'He ran well again (having run well previously also).'

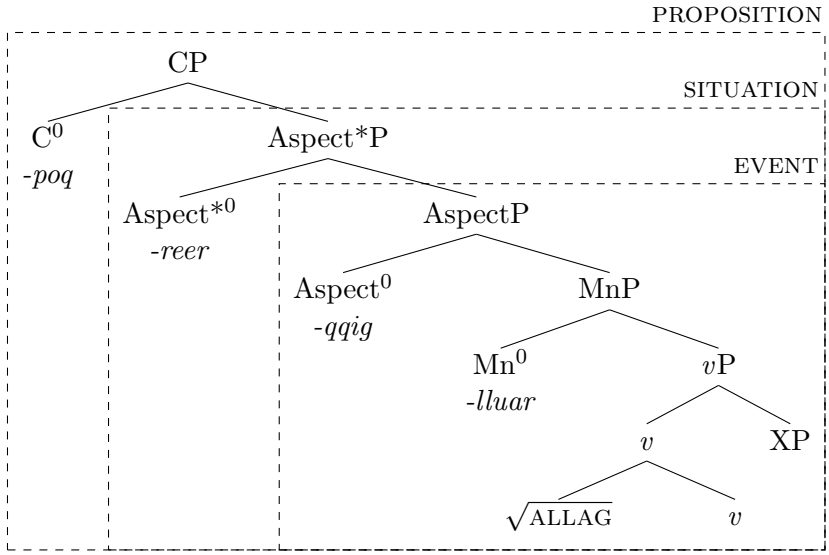
(93)



The figure in (93) illustrates the externally merged hierarchical structure. High aspect is labelled as Asp*, and the indicative mood marker is presumed to be the overt realization of a functional heads in the left periphery, here simply given the label C. The structure is simplified and only includes the relevant functional heads for illustrating the linear order of manner and aspect. The low aspect marker is labelled with Asp, and manner uses the label Mn. The syntactic structure reflects the scope relations, where the manner modifier is situated above the verb as well as the low aspect marker. In the model employed here, variation regarding the position of manner affixes is possible within this domain, i.e. within the complement of Asp*, but is it not possible for them to be merged outside of this domain.

In (92b), the repetitive aspect marker is situated above both the verb root and the manner modifier, taking scope over both of them and thereby yielding the interpretation that the writing event that was carried out in a good manner was repeated. Both the manner modifier and the repetitive aspect marker are situated in the event domain.

(94)



Below I illustrate the difference in semantic interpretation between the two examples in (92). Taking the aspectual affix *-qqig* to have similar semantic properties to a repetitive reading of the English 'again', its semantic interpretation can be represented as λPλe:∃e'[e'<e & P(e').P(e)], where e'<e stands for "e' occurred before e" (cf. Heim and Kratzer, 1998; Beck and Gergel, 2015). Manner is represented as outlined in (13) above, using the formalization ∃m [R(e, m) & GOOD (m)], which can be read as 'There exists an m(anner), such that m stands in an (unspecified) relation to e(vent) and m is good'. The semantic interpretation of (92a) is illustrated below, restricting it to the event denoted by the verb and the two aforementioned affixes.

(95) The Semantics of Manner<Repetitive

a. allag-qqig-**lluar**-
write-REP-**well**-

b. λe:∃e'[e'<e & write(e')]. write(e) & ∃m[R(e,m) & good(m)]

The manner modifier only targets the repeated writing event (write(e)), not the writing event that preceded the repetition (write(e')), thus yielding the correct semantic interpretation, where only one writing event with the manner value 'good' transpired. Compare this to the semantic interpretation of the verb when the affixes are reversed, as outlined below.

(96) The Semantics of Repetitive<Manner

a. allag-**lluar**-qqig-
write-**well**-REP-

b. λe:∃e'[e'<e & write(e') & ∃m[R(e',m) & good(m)]]. write(e) & ∃m[R(e,m) & good(m)]

When repetitive aspect is situated above the manner modifier, the event already has an established manner modifier, which is repeated together with the eventuality denoted by the verb, thus yielding the interpretation that two events unfolded, each modified by the semantic content denoted by the manner affix *-lluar*.

The data in (97) below (examples (a-b) repeated from (92) above) shows that the variable order for manner and low aspect is in a low position in the clause, since the position of the manner affixes and the repetitive aspect marker (97a-b) can vary in a position closer to the root than the higher perfective aspect marker. Example (97c) shows that the low aspect marker *-qqig* cannot appear further away from the root than the perfective aspect marker, exhibiting a similar pattern to that of manner affixes.

(97) a. arpaqqilluareerpoq
arpag-qqig-**lluar**-reer-pu-q
run-REP-well-PRV-IND-3S
'He ran again well.'

b. arpalluaqqereerpoq
arpag-**lluar**-qqig-reer-pu-q
run-well-REP-PRV-IND-3S
'He ran well again.'

c. *arpalluareeqqippoq
*arpag-**lluar**-reer-qqig-pu-q
run-well-PRV-REP-IND-3S

These examples corroborate the claim that variation in hierarchical order for manner affixes in relation to other functional categories takes place in the lowest EVENT domain of the clausal spine. Other kinds of morphology that are merged in this domain also exhibit variation in linear order with regards to manner modifiers, including valency changing morphology like causatives and passives,

as well as the internal ordering of a sequence of manner affixes. However, the same productive variation in linear order was not found for antipassives and applicatives. I speculate that this is due to selectional restrictions on antipassives and applicatives in West Greenlandic, rather than due to some broader grammatical constraint. As I show in subsection 4.3.2 in the next chapter, the ordering of valency changing morphology and verb-internal manner modifiers is subject to much cross-linguistic variation, as is expected under the model developed here.

In order to capture the linear distribution of manner affixes in relation to aspect markers in West Greenlandic, I proposed that some aspect markers are merged in the low EVENT domain, whereas some aspect markers are merged either in the medial SITUATION domain or the transition point between the two domains. This assumption raises the question of whether or not there are any limitations on which aspect markers can be merged in the different domains, and how the two are distinguished. I turn to these questions now.

There is a precedence in the literature for allowing some aspect markers to be merged in a low position in the clausal spine. For instance, Cinque (1999) gives repetitive, completive, and frequentative aspect, as examples of aspect projections that can merge below Voice (where manner adverbs are introduced), which would place them in a very low position in the clause. Similarly, Ramchand and Svenonius (2014) and Ramchand (2018) propose that verb-phrase selecting adverbs, of which the aspect adverb *completely* is given as an example, are merged in the lowest EVENT domain of the clause. Interestingly, repetitive, completive and frequentative aspect are all aspect markers that I have shown can be placed closer to the lexical root than manner affixes, corroborating the claim that these belong to a set of aspect markers that are merged in a low position in the clause.

However, I have shown that other aspect markers beyond these three can be situated below manner affixes. The affixes that I have found that can be merged lower than manner affixes include inchoative aspect (*-ler*), celerative aspect (*-jaar*, and prospective aspect (*-ngajag*), in addition to repetitive (*-qqig* and *-tar*), completive aspect (*-vig*) and frequentative aspect (*-kulaar/-kula*). This suggests that the original inventory of low aspect markers proposed by Cinque (1999) is too restrictive.

As an alternative, Travis (2010) argues that there is an aspect projection merged between VP and *v*P, which is primarily responsible for encoding lexical aspect. However, it is also possible for grammatical aspect markers to be merged in this position, thereby allowing grammatical aspect, which is prototypically externally

merged outside the vP, to be situated inside the verb phrase. In her discussion on Tagalog, Travis argues that the CV-reduplication found in the aspect system is the overt realization of a functional aspect head situated between the two VP projections. The semantics of this head is [+/-INCOMPLETE], making it similar to the perfective/imperfective distinction in its meaning. In her discussion on Navajo, the VP-internal aspect head encodes iterative aspect. Thus, while the main function of this low aspect head is to encode lexical aspect, it is possible for viewpoint aspect to be merged in this position as well, and there are no a priori restrictions upon the label of the aspect node merged inside the VP.

Wiltschko (2014) and Ritter (2014) argue that the perfect and imperfective aspect markers in Blackfoot are both merged inside the vP. They argue primarily on the basis of abstract nominalisations in the language, which take a unit smaller than vP as its complement, but nevertheless can include perfect and imperfective aspect markers. They take this to be evidence for the fact that there is an aspectual projection inside the VP-shell. Wiltschko, working within the Universal Spine Hypothesis framework, argues that aspect in Blackfoot is merged to CLASSIFICATION in her terminology, the lowest section of the clause. As such, it is merged below Point-of-View, the position which is traditionally associated with viewpoint aspect. This constitutes additional support for the claim that aspect markers can be merged in a very low position in the clausal domain, which is how we can derive the variation in terms of height and linear order for low aspect and manner-modifying affixes in West Greenlandic.

While the different accounts outlined above differ in details, they all allow aspect to be merged inside what is traditionally referred to as the verb phrase. However, they do differ in terms of which aspect markers can be merged in a low position. While Travis (2010) lists incompletive and iterative as explicit examples of aspect markers inside the verb phrase, she provides no explicit restrictions on the semantics of aspect markers in this position. Similarly, Wiltschko also does not provide any semantic restrictions. In contrast, Cinque (1999) provides explicit semantic content for the aspect modifiers that can be merged below manner, and thereby provides strong restrictions upon which type of aspect modifiers can be merged in a low position in the clause. Those aspect markers are frequentative aspect, repetitive aspect and completive aspect. Note that these predictions are not borne out in the data presented here, as celerative (*-jaar*), 'early', inchoative (*-ler*) and prospective aspect (*-ngajag*) can be merged both below and above manner modifiers, suggesting that a less restrictive model is needed.

It is beyond the scope of this dissertation to fully explore the kinds of aspect markers that can be merged in the lower parts of the clausal spine. Similarly, an

equally interesting question would be to explore what kinds of aspect markers are limited to the lowest domain, i.e. aspect projections that may never appear in the medial domain of the clausal spine. Instead, the key point I want to make here is that there is strong empirical and theoretical support for placing at least some aspect markers in a low position in the clausal spine. The ability of some aspect markers to be merged in such a low position is what opens up for variation in hierarchical order in relation to manner modifiers.

To reiterate, I propose that manner affixes in West Greenlandic cannot be merged above high aspect markers, because then they would be outside of the EVENT domain, and their manner-modifying function cannot be licensed. Interestingly, the affix encoding 'quickly' can appear further away from the root than the perfective aspect marker *-reer* in some examples. One such example is given in (98a) below. However, when appearing in this position, the manner interpretation is not available, and the affix *-gasuar* is instead given a temporal interpretation, where it encodes that the event encoded by the verb was terminated within a short duration of time. Compare this to (98b), which is ungrammatical.

(98) a. allareerasuarpai
allag-reer-**gasuar**-pa-i
write-PRV-**quick**-IND-3P.ABS.3S.ERG
'She finished writing them quickly (e.g. finishing writing was done in a short amout of time).'

b. *sanareernerluppoq
*sana-reer-**nerlug**-pu-q
make-PRV-**bad**-IND-3S.ABS

Since the suffix *-gasuar* in the example above is situated in the medial SITUATION domain, the manner interpretation is not available, and a temporal interpretation is instead forced. This stands in contrast to (98b), where the manner affix *-nerlug* cannot have its semantic content interpreted and the structure is regarded as ungrammatical. These patterns corroborate the claim that high aspect is situated in a position that is higher than where manner modification is possible, making the temporal interpretation seen above the only one available. This patterns again highlights the multifunctionality of some of the functional items in West Greenlandic.

Another interesting pattern was found for the aspect marker *-tar*, which also displays a degree of multifunctionality. It can encode both habitual and repet-

itive aspect, and often context is used to determine its meaning. In example (99a), it is situated above the manner modifier and has either a repetitive or a habitual interpretation. Interestingly, the habitual interpretation is not available if it appears closer to the root than a manner affix. If it appears closer to the root than a manner affix, only the repetitive interpretation is available, as is shown in example (99b).

(99) a. sulinerluttarpoq
suli-**nerlug**-tar-pu-q
work-**badly**-REP/HAB-IND-3S.ABS
'She usually works badly / She works badly again.'

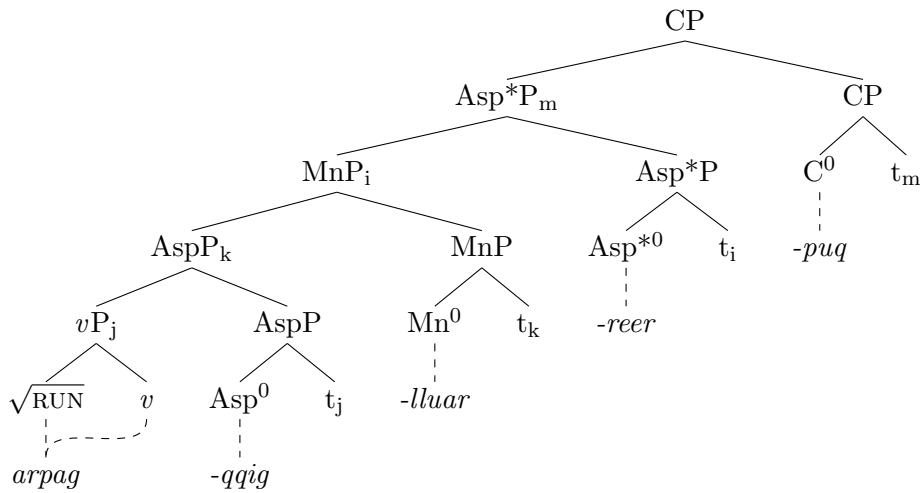
b. sulisarnerluppoq
suli-tar-**nerlug**-pu-q
work-REP/(*HAB)-**badly**-IND-3S.ABS
'She worked again badly.'

In the terminology adopted here, the habitual interpretation would fall under high aspect, and this interpretation is not available in the EVENT domain. When the aspect marker *-tar* is situated further away from the lexical root than the manner affix, either interpretation is possible, and it might be situated either in the EVENT or the SITUATION domain. In contrast, when situated closer to the root than the manner affix, only the repetitive interpretation is available, and it would fall under low aspect. These patterns support the close correlation between ordering and interpretation, as well as dividing the clause up into distinct domains that limit the distribution and interpretation of functional categories.

Before ending this section, I will outline one proposal for how the functional heads in the clausal spine are mapped to verbal affixes in West Greenlandic (although other alternatives are also compatible with the findings presented here). I build upon the work of Compton and Pittman (2010) for Inuktitut by assuming that West Greenlandic has a constraint where a phase must be realized by a single phonological word, the phases in the languages being CP and DP. However, I diverge from this framework and instead claim that all the verbal affixes in West Greenlandic are functional heads. The suffixes in West Greenlandic are derived via cyclical phrasal movement with pied-piping (cf. Julien, 2002 for the use of this movement operation (also known as roll-up movement) to derive suffixes in head-final languages). The CP phase is then mapped to a single phonological word, where all functional heads are realized as suffixes.

Via cyclical movement to the specifier of each functional projection with pied-piping, the suffixal status of all the functional heads can be derived. The cyclical movement is illustrated with the syntactic structure in (100), with traces marked with 't' for clarity. The phonological exponent is written in italics below each node, connected to the syntactic node via a dashed line. Since the verbalising node lacks any independent phonological realization, I propose that the lexical root and its classifying node are the target of a Span (Svenonius, 2012) that spells out both syntactic heads as *arpag*

(100)



In this section, I have outlined how the model adopted in this dissertation can be used to capture the linear distribution of manner affixes in West Greenlandic. I showed that it can be captured if one assumes that verb complexes in West Greenlandic mirror the structure of the clausal spine, and that this clausal spine is divided into distinct domains that limit the distribution of functional categories and their interpretation. I also briefly outlined how the affixes in West Greenlandic verb complexes can be derived as suffixes via cyclical phrasal movement with pied-piping.

3.5 Concluding Remarks

The goals of this chapter were to investigate the semantic properties of manner affixes in West Greenlandic, their distributional properties inside verb complexes and their syntactic status. The motivation for doing this was that they have not been fully explored in the language previously, nor has there been any detailed

studies of verbal affixes encoding manner information. Furthermore, this type of data has important implications for our understanding of the nature and structure of the clausal spine, as well as the relationship between morphology and syntax.

The semantics of manner affixes in West Greenlandic was shown to be relatively simple, often forming binary pairs based on more general semantic categories for manner modification. Their limited semantic content, their distribution as verbal affixes and the overall structure of West Greenlandic verbs were taken as evidence in favour of treating them as functional heads merged in the clausal spine. It was shown that their distribution inside verbal complexes is variable, although there are restrictions on this variation. This productive albeit limited possibility for variation in linear order and height was taken as arguments against a highly restricted, cartographic conception of the clausal spine. Instead, I argued that the data supports a conception of the clausal spine as divided into separate domains, with manner affixes being limited to the lowest of these, the EVENT domain. While variation within this domain was relatively free, barring certain selectional restrictions on individual functional heads in this domain, manner affixes are limited to this domain, thus yielding the limited but productive variation in scope.

The distribution of manner affixes followed naturally from the anti-lexicalist model adopted here, as manner adverbs also are predicted to be introduced in the lowest domain of the clause. The structure of West Greenlandic verb complexes can thus be taken to mirror the structure of the clausal spine. The fact that the structure of the morphologically complex verbs in the language can be accounted for using a strictly syntactic model provides further support for an approach to morphology and syntax where both are subsumed within a single combinatorial system. A morphosyntactic approach to the grammatical architecture, where morphological and syntactic structure are both built within the same module and where there is no morphology-syntax interface, is also preferable by virtue of parsimony, since it leads to an overall simpler theoretical framework. Furthermore, this approach also has stronger explanatory force since it can account for the demonstrated parallels between morphological and syntactic structure, parallels that other models are forced to simply stipulate.

This chapter has contributed to previous knowledge by providing a detailed case study on the semantic and grammatical properties of a cross-linguistically relatively rare and poorly understood linguistic phenomenon. Moreover, the data discussed here has also been shown to have important theoretical implications. However, it remains an open question whether the properties attested

for verb-internal manner modifiers in West Greenlandic can be generalised, or if the patterns discussed here are simply due to some quirk of West Greenlandic grammar. In the next chapter, I will take a broader cross-linguistic perspective on verb-internal manner modifiers to test the predictions made by the model adopted in this chapter on a broader language sample.

Chapter 4

Typological Survey

In the previous chapter, manner affixes in West Greenlandic are explored in detail. I propose that they are the overt realization of functional heads, and that their linear distribution inside verb complexes can be predicted if one assumes that the ordering of affixes reflects a syntactic hierarchical structure. The aim of this chapter is to take a broader, typological perspective to see if it is possible to recreate the findings in the previous chapter on a larger language sample. The language sample is given in Table 4.1, below repeated from section 2.2.1.

I propose that it is necessary to make a distinction between manner affixes, which only ever appear as verbal affixes, and incorporated manner modifiers, which can appear as independent constituents as well as incorporated into finite verbs. I use the term verb-internal manner modifiers to refer to both categories. Incorporated manner modifiers have richer semantic content, and cover a larger semantic range than manner affixes. Furthermore, incorporated manner modifiers can be morphologically complex, and they can appear as independent constituents, in contrast to manner affixes, which are morphologically simplex and only appear as verbal affixes. I propose that the differences between the two can be reduced to the fact that incorporated manner modifiers contain lexical roots, whereas manner affixes are the overt realization of syntactic functional heads.

In this chapter, I argue that both types of verb-internal manner modifiers are connected to the same manner functional head. A consequence of this is that both types have the same restrictions upon their linear distribution in relation to other verbal affixes or incorporated constituents. I show that the same syntactic model that was used in the previous chapter can likewise capture the distribution

of verb-internal manner modifiers in this larger sample, further corroborating the claim that the ordering of constituents inside finite verbs reflects a syntactic hierarchical structure.

Table 4.1: Typology language sample

Area	Family	Genera	Language
N. America	Unangan-Yupik-Inuit	Unangan	*Atkan Aleut*
		Inuit	*West Greenlandic*
	Algic	Algonquian	*Blackfoot, Ojibwe*
	Uto-Aztecan	Nahuan	*Classical Nahuatl*
		Numic	*Ute (C.R.N.)*
	Wakashan	Southern	*Nuu-chah-nulth*
	Kiowa-Tanoan	Kiowa	*Kiowa*
		Towa	*Jemez Towa*
	Sahaptian	Nez Perce	*Nez Perce*
		Sahaptin	*Sahaptin*
S. America	Mayan	Ch'olan	*Ch'ol*
		Yucatecan	*Itzaj*
	Pano-Tacanan	Tacanan	*Cavineña*
	Arawan	Paumari	*Paumari*
	Mixe-Zoquean	Zoque	*Zoque (S.M.C.)*
		Mixe	*Mixe (S.H.)*
	Isolates		*Urarina*
			Puinave
Oceania	Sepik	Sepik Hill	*Alamlak*
		Abau	*Abau*
		Ram	*Awtuw*
	Ramu-Lower Sepik	Lower Sepik	*Yimas*
	Macro-Gunwinyguan	Central gunwinyguan	*Bininj Gun-Wok*
Eurasia	Chukotko-Kamchatkan	Chukotian	*Chukchi*
	Sino-Tibetan	Brahmaputran	*Garo*
		Macro-Tani	*Galo*
	Austroasiatic	Mundaic	*Munda*
	Isolates		*Ainu*
			Nivkh

I discuss the categorical and syntactic status of verb-internal manner modifiers in 4.1, arguing that a distinction must be made between manner affixes and incorporated lexical roots functioning as manner modifiers. In 4.2, I discuss their semantic content, and propose statistical implicational universals for the semantic content of verb-internal manner modifiers across the language sample. In 4.3, I discuss the position of verb-internal manner modifiers inside verb complexes, showing that the predictions made by the model developed in the previous chapter holds for all the languages included in the sample. Preliminary results regarding the diachronic origin of manner affixes are given in 4.4, and a brief summary of the findings of this chapter is found in 4.5.

4.1 Affixation and Incorporation

I propose that it is necessary to make a distinction between manner modifiers as verbal affixes, and manner modifiers as incorporated constituents. Manner modifiers that can only ever appear as affixes on verbs are called manner affixes throughout this dissertation. They were the focus of the previous chapter on West Greenlandic. In contrast, manner modifiers that can appear as independent constituents, i.e. not attached to lexical roots, and as phonologically and morphologically integrated into a verbal stem, are called incorporated manner modifiers. I use the term verb-internal manner modifiers to refer to both categories. An illustration of an incorporated manner modifier is given from Classical Nahuatl in (101) below, which can be compared to the manner affix in West Greenlandic. Unless stated otherwise, the examples from West Greenlandic are my own.

(101) *Classical Nahuatl* (Andrews, 2003, pp. 334, 515)

a. ni-**ihciuh**-caa-yauh
1s-**hurry-**ADV-go
'I am going in a hurry.'

b. niman **ihciuh**-caa tlaihuah
immediately **hurry-**ADV send.messengers
'Immediately, he quickly set out messengers.'

(102) *West Greenlandic*
sulilluaruaannarpoq
suli-**lluar**-juaannar-pu-q
work-**well**-always-IND-3S.ABS
'She always works well.'

In (101), we can see that the manner modifier *ihciuhcaa* can appear both incorporated into a finite verb (101a) and as an independent constituent (101b). This stands in contrast to the manner modifier in the West Greenlandic example (*-lluar*), which only appears as an affix attached to a verbal stem. Within the typological literature, there is a convention of classifying polysynthetic languages based on whether or not they incorporate nouns and verbs into verbs (Mattissen, 2004, 2017). Languages that do this are contrasted with polysynthetic languages that only rely on affixation to create complex verbs. West Green-

landic, and Inuit languages in general, are categorized into the latter category, whereas Classical Nahuatl falls into the former category.

This distinction between two subtypes of polysynthesis is illustrated in the examples below, using noun incorporation from Huauhtla Nahuatl, and the equivalent structure from West Greenlandic, which makes use of a verbaliser instead.

(103) *Huauhtla Nahuatl* (Merlan, 1976, p. 185)

a. aškeman ti-'-k^{w}a nakatl
never 2s-3s-eat meat
'You never eat meat.'

b. na' ipanima ni-naka-k^{w}a
1s always 1s-meat-eat
'I always eat meat.'

(104) *West Greenlandic*

a. neqi neri-nngisaannar-pa-t
meat eat-never-IND-2sERG.3sABS
'You never eat meat.'

b. neqi-sor-juaannar-pu-nga
meat-consume-always-IND-1s.ABS
'I always eat meat.'

Comparing the two structures, we can see that the verb $k^{w}a$ in Huauhtla Nahuatl is the same in both examples. Following the analysis of noun incorporation developed by Baker (1996), we can conclude that this is a concatenation of two lexical items, one nominal and one verbal. This stands in contrast to the West Greenlandic example, where the independent verb *neri-* is distinct from the verbal form attached to the nominal item (*-sor*). The difference between the two can be summarized as follows: Prototypical noun incorporation includes two lexical roots, both of which can appear as independent constituents, whereas incorporating verbs consist of a verbaliser and a nominal root, of which only the latter can appear as an independent constituent. In terms of the syntactic structure of the two, the former contains two lexical roots, whereas the latter only contain one lexical root.

By analogy, I make the same distinction for verb-internal manner modifiers. On the one hand, there are verb-internal manner modifiers that only appear as affixes on a lexical verb, i.e. manner affixes, and there are those that appear as independent constituents, not attached to another lexical root, and as incorporated, i.e. incorporated manner modifiers. This distributional difference is the operational criterion for distinguishing the two. I propose that manner affixes are the overt realizations of functional syntactic heads (as discussed in detailed in Chapter 3), whereas incorporated manner modifiers also contain a lexical root.

Incorporated manner modifiers and manner affixes also differ in terms of morphological complexity and semantic content. For instance, the incorporated manner modifier *ihciuhcaa* in example (101) above is morphologically complex. In contrast, all manner affixes that were found in the typological sample are morphologically simplex. Furthermore, incorporated manner modifiers are able to encode richer semantic content and also capture a larger semantic range than manner affixes. This is illustrated in example (105) below.

(105) *Ute, Colorado River Numic* (Givón, 2011, p. 58)

a. **pia**-'apagha-y
sweet-talk-IMM
'(s/he) is sweet-talking.'

b. **mama**-paghay-wa-y
woman-walk-IMM
'(he) woman-walks/ walks like a woman.'

In Ute, *pia* is an adjective meaning 'sweet', and as can be seen in (105a), it can function as a manner modifier if it is incorporated into a finite verb. In (105b), the noun *mama* 'woman' is incorporated, thereby giving it a function as a manner modifier. The richer semantic content of these verb-internal manner modifiers, and their alternative status as adjectives and nouns, provides further evidence in favor of not analysing them as simple functional heads, but rather as containing lexical roots.

I begin by outlining my analysis of manner affixes, before discussing incorporated manner modifiers in greater detail. The analysis of manner affixes is adopted from the analysis of West Greenland. The syntactic status of manner affixes in the language was discussed extensively in the previous chapter, and the analysis developed there can be adapted to the other languages as well (see

section 3.3 in the previous chapter for details). Nuu-chah-nulth (Rose, 1981), Sahaptin (Jansen, 2001), Atkan Aleut (106), Blackfoot (107) and Urarina (108) are languages that exclusively have manner affixes. Some examples are given below.

(106) *Atkan Aleut* (Bergsland, 1997, p. 120)
tunuxˆta-**du**-za-laka-ting ii
talk-**fast**-HAB-NEG-CNJ.1S Q
'Do I talk slowly enough?'

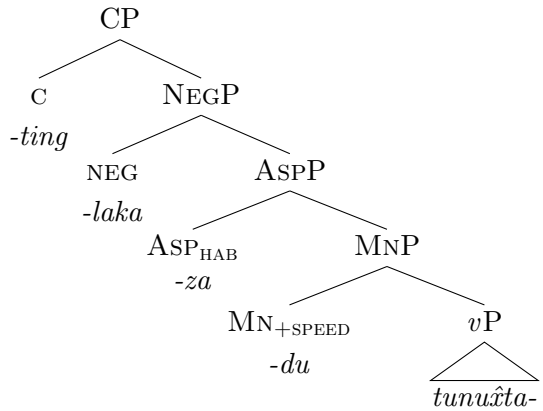
(107) *Blackfoot* (Frantz, 1991, p. 90)
kit-ik-á-**sok**-a'po'taki
2S-very-DUR-**well**-work
'You work really well.'

(108) *Urarina* (Olawsky, 2006, p. 672)
eno-a-**uri**-ni-u
enter-CAU-**fast**-DSTL-IMP
'Quickly go make him enter!'

Like in the previous chapter, I argue that these manner affixes are syntactic functional heads merged in the clausal spine. The functional heads have semantic features that can be given a positive and a negative value, thereby deriving the basic semantic types of manner modifiers. The distribution of manner affixes and their semantic content will be discussed more extensively in the two following sections. Here I only focus on their syntactic status.

The tree structure in (109) illustrates an approximate analysis of the verb in example (106) from Atkan Aleut. All affixes are treated as functional heads, with the agreement morphology being hosted by the C-head (see the discussion of agreement in the related language West Greenlandic in the previous chapter). The structure is simplified and only contains heads that have an overt phonological realization. These functional heads are then concatenated to form a morphologically complex finite verb. Manner is illustrated in the tree structure using the label Mn.

(109)



As is illustrated in (109), the manner affix is the overt reflex of a functional projection with the label 'Manner' that heads its own functional projection. The functional head carries a semantic feature (SPEED) that provides the specific semantic interpretation of the manner modifier.

I now illustrate how languages with incorporated manner modifiers can be analysed. A language with incorporated manner modifiers is Classical Nahuatl. Such modifiers can be morphologically complex. The examples in (110) are repeated from above. In (110a), the suffix *-caa*, used to derive adverbs, shows that the adverbial modifier is morphologically complex. In this example, the manner modifier *ihciuhcaa* is an independent constituent. When it is incorporated into a finite verb, it retains the same form, and is morphologically complex in this structure as well. This pattern is illustrated in example (110b).

(110) *Classical Nahuatl* (Andrews, 2003, 334 & 515)

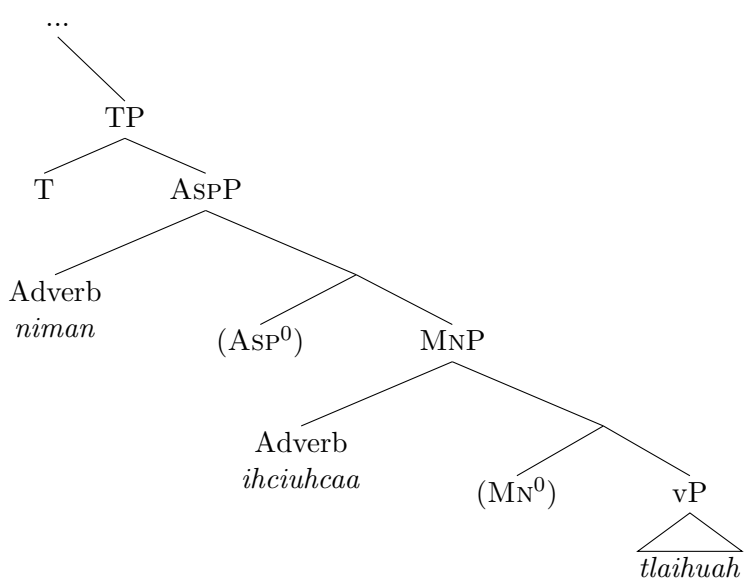
a. niman **ihciuh**-caa tlaihuah
immediately **hurry**-ADV send.messengers
'Immediately, he quickly set out messengers.'

b. n-**ihciuh**-caa-yauh
1s-**hurry**-ADV-go
'I am going in a hurry.'

For (110a), where the manner modifier is realized as an independent constituent, the manner adverb are situated in the specifier position of a functional projection headed by a manner functional head. I thus adopt the cartographic analysis of adverbs, where the function of the adverb is licensed by a functional head (cf.

Cinque, 1999, see also 2.3.2). In the specifier position, the manner modifier is a maximal projection (i.e. a phrase) and it is linearized as an independent constituent. Since it is not a syntactic head, it does not concatenate with the other syntactic heads in the hierarchy and does not incorporate into the finite verb alongside other functional material in the spine. The aspectual adverb *niman* 'immediately' is analysed using the same assumptions. The structure is illustrated in (111) below.

(111)

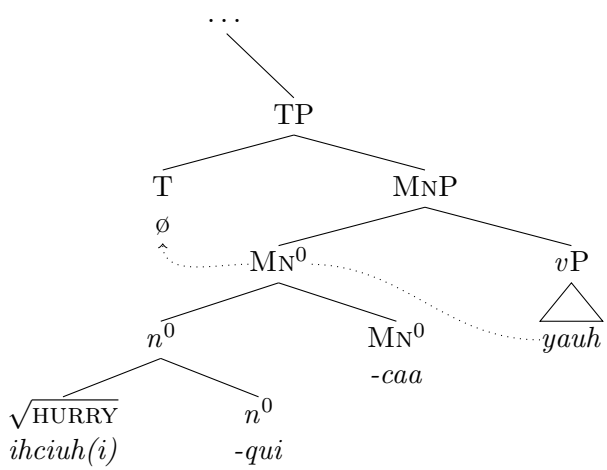


A central assumption that I make throughout this dissertation is that morphologically complex words are the result of a concatenation of syntactic heads, and I extend this to include incorporated manner modifiers. I propose that lexical roots can be externally merged with the manner functional heads. This takes place in a parallel workspace (see Collins and Stabler, 2016 for a formal description). This morphologically complex head is merged into the extended verbal projection, and projects a manner phrase. The overall structure will be the same as for manner affixes, with the exception that the manner syntactic head is morphologically complex since it also contains a lexical root.

I use the verb complex in (110b) to illustrate this line of reasoning. The incorporated manner modifier in this example is morphologically complex. It is ultimately derived from the verb *ihcihui* 'to hurry' via nominalisation *ihciuhqui* 'one who has hurried' (Andrews, 2003, p. 343), although the nominaliser is not visible in the adverb form. Thus, the example could be more accurately

paraphrased as 'I am like-the-one-in-a-hurry-going'. The suffix used to derive an adverb is the overt realization of the functional manner head licensing the manner interpretation (another possibility is that the marker *-caa* is the overt realization of an *adv*-head, and the manner head is not overtly realized). This structure is illustrated in (112) below.

(112)



The three relevant heads that are concatenated in the illustration above are the verb, the complex manner head, and T, illustrated using the dotted line. Note that while tense is an inflectional category in Classical Nahuatl, there is no overt marking for the present tense. However, T is included in the tree structure for illustrative purposes. As the manner modifier is a syntactic head merged in the clausal spine, it will concatenate with other syntactic heads (i.e. the verb and T), and will be linearized as an incorporated constituent of the finite verb. By allowing manner modifiers to either be merged directly into the manner functional had, or adjoined as a specifier in the manner functional projection, Classical Nahuatl can realize the manner modifier *ihciuhcaa* either as an independent adverb, or as incorporated into the finite verb.

Since there is a lexical root present in the incorporated manner modifier structures, the semantic content encoded by the manner modifier does not have to be encoded via semantic features of the functional manner head, as was the case for manner affixes (see 3.4 for details).

Note that having one type of verb-internal manner modifier does not necessarily exclude the possibility of another. Both Ojibwe (Valentine, 2001) and Yimas (example below) have both types of verb-internal manner modifiers, showing that

the two categories are not mutually exclusive. The manner modifier *kaykaykay* 'quickly' can appear both as an independent constituent as well as integrated into a finite verb, and would be classified as an incorporated manner modifier. This variation is illustrated in examples (113a) and (113b). In contrast, the manner modifier *mamang* 'slowly' can only appear as an affix on a verb, not as an independent constituent (113). VIII in the example marks agreement with a particular noun class.

(113) *Yimas* (Foley, 1991, p. 342)

a. angka-**kaykaykay**-cu-impu-pu-n
HORT.DL-**quickly**-out-go.by.water-away-IMP
'Let us go outside quickly!'

b. **kaykaykay** angka-cu-impu-pu-n
quickly HORT.DL-out-go.by.water-away-IMP
'Let us go outside quickly!'

c. kacmpt ya-kay-**mamang**-arkat-ncut
canoe VIII.P.OBJ-1P.SBJ-**slowly**-paddle-R.PST
'We paddled the canoes slowly.'

The proposal outlined here makes a few predictions regarding the differences between manner affixes and incorporated manner modifiers. Since incorporated manner modifiers include lexical roots, it is predicted that the semantic content that they encode is richer and covers a larger semantic range. It was shown above that this prediction is borne out (see example (105) above). Another prediction is that both manner affixes and incorporated manner modifiers should have the same distribution in relation to other functional categories inside verbal complexes, since they are both connected to the same syntactic head. I explore this topic in 4.3, and show that the predictions are borne out in the language sample explored here.

Another prediction is that not only adverbs can appear as incorporated manner modifiers, but other lexical classes as well. Since lexical roots are assumed to lack a lexical category in the presyntactic lexicon, roots that appear as verbs, nouns and adjectives are predicted to be able to incorporated as manner modifiers as well. This prediction is borne out in Ute, as illustrated in (105) above, where both a noun and an adjective function as incorporated manner modifiers. Indeed, a recurring pattern in the sample explored here was for adjectives and stative verbs to exhibit this behavior. In Ainu it is possible for stative verbs to

function as manner modifiers if incorporated into a finite verb. In Ainu, *moyre* also function as a stative verb meaning 'to be slow', and in the example below it functions as a manner modifier.

(114) *Ainu* (Shibatani, 1990, p. 71)
rakti apa a-**moyre**-caka
hung door 1S-**slow(ly)**-open
'I opened the suspended door slowly.'

In Ainu, the lexical root $\sqrt{\text{MOYRE}}$ 'be.slow' can be merged with v, in which case it functions as a verb, or it can be merge with Mn, in which case it will function as a manner modifier. The semantic content is the same, what differs is to what it assigns the property 'slow'. When it functions as a verb, it assigns 'slow' to an entity, and when it functions as a manner modifier, it assigns 'slow' to an event.

To reiterate, I propose that there are two types of verb-internal manner modifiers, those that contain lexical roots, and those that only are the overt reflexes of functional syntactic heads. This proposal makes predictions regarding the morphosyntactic distribution and the semantic content of the two types. For manner affixes (verb-internal manner modifiers that only appear as verbal affixes), the prediction is that their semantic content is limited to the five basic semantic categories (see section 4.2 and Table 4.2 below for details), namely SPEED, VALUE, CARE, STRENGTH and NOISE. The inverse prediction is made from semantic content. If any other semantic content than the basic five categories can be encoded, the prediction is that the modifiers should contain a lexical root and, barring any other restrictions, should also be able to appear as independent constituents. This prediction goes from semantic properties (beyond the five basic categories) to a grammatical property (able to appear as independent constituents). As we shall see, both of these predictions are borne out in the language sample explored here. The manner affixes found in the language sample are limited to the five basic categories, and verb-internal manner modifiers that encode any other semantic content can also appear as independent constituents.

In this section, I argue that it is necessary to make a distinction between manner affixes and incorporated manner modifiers. I propose that manner affixes are simply the overt reflexes of functional syntactic heads, whereas incorporated manner modifiers also contain lexical roots, in addition to functional syntactic heads, making them syntactically complex. The predictions made by this pro-

posal is explored further in the following sections. First, I explore the semantics of verb-internal manner modifiers (4.2), before I discuss their linear distribution inside verb complexes (4.3).

4.2 Semantics of Verb-internal Manner modifiers

I base the classification of the semantics of verb-internal manner modifiers on the categories proposed by Hallonsten Halling (2018), with the addition of the category STRENGTH. Moreover, I build upon this previous proposal by proposing that each semantic category can be assigned a positive or a negative value, yielding 5 pairs. These basic types were used to describe and classify the manner affixes in West Greenlandic, and they are found in all languages with verb-internal manner modifiers in the language sample employed here. The fact that several of the languages included in the sample also have manner modifiers of the type STRENGTH further corroborates the claim that it is necessary to add a fifth category. Table 4.2 presents an overview of the basic semantic categories of manner modifiers. An approximate English translation of some of the typical manner modifiers of each category is also given in the table below.

Table 4.2: Basic semantic categories of manner modifiers

Semantic class	+	-
SPEED	*'quickly'*	*'slowly'*
VALUE	*'well'*	*'badly'*
CARE	*'carefully'*	*'recklessly'*
STRENGTH	*'hard'*	*'softly'*
NOISE	*'loudly'*	*'quietly'*

Examples illustrating all five categories are given below, each including examples with both a positive and a negative value. The first of each pair contains the manner modifier with a positive value, and the second example contains the manner modifier with a negative value.

(115) SPEED

a. *Zoque, San Miguel Chimalapa* (Johnson, 2000, p. 350)
ʔəy yuk.cəm-**pəʔ**-wə
3ERG up.load-**fast**-CPL
'He loaded it up rapidly.'

b. *Chol* (Vázquez Álvarez, 2011, 104f)
ta=ix ke i-cha'-**k'uɲ**-jap-ø i-sa
PRV=already PROSP 3.ERG-again-**slowly**-drink-3.ABS 3-pozol
'He started again slowly to drink his pozol.'

(116) VALUE

a. *Quileute* (Andrade, 1933, p. 262)
ha't'c-i-kits
good-LNK-dance
'He dances well.'

b. *Alamblak* (Bruce, 1984, p. 162)
watextltailn-**beb**-më-m
hear-**badly**-R.PST-3p
'They heard badly.'

(117) CARE

a. *Nuu-chah-nulth* (Nakayama, 2001, p. 67)
naʔa:-**atah**-
hear-**trying.to.catch**-
'She listened carefully.'

b. *Nez Perce* (Cash, 2004, p. 65)
hi-**tokwala**-yeqi-k-e
3.NOM-**carelessly**-to.spill-k.element-PST
'He poured (it) carelessly.'

(118) NOISE

a. *Chukchi* (Comrie, 1981, p. 250)
tə-**majngə**-vetɣav-ərkən
1S-**loud**-speak-PRS
'I am speaking loudly.'

b. *Ojibwe* (Rhodes, 1985, p. 92)
bzaani-wiisni-0
quietly-eat-3S
'He's eating quietly.'

(119) STRENGTH

a. *Itzaj* (Hofling & Tesucún, 2000, p. 382)
tan-u-**chich**-meyaj
DUR-3-**hard**-work
'S/he works hard.'

b. *Garo* (Burling, 2003, p. 150)
dok-**srok**-a
hit-**light**-PRS
'to hit lightly'

In this chapter, I rely on data available in grammatical descriptions, which often vary in terms of breadth and depth for different languages. A consequence of this is that any given language in the language sample might have a larger inventory of verb-internal manner modifiers than what is included in the grammatical descriptions used here. This is especially the case for languages with incorporated manner modifiers, since if it is a highly productive process, not all such modifiers will be included in a reference grammar. With this caveat in mind, I now outline the cross-linguistic distribution of these basic categories across the language sample.

The distribution of the basic semantic categories in the language sample is illustrated in Table 4.3 below. By simply looking at the distribution of the basic semantic categories for manner modifiers inside verbs we can see that SPEED and VALUE are more common than the other three types. Interestingly, Hallonsten Halling (2018) points out SPEED as the most basic type of manner modifier, and she also points out VALUE in one of her proposed universals, where she claims that if a language has general modifiers, the semantic type VALUE will be one of them. The findings here can thus be said to fall in line with her conclusions, as VALUE alongside SPEED appear to be the most common semantic types for verb-internal manner modifiers.

Table 4.3: Basic semantic categories across the language sample

Semantic Category	Number of Languages
SPEED	28
VALUE	20
STRENGTH	12
CARE	11
NOISE	8

Table 4.4 provides an illustration of the distribution of the basic semantic categories across the languages included in the sample. The table includes the distribution for both manner affixes and incorporated-manner modifiers, since the proposed universals hold equally well for both types.

Table 4.4: Distribution of basic semantic categories

	SPEED	VALUE	CARE	NOISE	STRENGTH
Bininj Gun-Wok	✓	✓	✓	✓	✓
Yimas	✓	✓	✓	✓	✓
West Greenlandic	✓	✓	✓		✓
Galo	✓	✓		✓	
Classical Nahuatl	✓	✓	✓	✓	
Ojibwe	✓	✓	✓	✓	
Alamblak	✓	✓	✓	✓	
Itzaj	✓	✓		✓	✓
Paumari	✓	✓			✓
Garo	✓	✓			✓
Mixe (SH)	✓	✓			✓
Ainu	✓	✓			✓
Atkan Aleut	✓	✓			
Awtuw	✓	✓			
Jemez Towa	✓	✓			
Nivkh	✓	✓			
Zoque (SMC)	✓	✓			
Nuu-Chah-nulth	✓		✓		
Nez Perce	✓		✓		
Sahaptin	✓		✓		
Mundari	✓		✓		
Chol	✓				
Abau	✓				
Cavieña	✓				
Urarina	✓				
Puinave	✓				
Chukchi	✓			✓	✓
Quileute		✓			
Kiowa				✓	
Ute (CRN)		✓			✓

Based on the distribution of the five basic semantic categories across the language sample, I propose two statistical implicational universals. Firstly, SPEED is the most common category, so if a language has verb-internal manner modifiers, SPEED should be one of those categories. This is Semantic Universal 1. There are exceptions to this generalisation, found in Kiowa, Quileute, and Ute (Colorado River Numic), as is also illustrated in Table 4.4, so this is a statistical, rather than an absolutive, universal. I will discuss these languages in turn.

(120) Semantic Universal 1
If a language has verb-internal manner modifiers, one of them will be of the category SPEED, with either a positive or a negative value.

For Quileute I have only found one example of a manner modifier, encoding 'well', as seen in (116a) above. There is very little information regarding manner modifiers adjoined to verb in the reference grammar. It is therefore entirely possible for there to be other modifiers that also can adjoin to finite verbs. The reason that Quileute appears to violate the generalisation that all languages with verb-internal manner modifiers also encode SPEED in the same way might simply be due to a general lack of data on the language.

Kiowa lacks the category [SPEED] among its verb-internal manner modifiers, while still having a verb-internal manner modifier encoding [-NOISE]. In the example below, 'secretly' is understood to encode the absence of sound. However, it is unclear if it encodes manner information or if it simply modifies the circumstances in which an event took place, meaning that the modifier is more oriented to the situation in which the event unfolded, rather than to the event itself. Example (121b) below provides an argument for this interpretation, where it appears to modify the circumstance in which someone was born, rather than the manner in which someone was born. If it is true that Kiowa lacks manner modifiers inside verb complexes and do not constitute a violation of the proposed implication universals, since it does not have verb-internal manner modifiers to begin with.

(121) *Kiowa* (Adger et al., 2009, 22f)

a. hɔn a-**sem**-ɔɔpi-phou-toudɔɔ
NEG 2S.3S–**secretly**-fish-catch-send.NEG
'You didn't secretly send him fishing.'

b. a-**sém**-t!ɔm-thɔtɔ-xán
1S-**secretly**-first-sit.NV-arrive
'I was secretly born first.'

Ute does have verb-internal manner modifiers but does not encode SPEED with any of them. This is quite surprising since the language productively incorporates adverbs, adjectives and nouns to function as manner modifiers. However, I have not found any examples where an incorporated modifier encodes SPEED. It could either be the case that SPEED can be encoded via incorporated manner

modifiers, but it was not included as an example in the grammar, or it could be the case that it not possible and that it is absent in the language.

If the different categories are divided into subgroups, an additional implicational universal can be derived. If VALUE and CARE are grouped together as one group, and STRENGTH and NOISE are grouped together as another group, another statistical, implicational universal can be derived. This is illustrated Table 4.5, where the categories VALUE & CARE, and NOISE & STRENGTH are grouped into separate columns. The vertical lines show the transitions point between languages with only SPEED, and SPEED, VALUE & CARE, and SPEED, VALUE & CARE, NOISE & STRENGTH. Quileute, Kiowa and Ute (Colorado River Numic) are violations of the universals, since they lack verb-internal manner modifiers of the category SPEED while having other verb-internal manner modifiers, and Chukchi violate the second universal, since it has SPEED as a semantic category for verb-internal manner modifiers, while lacking both VALUE and CARE. These languages are separated with a dashed-line in the table below.

Chukchi can incorporate both adverbs and adjectives into verb complexes for them to function as manner modifiers. This is done without any overt morphology for adjectives. While I have found incorporated modifiers that encode SPEED, NOISE and STRENGTH, I have not found any examples of manner modifier inside verb complexes that encode VALUE or CARE. Chukchi therefore appears to constitute a counterexample to the second universal. However, it could just be that they were not included in the reference grammars that I used while still being grammatically possible. Still, it constitutes a violation and the generalisation must be given the status of a statistical implicational universal, rather than an absolute implicational universal.

Based on the distribution of the basic semantic categories for verb-internal manner modifiers in the language sample, Semantic Universal 2 can from this be derived, as given formally below. It is only a statistical universal, not an absolute universal. Put less formally, for languages with verb-internal manner modifiers, if a language encodes either STRENGTH or NOISE or both using verb-internal manner modifiers, it will encode either VALUE or CARE or both using verb-internal manner modifiers, and if a language encodes either VALUE or CARE or both using verb-internal manner modifiers, it will also encode SPEED using verb-internal manner modifiers. Note that both universals hold for languages with manner affixes and for languages with incorporated manner modifiers, as well as for languages with both types of verb-internal manner modifiers.

Table 4.5: Distribution of grouped semantic categories

	SPEED	VALUE ∨ CARE	NOISE ∨ STRENGTH
Bininj Gun-Wok	✓	✓	✓
Yimas	✓	✓	✓
West Greenlandic	✓	✓	✓
Galo	✓	✓	✓
Classical Nahuatl	✓	✓	✓
Ojibwe	✓	✓	✓
Alamblak	✓	✓	✓
Itzaj	✓	✓	✓
Paumari	✓	✓	✓
Garo	✓	✓	✓
Mixe (SH)	✓	✓	✓
Ainu	✓	✓	✓
Atkan Aleut	✓	✓	
Awtuw	✓	✓	
Jemez Towa	✓	✓	
Nivkh	✓	✓	
Zoque (SMC)	✓	✓	
Nuu-Chah-nulth	✓	✓	
Nez Perce	✓	✓	
Sahaptin	✓	✓	
Mundari	✓	✓	
Chol	✓		
Abau	✓		
Cavieña	✓		
Urarina	✓		
Puinave	✓		
Chukchi	✓		✓
Quileute		✓	
Kiowa			✓
Ute (CRN)		✓	✓

(122) Semantic Universal 2
SPEED ⇐ (VALUE ∨ CARE) ⇐ (STRENGTH ∨ NOISE)

An interesting pattern worth discussing further is found in Bininj Gun-Wok. In Bininj Gun-Wok there is a single affix that appears to encode a range of different types of manner information. The exact interpretation is determined by the verb root to which it attaches. The modifier *wernh-* encodes manner information of the category CARE in example (123a), SPEED in example (123b), VALUE in example (123c) and STRENGTH in example (123d). Following Evans (2003), they are all glossed as 'properly'. When combined with verbs of consumption, it receives an intensifier/grade interpretation.

(123) *Bininj Gun-Wok* (Evans, 2003, p. 500)

a. a-**wernh**-na-n gun-mok
1/3-**properly**-look-NP IV-sore
'I look at the sore properly, have a good look at the sore.' [+CARE]

b. ga-**wernh**-lobme ngudjmak
3-**properly**-run.NP fleet.footed
'He's running really fast, he's fleet-footed. [+SPEED]

c. djama ga-**wernh**-wokdi
NEG 3-**properly**-talk.NP
'He can't talk properly.' [+VALUE]

d. **wernh**-bun-
properly-hit
'To hit hard' [+STRENGTH]

One way of analysing this pattern would be to claim that Bininj Gun-Wok simply has a single MN-head with a positive VALUE semantic feature, and the exact interpretation will be determined based on the context in which the affix appears. The modifier *wernh-* has different instructions for interpretation at the Conceptual-Intentional Interface, based on the overall syntactic structure in which it appears. While this analysis provides a coherent way of analysing the manner modifier *wernh-* within the framework of this dissertation, future research may show that an alternative analysis is more accurate. In the tables above, I have listed Bininj Gun-Wok as having all five basic categories. I leave this topic for future research.

A related question is what the diversity of verb-internal manner modifiers stems from. For incorporated manner modifiers, the answer is quite straight-forward, as the semantic content is determined by the lexical root. The same line of reasoning cannot be extended to manner affixes, since the semantic interpretation is determined by semantic features on the manner functional head. On a speculative note, I propose that the size of the inventory of manner modifying heads is at least partially emergent. Here I follow the work of Biberauer and Roberts (2015). Put simply, the number of distinctions made within each category, distinctions in aspect, distinctions in modality etc. that a child makes is dependent upon the relevant language input s/he has. As such, not all categories in the extended verbal projection are a part of Universal Grammar, as is claimed within cartography. Instead, the child is equipped with the means

of developing different functional categories depending on his or her linguistic input. They might be born with some kind of predisposition for identifying which features are relevant for the syntactic computation, and which features are relevant for the semantic interpretation of the structure (Zeijlstra, 2008). In addition to this, a kind of template for creating formal features might also be necessary (Biberauer, 2019).

The number of Mn-heads that a child will have to add to their inventory of functional projections will be dependent upon language input. We can imagine a very simple system of manner affixes, for instance the one found Abau, which only has one manner affix, an overt reflex of Mn_{SPEED}. Awtuw presumably has this manner head in the extended verbal projection, alongside a semantically unmarked Mn-head for other manner modifiers. If children encounter more manner affixes in their L1 input, they will have to add additional Mn-heads with different second-order features to match their L1 input. For instance, a slightly more complex system would be the one found in Awtuw, which has manner affixes of the type Mn_{SPEED} and Mn_{VALUE}, with associated negative and positive values added to the second-order features. On the upper end of things we find West Greenlandic, which has a larger set of manner heads, including Mn_{SPEED}, Mn_{VALUE}, Mn_{CARE} and $\text{Mn}_{\text{STRENGTH}}$, with positive and negative values.

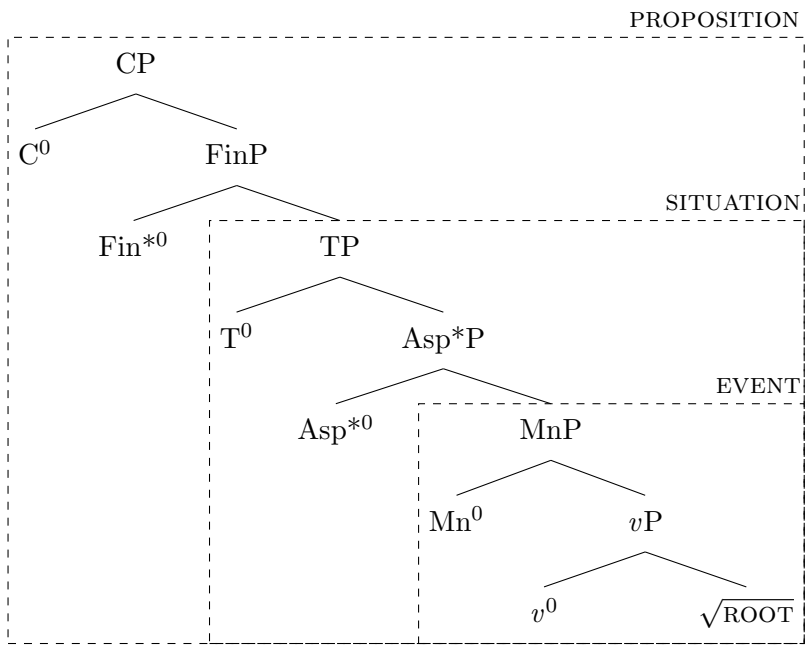
This partially emergent approach to manner functional heads is still highly speculative and requires further research. However, it does provide an initial, tentative approach to how one can approach the diversity of inventories of manner affixes found across languages.

To summarize the discussion on the semantics of verb-internal manner modifiers, a few conclusions were drawn. Firstly, it is possible to formulate Greenberg-style implicational universals concerning the semantic content of verb-internal manner modifiers across languages. Secondly, the basic semantic content of manner adverbs closely overlaps with the basic semantic content of verb-internal manner modifier, regardless of whether or not they are affixes or incorporated constituents. This result hints at an interesting parallel between the semantics of morphological and syntactic structure, an issue which is of primary importance in this dissertation.

4.3 Linear distribution of verb-internal manner modifiers

As was discussed in previous chapters, there is a broad consensus regarding the overall structure of the clausal spine. Mood (in the discourse-oriented sense) merges in a position asymmetrically c-commanding Tense, which in turn merges in a position asymmetrically c-commanding Aspect (Cinque, 1999, 2014; Julien, 2002). However, there is less consensus regarding the exact details and the nature of the clausal spine. I adopt a model where the clause is divided into separate domains, which restrict the distribution of functional projections in the clausal spine. The different domains are illustrated using dashed lines in the tree structure below. The lowest domain [EVENT] includes morphemes related to argument structure (illustrated by the *v*P below) and manner modifiers (illustrated by MnP), and their relative ordering is subject to variation. In the medial domain [SITUATION] we find tense and aspect markers, and finally mood and other discourse-oriented projections are situated in the highest domain [PROPOSITION].

(124)



To reiterate, one of the aims of this chapter is to explore if the claim that manner modifiers are limited to the lowest domain is true by investigating the distribution of manner modifiers inside finite verbs. I can thereby test the claim

that this is the overall structure of the clause, as well as test if it is truly the case that morphological and syntax structure mirror one another. Based on previous research on manner adverbs, and the results from the study on manner affixes in West Greenlandic, manner modifiers consistently merge below mood, tense and viewpoint aspect, i.e. aspect that marks the transition point between the [EVENT] domain and the [SITUATION] domain or that are situated inside the [SITUATION] domain. The hierarchical order we expect to find is then [Mood [Tense [Aspect [Manner [v $\sqrt{}$]]]]]. The prediction derived from this hierarchy is that manner will always form a constituent together with the verb root to the exclusion of aspect, tense and mood. Following the Mirror Principle, none of the other markers will be able to intervene between a verb-internal manner modifier and a verbal root. Table 4.6 provides an illustration of the predicted patterns for tense, manner and the verbal root. The same restrictions are predicted for aspect and mood as well. Those marked with * are predicted to be impossible.

Table 4.6: Possible combinations for tense and manner

Tense-Manner-$\sqrt{\text{ROOT}}$	$\sqrt{\text{ROOT}}$-Manner-Tense
Tense-$\sqrt{\text{ROOT}}$-Manner	Manner-$\sqrt{\text{ROOT}}$-Tense
*Manner-Tense-$\sqrt{\text{ROOT}}$	*$\sqrt{\text{ROOT}}$-Tense-Manner

In the previous section, I proposed that manner affixes and incorporated manner modifiers are related to the same functional head. It is therefore predicted that both types should have the same restrictions in terms of linear distribution when realized as verb-internal manner modifiers. The pattern illustrated in Table 4.6 should therefore hold for both types of manner modifiers, while the two might differ in semantic content and structural complexity. Finally, it is also predicted that negation should consistently be situated above manner modifiers, which should be reflected in the linear order.

Rather different predictions are made regarding morphology related to argument structure. Since valency changing morphology is merged in the same domain as manner modifiers, it is predicted that there ought to be variation in linear order between the two categories, both within a single language and cross-linguistically. This is the expected pattern since there are no structural restrictions for their hierarchical ordering within the lowest domain of the clause. The different possible (and impossible) patterns are determined by the selectional and semantic properties on individual functional heads, rather than inherent restrictions on the syntactic hierarchy.

4.3.1 Tense, Aspect, Mood and Negation

When mood markers appear on the same side of the verbal root as manner modifiers, mood markers always appear further away from the root than manner modifiers in the language sample. This pattern holds regardless of whether the manner modifier is an affix or an incorporated constituent, and regardless of whether they are realized to the left or right of the verbal root. An example illustrating this pattern when both markers are linearized to the left of the verbal root is found in (125a) from Yimas, where the mood marker (encoding hortative mood) is situated further away from the root than the verb-internal manner modifiers. In contrast, in (125b) both mood (imperative) and manner (fast) in Cavineña are linearized to the right, and manner is still closer to the lexical root.

(125) a. *Yimas* (Foley, 1991, p. 342)
angka-**kaykaykay**-cu-impu-pu-n
HORT.DL-**quickly**-out-go.by.water-away-IMP
'Let us go outside quickly!'

b. *Cavineña* (Guillaume, 2008, p. 203)
iji-**wisha**-kwe e-na
drink-**fast**-IMP.S NPF-water
'Drink your water quickly (and let's go)!'

Based on these observations, we can draw the conclusion that manner will be situated closer to the verbal stem than mood, represented abstractly as Mood-Manner-ROOT-Manner-Mood. These findings are in line with the predictions outlined above.

Moving on to tense markers, we find the same pattern as for mood markers. Tense markers consistently appear further away from the root than manner modifiers. For suffixes, this pattern is illustrated with the example from Awtuw in (126a), where the past tense suffix is situated further away from the lexical root than the manner modifiers. For prefixes, the future tense prefix in Chukchi in example (126b) is situated further away from the lexical root than the manner modifier.

(126) a. *Awtuw* (Feldman, 1986, p. 78)
rey æye rokr'-**imy'**-e
3S.M food cook-**quickly**-PST
'He cooked the food quickly.'

b. *Chukchi* (Dunn, 1999, p. 242)
...re-lɣ-**in?**-ə-twi-ɣʔe...
...FUT-INT-**fast**-E-run-TH...
'...(you) will run quickly...'

Based on these observations, we can draw the conclusion that manner will be situated closer to the verbal stem than tense if they are linearized on the same side of the lexical root. Previous research has shown that tense is merged below mood in the clausal spine (Cinque, 1999; Julien, 2002). The findings so far can thus be represented abstractly as Mood-Tense-Manner-ROOT-Manner-Tense-Mood. These findings are also in line with the predictions outlined above.

Moving on to aspect, only instances where the manner modifier was closer to the verbal root than any aspect markers were found in the typological sample. An illustration of this pattern when both markers are situated to the left of the verb root is given in (127a) from Itzaj. The manner modifier is situated closer to the root than the aspect marker. The mirror ordering is found in Atkan Aleut where both markers are realized as suffixes (127b), with the manner modifier appearing closer to the root than the habitual aspect marker.

(127) a. *Itzaj* (Hofling & Tesucún, 2000, p. 82)
k-u-**k'as**-men-t-ik
INC-3A-**badly**-make-TRN-ITS
'S/he makes it badly.'

b. *Atkan Aleut* (Bergsland, 1997, p. 120)
tunuxˆta-**du**-za-laka-ting ii
talk-**fast**-HAB-NEG-CNJ.1S Q
'Do I talk slowly enough?'

Based on these observations, I draw the conclusion that manner will be situated closer to the verbal root than aspect if both are linearized on the same side of the verbal root. Based on previous research, we know that aspect is situated closer to the root than tense (and by transitivity), closer than mood (Cinque,

1999; Julien, 2002). The findings so far can thus be represented abstractly as Mood-Tense-Aspect-Manner-ROOT-Manner-Aspect-Tense-Mood. These findings are also in line with the predictions outlined above. Note that there might be exceptions to the ordering of tense, aspect and mood when realized as suffixes (Cinque, 2014). The abstract representation above is simply included as a convenient way of representing the position of manner in relation to these three categories.

With the exception of West Greenlandic, as was discussed in the previous chapter, no other language in the sample has been observed to exhibit a structure where aspect markers intervene between a manner modifier and the verbal root. This is particularly interesting for Blackfoot, which has been argued that to have aspect merged inside the vP. Ritter (2014) argues that abstract nominalisations in Blackfoot cannot target a vP, but rather a functional aspect projection within the verb phrase. She claims that this functional projection is Inner Aspect, following Travis (2010), which is concerned with the internal structure of the eventuality denoted by a predicate. The basis for the claim that these nominalisations cannot target a vP is that the overt realization of v cannot be present in these nominalisations. Wiltschko (2014) develops this analysis further and argues that perfect and imperfective aspect are adjoined inside the verb phrase. Two examples of the low nominalisation in Blackfoot with aspect markers (glossed as IMPF and PERF below, following Ritter, 2014).

(128) *Blackfoot* (Ritter, 2014, p. 46)

a. kitáwawaahkaani iksoka'pii
kit-á-wawaahkaa-n-yi ik-**sok**-a'pii
2S-IMPF-play-NOM-IN.S INT-**good**-be.AI
'Your playing is good.'

b. annihkayi nitsíkaaisttokimaan nitsístapihkahto'p
annihkay nit-kaa-isttokimaa-n nit-ist-a'pihkahtoo-hp
DEM 1S-PERF-drum-NOM 1S-?-give.away-TH
'This one drum I've had, I gave it away.'

Even though aspect has been shown to be merged in a low position in the clausal spine, manner affixes in Blackfoot are still situated closer to the verbal root than aspect prefixes. This pattern is illustrated (129) below, with aspect glossed as IMPF, adopted from the original glossing in Frantz (1991) to follow the glossing used by Ritter (2014).

(129) *Blackfoot* (Frantz, 1991, pp. 90–93)

a. áíkkamokska'siwa
á-**íkkam**-okska-'siwa
IMPF-**quickly**-run-3S
'He runs fast.'

b. kitsikáísoka'po'taki
kit-ik-á-**sok**-a'po'taki
2S-very-IMPF-**well**-work
'You work really well.'

Since both manner and aspect here are merged within the lowest domain of the clause, we would expect there to be some possible variation here. While it is possible that such variation exists in the language, I have not found any examples of it. What is interesting about these patterns for the current purposes is that even though we have independent evidence showing that aspect markers in Blackfoot are situated in the lowest domain, they still appear further away from the root than the manner modifiers. This can be regarded as additional evidence for the claim that manner modifiers must be merged in the lowest domain of the clause.

Regarding negation, if the negative affix and the manner modifier are situated on the same side of the lexical root, the manner modifier will be closer to the root. This is illustrated for prefixes in (130a) and for suffixes in (130b).

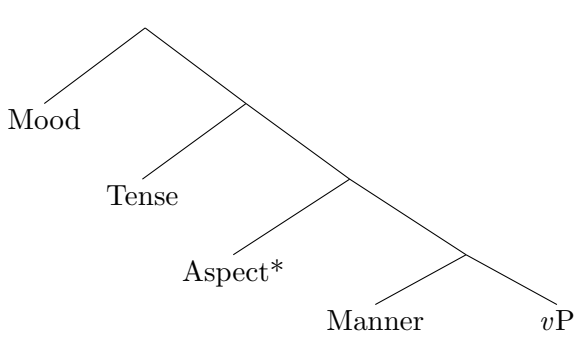
(130) a. *Ayutla Mixe* (Romero-Méndez, 2009, p. 538)
ëjts wa'a ka-**ey**-mëty'k-p
1S.ERG DUB 1S.NEG-**good**-tell-INDEP
'I do not tell well.'

b. *Atkan Aleut* (Bergsland, 1997, p. 120)
tunuxˆta-**du**-za-laka-ting
talk-**fast**-HAB-NEG-CNJ.1S
'Do I talk slowly enough?'

Mapping the linear orders outlined above to a hierarchical structure, we arrive at the structure in (131). These findings all adhere to the predictions made by the theoretical framework adopted here, since it predicted that manner should be introduced in a low position in the clausal spine. Since negation can be

positioned in several different positions in the clausal spine, including both above and below at least tense and aspect (Cinque, 1999), for illustrative purposes it is not included in the tree structure below.

(131)



In this section, I have discussed the distribution of manner modifiers in relation to tense, aspect, mood and negation, showing that in my language sample manner modifiers always appear closer to the verbal root than any of the other categories. The observed distributional patterns follow from the overall syntactic structure of the clause, together with the claim that morphological structure must reflect syntactic structure. The findings are compatible with the overall proposal for the structure of the clausal spine made in this dissertation. In the next section, I turn to morphology related to argument structure.

4.3.2 Valency Changing Morphology

In this section, I look at how causatives and applicatives interact with verb-internal manner modifiers. The aim is to determine where in relation to manner modifiers they are situated inside verb complexes. In contrast to the discussion of tense, aspect, mood and negation above, the ordering patterns are subject to much cross-linguistic variation. This is also the predicted pattern, since I previously proposed that the ordering of functional projections in the lowest EVENT domain is determined by selectional restrictions on individual functional heads. However, the languages against which these predictions could be tested were few, and the discussion below should be regarded as a preliminary investigation into these issues.

Beginning with causatives, in West Greenlandic they can be situated both above and below manner modifiers, giving rise to different interpretations. Consider the minimal pair in (132), and how it yields different interpretation in scope.

The pattern was discussed in greater detail in subsection 3.2.4 in the previous chapter. However, I have not found any examples of this type of variable order the other languages included in the sample.

(132) *West Greenlandic*

a. anipallatsippai
ani-**pallag**-tit-pa-i
exit-**quickly**-CAU-IND-3S.ERG.3P.ABS
'She made them go out quickly (She made them go out and they went out quickly).'

b. anisipallappai
ani-tit-**pallag**-pa-i
exit-CAU-**quickly**-IND-3S.ERG.3P.ABS
'She made them, in a quick manner, go out.'

One example of a language with causatives and manner modifiers on the same side of the verb root was Urarina, where the manner modifier appears further from the root than the causative while also scoping above it. Like in the West Greenlandic examples above, there also appears to be a correlation between linear order and scope.

(133) *Urarina* (Olawsky, 2006, p. 672)
eno-a-**uri**-ni-u
enter-CAU-**fast**-DSTL-IMP
'Quickly go make him enter!'

A similar pattern was found for Cavineña, where, according to the verbal template of the language, manner should always appear further from the root than causatives (Guillaume, 2008), although I could not find any examples where the two co-occur. In Abau both are on the same side of the verb root (Lock, 2011), but I have not been able to establish their relative ordering.

In the typology of causatives developed by Pylkkänen (2008), one factor is the size of the complement that the causatives can take. Root-selecting causatives cannot take a projection including a manner as its complement, and it is predicted that manner will always be situated above such causatives. In contrast, Verb- and Phase-selecting causatives can take as their complements a structure that includes manner modifiers, and such causatives should be able to scope

above manner modifiers. In light of the discussion on causatives in West Greenlandic, it should likewise be possible for manner modifiers to be situated in a position higher than Verb- and Phase-selecting causatives, thereby also scoping over them. The kind of variation in linear order found in the typology sample is therefore expected in this typology of causatives. However, while this topic was discussed in greater detail for West Greenlandic, the data discussed here is too limited to warrant any further conclusions.

Applicatives are subject to same data restrictions as causatives. For Bininj Gun-Wok, based on the morphological template of the language, manner appears further away from the root than the applicative introducing a benefactive argument (Evans, 2003). However, I have not found any examples where they appear together. This is essentially the same pattern that was found for the West Greenlandic applicative *ute*, which always appears closer to the root than manner modifiers. On the other hand, the applicative in Ainu appears further away from the root than the manner modifier when it introduces a goal argument. This pattern is illustrated in (134) below.

(134) *Ainu* (Shibatani, 1990, p. 71)
hanke ok ay a-i-ko-**tunas**-rap-te
near come arrow PS-1S.OBJ-APL-**fast**-fall-CAU
'The arrows were made to fall fast toward me.'

The pattern illustrated by Ainu above is thus the opposite of the one found in West Greenlandic. This shows that the position of applicatives in relation to manner modifiers is subject to cross-linguistic variation. I propose that the ordering patterns for applicatives and manner modifiers, like that of causatives and manner modifiers, is due to selectional restrictions on functional heads. As such, any variation with regards to the ordering of applicatives and manner is likely due to different selectional properties on applicatives and manner functional heads, rather that due to some inherent ordering restrictions imposed on the clausal spine.

For West Greenlandic, I showed that applicatives and antipassives are merged below manner, whereas causatives and passives can merge both above and below manner. This seems to mirror the subject-object asymmetry, according to which the internal argument and its related functional projections are situated closer to the verbal root than the external argument. However, the data here shows that this is not part of a broader pattern. Causatives in West Greenlandic can be situated above manner, whereas in Urarina they are situated below manner, even

though causatives are related to an external argument. Similarly, applicatives always appear below manner in West Greenlandic and in Ainu they are situated above manner, even though applicatives are related to an internal argument.

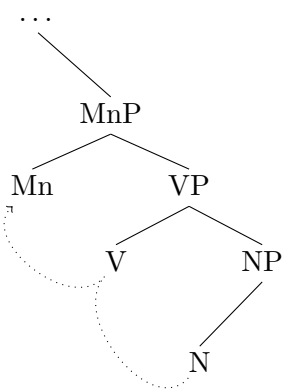
This rather short discussion showed that applicative and causative morphology can vary in terms of linear order in relation to verb-internal manner modifiers. This variable pattern is likely due to different selectional properties on applicatives and causatives, as it has been shown that the size of the complement that applicatives and causatives can take varies considerably across languages. However, I have not found any examples of variation in individual languages. This data highlights the need for further detailed studies on individual languages with regards to how manner modifiers interact with applicatives and causatives, and valency changing morphology more broadly.

4.3.3 Manner and Noun Incorporation

Most of the languages explored here have properties commonly associated with polysynthetic languages, including noun incorporation. Here I explore the relative ordering of manner modifiers and incorporated nouns inside verb complexes. I focus on the incorporation of the internal argument. Verb-internal manner modification together with noun incorporation provides novel data for discussing how internal arguments are introduced.

Firstly, as I outlined in section 4.1, it is necessary to make a distinction between prototypical noun incorporation, which consists of a nominal and a verbal root, both of which can appear as independent constituents, whereas incorporating verbs consist of a verbaliser and a nominal root, of which only the latter can appear as an independent constituent. Taking the analysis developed by Baker (1988) as my starting point, noun incorporation is derived via head movement, where the internal argument, a complement of the verb, moves to the lexical verb, yielding a complex head. A verb-internal manner modifier could then be added to the verbal complex by head movement of the complex head containing both the verbal and the nominal root. This proposal is illustrated in (135) below, where the NP represents the internal argument, and Mn represents the verb-internal manner modifier. The external argument is not included.

(135)



Under the Mirror Principle, this structure predicts that the internal argument will be linearized closer to the verbal root than the manner modifiers, since they form a constituent to the exclusion of the manner modifier. However, this prediction does not hold for all the languages included in the sample, as I outline below.

In Kiowa, the order of constituents is AGR-Adv-N-V-$\sqrt{\text{ROOT}}$-TAMs (Watkins, 1980, p. 277). In the example below, the incorporated object is closer to the verb root than the manner modifier. Given the hierarchical structure outlined above, this is the predicted order.

(136) *Kiowa* (Adger et al., 2009, p. 22)
hɔn a-**sem**-ɔɔpi-phou-toudɔɔ
NEG 2s.3s–**secretly**-fish-catch-send.NEG
'You didn't secretly send him fishing.'

In Bininj Gun-Wok we find the same pattern, with incorporated nouns appearing closer to the root than manner modifiers. I have not found any examples where they appear in the same verb, but we can arrive at this conclusion based on the morphological template provided by Evans (2003, p. 318). The ordering of the prefixes based on the template is given in (137) below. Manner is positioned in the Misc1 position below, while the incorporated nominals are found in the slots abbreviated as Gen.Incp and Body.Incp below, respectively.

(137) Bininj Gun-Work Verbal Template
T-SBJ-OBJ-Directional-Aspect-Misc1-BEN-Misc2-Gen.Incp-Body.Incp-Numerospatial-Comitative-Stem

Cavineña is another language with both verb-internal manner modifiers and noun incorporation. According to Guillaume, 2008, p. 147, no morphology can intervene between the verbal root and the incorporated nominal. The pattern found in this language likewise adheres to the claim that the verbal root and the internal argument forms a constituent to the exclusion of manner modifiers, although I have not found any examples of both manner modifier and incorporated noun within a single finite verb.

For Ainu, I have not found any examples of manner modifiers occurring together with incorporated nominals. However, according to the morphological template presented by Shibatani (1990, p. 76), incorporated generic objects appear further away from the root than the applicative prefix *ko-*, and in the relevant example (repeated below) the incorporated manner modifier appears closer to the root than the applicative.

(138) *Ainu* (Shibatani, 1990, p. 71)
hanke ok ay a-i-ko-**tunas**-rap-te
near come arrow PASS-1S.OBJ-APL-**fast**-fall-CAU
'The arrows were made to fall fast toward me.'

(139) Ainu Verbal Template (Shibatani, 1990, p. 76)
SBJ-OBJ-APL(-e-)-GEN.OBJ/REFL/RECI-APL(-ko-)-verbPL-CAU-ITR.ASP

Assuming a transitive relation between the different markers, I conclude that manner modifiers can appear between verb roots and incorporated nominal objects. This stands in contrast to the pattern discussed above for Kiowa, Bininj Gun-Wok and Cavineña.

Incorporated manner modifiers appear closer to the root than incorporated nominals in Classical Nahuatl. In the (140), the manner adverb *huel* is incorporated into a finite verb (it can also appear as an independent adverb). Together with the verb *itta* 'see', it has the idiomatic interpretation 'to like'. In (140a), it can be seen that the incorporated adverb is situated closer to the verb root than the incorporated object. In (140b), the equivalent structure with the object as an independent constituent is found below.

(140) *Classical Nahuatl* (Andrews, 2003, p. 273)

a. ni-no-tlahto:l-**huel**-itta
1s-my-word-**well**-see
'I look upon my words with approval/well, i.e. I like my words.'

b. ni-**huel**-itta in no-tlahto:l
1s-**well**-see DET my-word
'I look upon my words with approval/well, i.e. I like my words.'

The four languages Mixe (Romero-Méndez, 2009; Van Haitsma & Van Haitsma, 1976), Zoque (Johnson, 2000), Chukchi (Comrie, 1981; Dunn, 1999) and Jemez Towa (Yumitani, 1998) are all said to have both incorporated nouns and verb-internal manner modifiers situated on the same side of the verbal root. However, in the grammars I have consulted their relative ordering is not discussed and I have not found relevant examples illustrating their ordering.

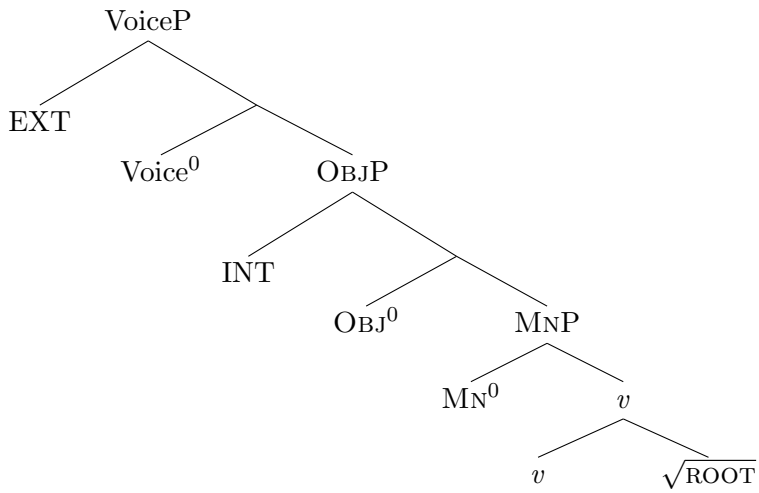
To summarize, when incorporated manner modifiers and nominals appear on the same side of the verbal root, I found three different patterns in the language sample: Manner-Noun-Verb, found in Kiowa and Bininj Gun-Wok, Verb-Noun-Manner, found in Cavineña, and Noun-Manner-Verb, found in Classical Nahuatl and Ainu. The former two appear to reflect the same hierarchical structure, whereas the latter pattern suggests that there is variation in the externally merged structure. The fact that it is possible for verb-internal manner modifiers to appear between the internal argument and the verbal root suggests that the verb and the internal argument do not necessarily form a constituent to the exclusion of manner modifiers, contrary to the predictions derived from Baker's original analysis of noun incorporation.

I propose that this data sheds light on the relationship between the verb and internal arguments. Several authors have proposed that the internal argument ought to be severed from the verb, and instead introduced as a specifier in a functional projection. Borer (2005), Siddiqi (2009), Fábregas (2012) Lohndal (2014) are some contributors to this line of research. While the different authors disagree on the exact details of the functional projections, for instance regarding their relative position and label, they all agree that internal arguments are not introduced as complements of a lexical verb. Instead, the internal argument is introduced in the specifier of some functional projection.

The point that I want to make here is that if one assumes that the internal argument is introduced via a functional projection that is distinct from the

verbalising head that combines directly with the lexical root, it is possible, at least in principle, for manner modifiers to form a constituent together with the verb to the exclusion of the internal argument. An illustration is given in (141) below. Here I use the label 'ObjP' from Siddiqi (2009) (roughly corresponding to FP in Fábregas, 2012 and Lohndal, 2014) for the functional projection that introduces the internal argument. 'EXT' stands for the external argument, and 'INT' for internal argument.

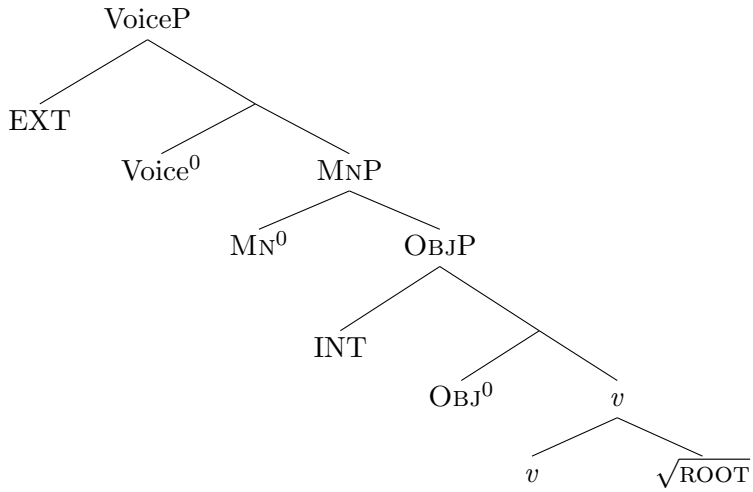
(141)



Since the functional projection is distinct from the functional projection that assigns a lexical category to the lexical root (v), it is, in principle, possible for the manner functional head to be situated between the verbal root and the internal argument. This structure, if both the manner modifier and the incorporated nominal are linearized on the same side of the verbal root, would yield either Noun-Manner-Verb or Verb-Manner-Noun.

I speculate that the ordering of MnP and ObjP in the structure above is subject to cross-linguistic variation, since some languages place the internal argument closer to the verbal root than verb-internal manner modifiers. Within this framework, such a linear order would be derived from a structure where the manner modifier takes the functional projection that introduces the internal argument as its complement. An example of such a structure is illustrated in (142) below.

(142)



In (142), the functional projection introducing the internal argument (ObjP) is instead situated below the manner modifier, and forms a constituent with the verbal root that excludes the manner modifier. This allows it to be linearized closer to the verbal root than the manner modifier. This structure, if both the manner modifier and the incorporated nominal are linearized on the same side of the verbal root, would yield either Manner-Noun-Verb or Verb-Noun-Manner.

If this analysis is on the right track, it would provide a novel argument in favor of severing the internal argument from the verb, and instead introducing it via a separate functional projection. However, these conclusions might be a bit premature, since I base this discussion on relatively little data. Preferably, more detailed studies in languages that have verb-internal manner modifiers and prototypical noun incorporation should be done first. In this dissertation, the in-depth study on verb-internal manner modifiers is on West Greenlandic, which does not have noun incorporation (see 3.2.8 for details). I leave this topic for future research, and move on to discuss verbalisers and verb-internal manner modifiers.

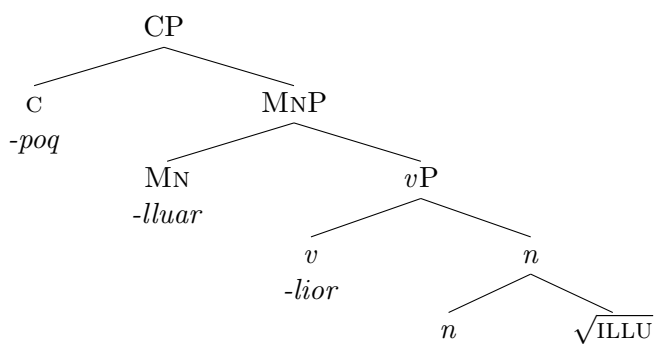
Paumarí, like West Greenlandic, has verbalisers that attach to nouns to form a verbal stem. Manner affixes are realized as suffixes and based on the example below and the grammatical description of the language, we can conclude that they cannot intervene between the verbaliser and the nominal root. What is glossed as 'action' below is a verbaliser. This is very similar to the pattern found in West Greenlandic, repeated below from (81).

(143) *Paumarí* (Chapman & Derbyshire, 1991, p. 320)
o-hado-ha-**joraki**-'iana-hi
1S-knife-action-**quickly**-again-THEME
'I cut again quickly.'

(144) *West Greenlandic*
illuliorluarpoq
illu-lior-**lluar**-po-q
house-build-**well**-IND-3S.ABS
'He built the house well.'

I propose that these structures consist of a verbaliser that takes a nominalised root (as was shown for different varieties of Inuit, nominal modifiers may also be present in the structure, showing more than a simple nominalised root might be present) as its complement. From this structure an extended verbal projection is built. The verbaliser takes the nominal stem as its complement, and projects an extended verbal projection, where the manner modifier is found. Since the 'incorporated' argument is introduced as a complement of the verbaliser, the prediction under the Mirror Principle is that the verbaliser will always be closer to the nominal root than the manner modifier, provided that both of them are linearized on the same side of the nominal root. No counterexamples to this pattern have been found in the language sample, so it is possible to simply adopt the analysis developed for West Greenlandic in the previous chapter. The tree structure below in (145) provides an illustration for the example in (144) above.

(145)



The verbaliser *-lior* takes the nominal projection as its complement. The manner modifier is situated above the verbaliser, in the extended verbal projection.

The verbaliser *-lior* thus forms a constituent with the nominal stem *illu* to the exclusion of the manner modifier. As in the previous chapter, C is assumed to be the host both the mood marking and agreement morphology in West Greenlandic. This hierarchical order is reflected in the linear order, where the manner modifier is situated further away from the verbal root than the verbaliser.

In this subsection, I discussed noun incorporation and verb-internal manner modifiers, focusing on their linear distribution and their hierarchical ordering. I suggested that the data provides some tentative new arguments in favor of severing the internal argument form the verb, although this topic requires further research.

4.3.4 Summary of Linear Distribution

In this section, the linear order of verb-internal manner modifiers in relation to mood, tense, aspect (TAM), valency changing morphology (causative and applicative), negation and incorporated nouns was discussed. It was shown that manner modifiers consistently appear closer to the verbal root than TAM-markers and negation in the language sample. In contrast, causatives, applicatives and incorporated nouns exhibit much more cross-linguistic variation in terms of their positioning in relation to verb-internal manner modifiers. The following Greenberg-style universals regarding the morphosyntax of verb-internal manner modifiers can thus be formulated:

(146) Morphosyntactic Universal 1
If Mood and verb-internal manner modifiers are situated on the same side of the verbal root, the manner modifier will be situated closer to the lexical root.

(147) Morphosyntactic Universal 2
If Tense and verb-internal manner modifiers are situated on the same side of the verbal root, the manner modifier will be situated closer to the lexical root.

(148) Morphosyntactic Universal 3
If Aspect and verb-internal manner modifiers are situated on the same side of the verbal root, the manner modifier will be situated closer to the lexical root.

The kind of variation in terms of the ordering of functional projections as was discussed for West Greenlandic in the previous chapter has not been observed for the other languages that were included in this sample. Beyond West Greenlandic, no other languages in the sample have aspect markers that can be situated closer to the lexical root than manner modifiers. The data investigated in this chapter is therefore compatible with a more restrictive cartographic model, rather than the domain-based model adopted here. However, it was shown in the previous chapter that such a model provides a much more comprehensive account of the grammatical structure found in West Greenlandic, and the data discussed in this chapter is compatible with such a model. This typological survey is in line with the claim that the clausal spine is divided up into three separate domains, which also restricts the distribution of functional projections.

4.4 Diachronic Development of Manner Affixes

Before ending this chapter, I want to present some tentative data regarding the diachronic origin of manner affixes. The data is very limited and should only be regarded as preliminary steps towards a deeper understanding of their origin. Manner affixes appear to be able to develop via at least three different paths. They appear to be able to develop from lexical verbs, presumably via auxiliary verbs as an intermediate stage, from incorporated constituents, and from the merger of affixes. I begin by discussing the potential development from lexical verbs.

In Nivkh, a small set of verbs can also appear as suffixes on verbs to encode manner information. They include *arki* 'do.sth.slowly' for 'slowly' *ев*, *elv* 'do.sth.badly' for 'badly' and *ur* 'be.good' for 'well'. They have the same form when they are attached to a verb. Below follows an example of the verb *ur* 'be.good' being used as a manner modifier in Nivkh.

(149) *Nivkh* (Nedjalkov & Otaina, 2013, p. 100)
qan ve-**ur**-c
dog run-**be.good**-IND
'The was running fast.'

A similar pattern can be found in Mundari, where the verb for 'to make' can function as an independent lexical verb as well as a verb-internal manner modifier (meaning 'carefully'). In example (150a), *bai-* functions as the main verb of

the clause, meaning 'make', whereas in (150b) it functions as a manner modifier to the verb *lel-*. In contrast to the examples from Nivkh, there is a clear shift in the semantic interpretation.

(150) *Mundari* (Osada, 2008, pp. 106, 137)

a. buru=ko bai-ke-d-a.
mountain=3P.SBJ make-CPL-TRN-IND
'They made the mountain.'

b. lel-**bai**
look-**carefully**
'to look carefully'

In Awtuw, the manner modifier encoding 'speed' has a similar form to the verb 'to run' and Feldman (1986) speculates that the affix is derived from that verb. In this example, like in the one above from Mundari, a change in the semantics is clearly observable. Example (151a) includes the manner affix *-imy'-*, and in example (151b) a verb with the same phonological form appears as an independent verbal predicate.

(151) *Awtuw* (Feldman, 1986, pp. 78, 93)

a. rey æye rokr'-**imy'**-e
3S.M food cook-**quickly**-PST
'He cooked the food quickly.'

b. rey yæn (lape-ke) di-k-imy-ey
3S.M child (village-LOC) FA-IP-run-IP
'The child is running (in the village).'

Alamblak exhibits a similar pattern, where the manner modifier for 'badly' is similar in form to the stative verb meaning 'be.bad/decrepit', and Bruce (1984) speculates that they might be related. Example (152a) shows the verb *beb-* functioning as a main verb, whereas in example (152b) it takes on the function of a manner modifier attached to the main verb.

(152) *Alamblak* (Bruce, 1984, pp. 162, 26)

a. beb-tay
bad-PROC
'Become decrepit, bad (grow old)'

b. watextltailn-**beb**-më-m
hear-**badly**-R.PST-3P
'They heard badly.'

In Puinave, the verb for 'run' can be incorporated into a verb complex, in which case it receives the interpretation 'quickly' or 'with force' (Girón, 2008). In Cavineña, the modifier for 'quickly' appears to be derived from the lexical verb 'to shake'. In example (153a), *wisha-* functions as the main verb of a clause, whereas in example (153b) below it functions as a manner modifier.

(153) *Cavineña* (Guillaume, 2008, 202f)

a. wisha-ya=ju=tu e-kaka pakaka-ya
shake-IMPF=DS=3SG(-FM) NPF-fruit fall-IMPF
When he shook (the tree), the fruit fell.'

b. iji-**wisha**-kwe e-na
drink-FAST-IMP.S NPF-water
'Drink your water quickly (and let's go)!'

Sino-Tibetan languages provide interesting insights into how manner affixes might have developed diachronically. Galo (Post, 2007; Rwbaa et al., 2009) and Garo (Burling, 2003) are both spoken in North Eastern India and both have developed manner affixes. They are Sino-Tibetan languages belonging to different primary branches of the language family, with Galo being situated in the Macro-Tani branch and with Garo being situated in the Sal branch. Their authors of their respective grammatical descriptions independently claim that the set of 'adverbial affixes' (manner affixes are included in this classification, although the authors do not use this term) in the two languages are derived from lexical verbs. I have not found any examples where a manner modifier in the sense explored here also appears as an independent lexical verb in the languages.

What makes this particularly interesting is that the Sino-Tibetan language Meithei (Kuki-Chin-Naga) uses verbs to encode manner information. The verbs encode manner information and function as the finite verb of the clause, with the lexical verbs being non-finite. As such, the structure looks very similar to an auxiliary verb taking a non-finite lexical verb as its complement. In example (154a), the verb *təp-* functions as manner modifier and the finite verb of the clause while the lexical verb is non-finite and is responsible for encoding an

event. Example (154b) is included for comparison, where it can be seen that a modal auxiliary verb is used in the same grammatical structure as the manner modifier.

(154) *Meithei* (Chelliah, 1997, 170f)

a. əy-na tʃena-pə **təp**-pi
1-CNTR run-NMZ **slow**-NHYP
'I run slowly.'

b. Mə-hak hindi pa-pə ŋə-i
3-here hindi read-NMZ able-NHYP
'He can read Hindi.'

Bringing the observations from these languages together, they seem to point toward the claim that manner affixes can develop from lexical verbs, via some intermediate step as auxiliary verbs (and perhaps with additional intermediate stages as vector verbs and clitics (Hopper & Traugott, 2003)). While we have no historical data to support this claim, synchronic data from several different language families point in this direction. The fact that many TAM-markers also develop along these lines provides some additional theoretical support for this historical origin. The topic of auxiliary verbs as manner modifiers (i.e. manner adverbial verbs) is the focus of chapter 5.

Table 4.7 illustrates a potential diachronic source of manner affixes, from lexical verbs to manner affixes, via an intermediate stage as auxiliary verbs.

Table 4.7: Lexical verb to manner affix

Lexical Verb ⇒	**Auxiliary Verb ⇒**	**Manner Affix**

This path of development differs slightly from prototypical grammaticalisation. Firstly, a no instances of clear phonological reduction have been found, which is typical of grammaticalisation (although not necessary). Furthermore, in the attested cases semantic bleaching is not as prominent as one would expect under grammaticalisation theory. As seen above, several manner affixes appear to have developed from stative verbs that function to encode a property to an entity. The semantic content of the derived manner affixes is the same, with the only difference that the target has shifted from entities to events. Instead of assigning a property to an entity (as a stative verb), it assigns a property to an aspect of an event (as a manner modifier). In other examples, for instance in Awtuw, where the verb 'run' has developed into a manner affix encoding

'quickly', the semantic development can better be described in terms of semantic bleaching. However, the primary development appears to be one of shift in function and morphosyntax. The shift in function can be described as moving from assigning a property to an entity, to assigning a property to an event. The shift in morphosyntax can be described as moving from being the main predicate of the clause to becoming a modifier inside the extended verbal projection.

Another observed source of manner affixes is from incorporated manner modifiers. This shift is only attested within a single language, so these conclusions should be treated with caution. Still, for the sake of completeness, I decided to include it in the discussion. The data is based on two separate varieties of Nahuatl, Classical Nahuatl on the one hand (spoken about 500 years ago), and Isthmus Nahuatl on the other (a modern variety). As was mentioned above, Classical Nahuatl has productive incorporation of manner adverbial modifiers. These manner modifiers can appear either as independent constituents, or as incorporated into a finite verb. In example (155a), a morphologically simplex manner modifier is incorporated into a finite verb, whereas in example (155b) it is realized as an independent constituent.

(155) *Classical Nahuatl* (Andrews, 2003, pp. 611, 146)

a. in yohualtica **huel**-lachi-ya...
DET at.night **well**-watch-IMPF...
'At night it watches carefully...'

b. mochi **huel** a:yi
everything **well** do
'He does everything well/He can do everything.'

In contrast, in the modern Isthmus Nahuatl variety there are a handful of manner modifiers that must appear as part of a verb complex, referred to as 'inseparable adverbs' in the reference grammar (Wolgemuth, 2002, p. 122). In (156a), the manner modifier for 'badly' is found attached to the verb, and in (156b) the manner modifier for 'properly' is realized as a prefix on the verb.

(156) *Isthmus Nahuatl* (Wolgemuth, 2002, 59, 121f)

a. ma:lnemi
ma:l-nemi
badly-live
'He lives badly.'

b. yeh ina:n 0-wel=ya **mela?**-tahtowa, pero ayeh no: i-tahtol
he now 3s-can=now **properly**-speak, but is.not also his-speak
katka
previously...
'Now he can speak properly (i.e. in Nahuatl), but this isn't what his speech used to be...'

Interestingly, some of the 'inseparable adverbs' in Isthmus Nahuatl have cognates with independent forms in Classical Nahuatl. The manner modifiers *mela:ʔ-* 'truly, properly' and *ictaka-* 'covertly' in Istmus Nahuatl corresponds to *mela:hu(a)* 'to straighten/correct' and *ichtaca:* 'secretly/thief-like' in Classical Nahuatl, respectively. These two adverbs can also be incorporated into finite verbs to function as incorporated manner modifiers. While the data supporting this claim is rather sparse, similar grammaticalisation paths have been observed for other polysynthetic languages as well, where incorporated material is reanalysed as affixes (cf. Aikhenvald (2017) on the reanalysis of incorporated material in lower Amazonia.)

The diachronic development of manner affixes in Yupik-Inuit languages (with a special focus on West Greenlandic) was outlined in in the previous chapter. Manner modifiers in this language family (based on reconstructions) have developed from the merger of different affixes. The attested examples included combinations of nominalisers and verbalisers, as well as combinations of different verbal modifiers. One example of the former is the manner affix *-qqissar*, which might have developed from the combination of the nominaliser **nəʀ* and the verbaliser **kiɣ*, meaning 'have a good'. See section 3.1.1 for further details and examples.

In this section, I have provided some tentative data on the diachronic development of manner affixes. I propose that they have at least three possible sources: Lexical verbs, incorporated adverbials and the merger of affixes. The data is still rather limited, and these findings should be considered preliminary.

4.5 Concluding Remarks

A few important generalisations are made in chapter. There are at least two types of verb-internal manner modifiers, namely manner affixes and incorporated manner modifiers. While they differ in their syntactic status, I show that

they have the same distributional patterns within verb complexes. If such manner modifiers are realized on the same side of a verbal root as mood, tense, aspect and negation, the manner modifier will be situated closer to the lexical root. In the typological sample, verb-internal manner modifiers of the semantic category SPEED are by far the most common, permitting the formulation of an implication universal, according to which, if a language has verb-internal manner modifiers, SPEED will be among them. If the other four categories are grouped together in two separate groups, another implicational universal can be formulated, according to which if a language has verb-internal manner modifiers of the type STRENGTH and/or NOISE, it will also have VALUE and/or CARE in its inventory, as well as the category SPEED. There are a few exceptions to the generalisations in the language sample, making it a statistical universal rather than an absolute universal.

The findings regarding the grammatical properties of verb-internal manner modifiers also have important implications for our understanding of the relationship between morphology and syntax and the organization of the clausal spine. The position of manner in relation to tense, aspect and mood are predicted based on the anti-lexicalist model adopted here, since the ordering inside verbs mirror their position in the syntactic hierarchy. These findings can thus be taken as a corroboration of this model. However, the type of extensive variation in height and order between manner and other functional categories discussed for West Greenlandic in the previous chapter was not observed for the other languages in the typological sample, although this might very well be a consequence of biases in the data. The data discussed here might therefore be compatible with a more restrictive cartographic account of the clausal spine. However, the West Greenlandic data justifies a clausal spine divided into domains that allow for some variation, and such a model is also compatible with the findings in this chapter. This suggests that the positioning of manner in the lowest domain of the clause is not just a restriction found in West Greenlandic, but part of a much larger pattern across different languages.

Chapter 5

Manner Adverbial Verbs

In the previous two chapters, I argue that verb-internal manner modifiers are reflexes of manner functional heads (simplex or including lexical roots) merged in the lowest domain of the clausal spine. This analysis accounts for several of the semantic properties and distributional patterns of such manner modifiers. Since they are connected to functional syntactic heads in the extended verbal projection, it is predicted that an analytic counterpart to the synthetic realization would be that of auxiliary verbs, as auxiliary verbs are generally taken to be the overt realization of functional syntactic heads (Cinque, 1999; Julien, 2002; Rizzi & Cinque, 2016). Auxiliary verbs also appear to be a diachronic source of manner affixes, as was discussed in 4.4 in the previous chapter. One way of further testing the predictions made in the previous two chapters is to investigate the syntactic properties of auxiliary verbs that encode manner information. An example of an auxiliary verb encoding manner information from Takituduh Bunun is presented in (157c) below, with (157a-b) illustrating how finite verbs are identified. Unless stated otherwise, the examples from Takituduh Bunun are my own.

(157) *Takituduh Bunun*

a. kulut-un=ku ca nincing
cut-PV=1S.ERG NOM carrot
'I cut the carrot.'

b. asa-un=ku ma-kulut ca nincing
want-PV=1S.ERG AV-cut NOM carrot
'I want to cut the carrot.'

c. **haiv**-un=ku ma-kulut ca nincing
quickly-PV=1S.ERG AV-cut NOM carrot
'I cut the carrot quickly.'

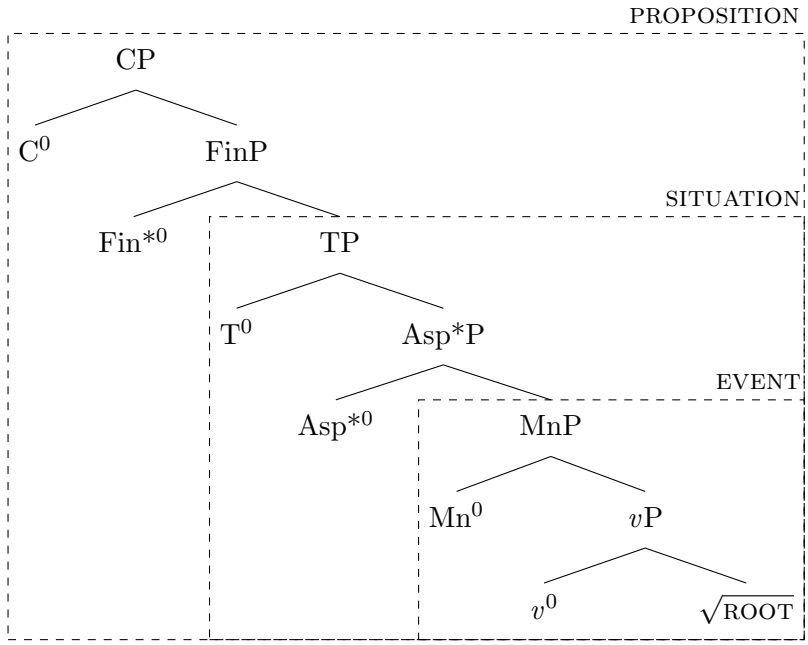
In (157a) it is the lexical verb that hosts the distinctive voice morphology of the clause (PV) as well as the agent clitic, two properties associated with finite verbs in the language. In (157b), it is instead the modal auxiliary verb 'want' that hosts the distinctive voice morphology and the agent clitic, while the lexical verb has the default actor voice morphology. Therefore, the modal auxiliary verb is the finite verb of the clause. In (157c), it is the manner modifier 'quickly' that hosts both the distinctive voice morphology and the agent clitic, while the lexical verb has the default actor voice morphology. In this sentence, it is the manner modifier that is the finite verb of the clause. These examples highlight the structural similarities between the auxiliary verb *asaun* and the manner modifier *haivun*, suggesting that the latter also can be treated as an auxiliary verb.

In the previous two chapters, I adopt an anti-Lexicalist approach to the interface between morphology and syntax, thereby following the claim that morphology and syntax belong to the same grammatical domain. The fact that the position of verb-internal manner modifiers was predictable following an anti-lexicalist model of word formation was taken as a corroboration of this assumption. An advantage with this approach is that it makes strong predictions regarding the grammatical properties of auxiliary verbs that encode manner information. A prediction is that morphological structure should mirror syntactic structure (and vice-versa). This is a much-discussed hypothesis, although it has primary been discussed in terms of tense, aspect and mood markers, and valency-changing morphology (Baker, 1985; Cinque, 1999; Julien, 2002). By comparing the grammatical properties of verb-internal manner modifiers and manner modifying auxiliary verbs, the predictions made by this hypothesis can be tested further.

Since I argue that the hierarchical structure for both the synthetic (i.e. verb-internal manner modifier) and the analytic alternatives (i.e. auxiliary verbs encoding manner information) are the same, it is predicted that the same restrictions upon linear patterns should hold for both. Given the hierarchical structure illustrated in the tree structure below, it is predicted that auxiliary verbs that encode manner information (i.e. manner adverbial verbs) ought to be situated closer to the verbal root than tense, view-point aspect and mood markers, whereas the ordering for valency changing morphology and manner

modifiers is predicted to be variable.

(158)



To test these predictions, I take a closer look at auxiliary verbs that encode manner information in Formosan languages (the Austronesian languages of Taiwan). The inventory of auxiliary verbs in these languages is typologically distinct since they are not limited to temporal and modal auxiliaries, but also include auxiliary verbs that encode manner and aspectual information. They are often referred to as adverbial verbs in the literature, and I adhere to that convention here. In order to distinguish adverbial verbs that encode manner information for other types of adverbial verbs, I use the term 'Manner Adverbial Verb' throughout this chapter. I only use the term 'auxiliary' in the context of modal auxiliary verbs. While H. Y. Chang (2009, 2010), Holmer (2006, 2010, 2012) and H.-H. I. Wu (2019) have argued that adverbial verbs are functional heads in the extended verbal projection (see 2.3.1 for more details), they agree that a cartographic model cannot account for all the properties attested for adverbial verbs. I therefore explore to what extent the model developed in the previous two chapters can address the short-comings behind using a cartographic framework for analysing manner adverbial verbs.

In this chapter, I investigate the properties of adverbial verbs that encode manner information in Formosan languages broadly, not focusing on any particular language. The definition of manner adverbial verbs was introduced in chapter

2, and it is repeated here for clarity. The definition is closely related to the one used for identifying verb-internal manner modifiers, differing only in the formal criterion. Manner adverbial verbs must i) function as a modifier towards a lexical verb (functional criterion), ii) assign an attribute to an aspect of the event denoted by the lexical verb (semantic criterion) and iii) must be phonologically independent and host the verbal morphology associated with finite verbs (formal definition). An example of a manner adverbial verb from Seediq is presented in (159).

(159) *Seediq* (Holmer, 2012, p. 904)
knhwa-un=mu m-imah ka begu
slow-PV=1S.GEN AV-drink NOM broth
'I will drink the broth slowly.'

The manner modifier stem (*knhwa* in 159) hosts verbal morphology (PV, which is the distinctive voice of the clause) and it hosts the agent clitic. The fact that the internal argument ('broth') is marked in the nominative case and the external argument (first person) is in the genitive case shows that the clause is in the patient voice. The manner modifier is phonologically independent, and as in the Takituduh Bunun examples above, the lexical verb is marked in the default actor voice, glossed as AV. It also assigns a property to an aspect of the event denoted by the lexical verb ('slow'), and it function as a modifier to the lexical verb. It thereby meets all the criteria for being classified as a manner adverbial verb.

I begin this chapter by giving a brief introduction to the Formosan languages in 5.1. I then move on to discuss the morphosyntactic properties of manner adverbial verbs in 5.2, focusing on describing their linear distribution and their morphology. In 5.3, I present my analysis that attempts to capture the morphosyntactic properties of manner adverbial verbs. I discuss the semantic content of manner adverbial verbs in 5.4, before concluding the chapter in 5.5.

5.1 Introducing Formosan languages

In this section I provide an introduction to the Formosan languages that I discuss here. A brief overview of their genealogical affiliations is included, as well as a brief introduction of the grammatical structures relevant for the upcoming discussion.

5.1.1 Genealogy

The Formosan languages all belong to the Austronesian language family. Taiwan is the presumed Urheimat of the language family. While it is generally agreed that the extra-Formosan Austronesian languages all belong to a single branch of the family, the sub-classification of the Formosan languages within the family is a much-discussed topic (cf. Blust, 1999; P. J.-K. Li, 2008; Ross, 2009; Blust and Chen, 2017). Here I adopt the more conservative proposal (that of Blust, 1999), according to which Proto-Austronesian split up into 10 different branches, 9 of which are Formosan. The Malayo-Polynesian branch contains all Austronesian languages spoken outside of the island of Taiwan. A list of the 9 different Formosan branches, as well as the extra-Formosan branch, are given below. The languages discussed in this chapter are given in italics next to their branch.

- Austronesian
  - Paiwan (*Paiwan*)
  - Bunun (*Takituduh, Isbukun*)
  - Tsouic (*Tsou*)
  - Northwest Formosan (*Saisiyat*)
  - Atayalic (*Seediq*, *Mayrinax Atayal*)
  - East Formosan (*Kavalan*)
  - Puyuma (*Puyuma*)
  - Western Plains (*Thao*)
  - Rukai
  - Malayo-Polynesian

In this chapter, I look at manner adverbial verbs in Formosan languages more broadly, rather than focusing on a single language. When I first mention a specific language variety, I also give its genealogical classification according to the proposal above.

5.1.2 Grammatical Overview

The Formosan languages (excluding the highly Sinicised varieties) are predicate- and verb-initial. One example from Takituduh Bunun and one example from Puyuma illustrating the verb-initial word order are given below (160) and (161),

respectively. In Takituduh Bunun VSO is the unmarked word order whereas Puyuma have VOS as the unmarked word order. However, many Formosan languages allow a degree of variation in the ordering of arguments in the post-verbal domain.

(160) *Takituduh Bunun*
kal'ing-un Umin ca qasu tulkuk
stir.fry-PV PN PIV meat chicken
'Umin stir-fried the chicken meat.'

(161) *Puyuma* (Teng, 2008, p. 47)
tu=trakaw-aw na paisu kan isaw
3S.GEN=steal-PV DF.PIV money GEN PN
'Isaw stole the money.'

Formosan languages exhibit a broadly right-branching syntactic structure. This can be seen in the verb-initial basic clause structure illustrated in the previous two examples, as well as in adpositional phrases, which are prepositional. Auxiliary verbs likewise precede lexical verbs, as is expected for head-initial, right-branching languages. Examples illustrating the position of auxiliaries and adpositions are given below. Note that the internal structure of noun phrases is subject to much variation, both within and between languages, with modifiers both preceding and following the head noun.

(162) *Puyuma* (Teng, 2008, pp. 54, 235)

a. trekelr=ku i ruma'
<AV>drink=1S.NOM LOC house
'I drink (wine) at home.'

b. karuwa m-ubii=la
can AV-fly=PERF
'He can fly already.'

An important grammatical feature of conservative Austronesian languages (including the Formosan languages discussed here) is the so-called Austronesian Voice System. This grammatical phenomenon has also been referred to as 'Philippine-Type Voice system', 'Austronesian Alignment', 'Austronesian Focus System' and 'Austronesian Trigger System'. Verbs have several different 'voice'

markers, often divided into the two categories, 'actor' voice and 'non-actor' voices (also known as 'undergoer' voices). Languages with more conservative systems tend to have one actor voice and at least three different non-actor voices. In descriptive terms, the voice morphology on the verbs broadly reflects the transitivity of the clause and the argument structure properties of the pivot, i.e. the most prominent argument of the clause. The pivot also often has a special case marker. The pivot is privileged in several ways, being the only argument available for relativization, topicalization, Wh-movement and cleft constructions, and it generally has a higher degree of referentiality compared to other arguments. The nature of the voice system and the status of the pivot are both contested issues that have been subject to much discussion. The Puyuma voice system is illustrated in (163). The different voice markers are glossed as AV for Actor Voice, and the three undergoer voices are glossed as PV for Patient Voice, LV for Locative Voice and CV for Circumstantial Voice. The case marker for the pivot argument in the examples below is glossed as NOM.

(163) *Puyuma* (Teng, 2008, pp. 47–48)

a. trakaw dra paisu i isaw
<AV>steal OBL money S.NOM PN
'Isaw stole money.' Agent as Pivot

b. tu=trakaw-aw na paisu kan isaw
3S.GEN=steal-PV DF.NOM money GEN PN
'Isaw stole the money.' Theme as Pivot

c. tu=trakaw-ay=ku dra paisu kan isaw
3S.GEN=steal-LV=1S.NOM ID.OBL money ID.OBL PN
'Isaw stole money from me.' Source as Pivot

d. tu=trakaw-anay i tinataw dra paisu
3S.GEN=steal-CV S.NOM his.mother ID.OBL money'
'He stole money for his mother.' Benefactive as Pivot

In (163a), the verb is marked with AV and the pivot has an agent thematic role. The pivot in AV clauses prototypically are agents, but this generally also includes experiencers. In (163b), the verb is marked with PV and the pivot has a theme thematic role. In PV clauses the pivot prototypically fulfils a theme or patient role. In (163c), the verb is marked with LV and the pivot has a source thematic role. In LV clauses, the pivot is prototypically some kind of locative argument, representing location, goal, source (as in the example above) and

similar roles. In Puyuma, LV is also often used for themes that are less effected by the verbal event, whereas PV is preferred for patients that are more affected by the event (Teng, 2008, p. 111). In (163d), the verb is marked with CV and the pivot has a benefactive thematic role. In CV clauses the pivot can have a variety of thematic roles, benefactive and instrument being common ones.

AV morphology is also used in intransitive clauses, where the pivot exhibits a larger range of thematic roles. The intransitive clauses in AV include those with unergative verbs, unaccusative verbs as well as stative verbs. Examples illustrating this diversity are given in (164) from Takituduh Bunun.

(164) *Takituduh Bunun*

a. m-alalia azak
AV-run 1S.NOM
'I run.' Unergative verb

b. m-u-liqliq ca huluc=naak
AV-AC-tear NOM clothes=1S.POSS
'My clothes tore.' Unaccusative verb

c. ma-daqvis ca ludun
AV-tall NOM mountain
'The mountain is tall.' Stative verb

Examples illustrating all four voice alternations in Takituduh Bunun are given below. The four sentences below all have different voice markers on the verbs, and the pivot in all four sentences has a different thematic role. The case for the pivot is glossed with NOM in the examples below.

(165) *Takituduh Bunun*

a. ma-kal'ing azak qasu tulkuk
AV-stir.fry 1S.NOM meat chicken
'I stir-fry chicken meat.' Agent as Pivot

b. kal'ing-un zaku ca qasu tulkuk
stir.fry-PV 1S.ERG NOM meat chicken
'I stir-fry the chicken meat.' Patient as Pivot

c. kal'ing-an zaku qasu tulkuk ca tipin
stir.fry-LV 1S.ERG meat chicken NOM wok
'I stir-fry the chicken meat in the wok.' Location as Pivot

d. is-kal'ing zaku qasu tulkuk ca simal
CV-stir.fry 1S.ERG meat chicken NOM oil
'I stir-fry the chicken meat with the oil.' Instrument as Pivot

In (165a) above, the verb is marked with AV and the pivot is an agent. In (165b), the verb is marked with PV and the pivot is a patient. In (165c), the verb is marked with LV and the pivot is a location. In (165d), the verb is marked with CV and the pivot is an instrument.

The nature of the Austronesian voice system has been subject to much discussion, particularly in how it relates to grammatical roles, transitivity and morphosyntactic alignment, and what the syntactic status of the pivot is. Here, I only give a brief account of two major schools of thought on the issue, and refer the reader to the references below for more details.

One common analysis of the Austronesian Voice System is the 'Valency-Neutral Approach' (Himmelmann, 2002; Rackowski, 2002; Rackowski and Richards, 2005; Chen, 2017). Proposals within this broad approach differ significantly from one another, but I not elaborate on these differences here. Broadly speaking, their commonality lies in the claim that the voice morphology on the finite verbs does not manipulate the argument structure, but rather reflects some argument structure property or thematic role related to the clause pivot. The pivot is understood to be either the clause subject, clause topic, or both, depending on the analysis. The voice marking on the finite verb is thus understood as something more akin to an inflectional category like agreement. For instance, actor voice signals that the nominative subject is the privileged argument, whereas locative voice signals that a locative argument is the privileged argument. In formal approaches, the voice morphology is often taken to reflect the extraction of the pivot from its externally merged position to a higher position in the clause, for instance a subject or topic position.

An alternative to the 'Valency-Neutral Approach' is the 'Valency-Changing Approach'. As the name suggests, the voice markers are conceived of as being the overt reflexes of functional heads that encode and manipulate the arguments of verbs. This approach is often based on an ergative analysis of the Austronesian Alignment (Aldridge, 2004, 2012; Liao, 2004; H. Y. Chang, 2011). The pivot is taken to be an absolutive argument. The extraction restrictions on the pivot (only the pivot, i.e. the absolutive argument, may be extracted for Wh-questions, relative clauses, clefts) are taken to be a reflection of an ergative syntax. An important assumption within this school of thought is that Actor

Voice clauses are intransitive, and that any apparent internal arguments are actually oblique, non-core arguments. AV clauses with an oblique argument are thus analysed as antipassive clauses or extended intransitive clauses, and AV morphology is taken to simply indicate that the clause is intransitive. As a consequence, Patient Voice clauses are taken to be the default transitive clause, and the PV morphology on the finite verb simply reflects the transitive structure of the clause. The agent in PV clauses is analysed as being the ergative argument, whereas the internal argument is the absolutive argument. Both CV and LV morphology are taken to be reflexes of applicative morphology promoting an oblique argument to a core internal argument, which is in the absolutive case. Table 5.1 attempts to provide an overview of the status of the different constituents as well as the nature of the voice morphology.

Table 5.1: Ergative analysis of the Austronesian voice system

Clause Type	Agent	Patient	Locative	Instrument	Voice
AV	Absolutive	Oblique	Locative	Oblique	Intransitive
PV	Ergative	Absolutive	Locative	Oblique	Transitive
LV	Ergative	Oblique	Absolutive	Oblique	Applicative
CV	Ergative	Oblique	Locative	Absolutive	Applicative

I will not be able to do justice here to the arguments for and against the different approaches, as well as the differences between various proposals within each school of thought (however, see Chen and McDonnell, 2019 for a recent overview and evaluation of the different positions). Instead, I simply adopt a version of the valency-changing, ergative analysis for the remainder of this chapter. The distinction between Actor Voice and Patient Voice signals the transitivity of the clause, the former marking an intransitive clause, and the latter a transitive clause structure. Locative and Circumstantial Voice are taken to be overt reflexes of applicative morphology. While this approach has proven to be useful for discussing manner adverbial verbs across Formosan languages, I do not claim that it is a superior analysis, nor that any other approaches would be incompatible with the data discussed here.

Differences between analyses between are also reflected in the glossing used by different authors. Since I rely heavily on data from different authors with different analyses in this chapter, this poses a challenge. The most relevant terminological differences for this chapter are outlined in Table 5.2, to be used as a reference if necessary.

Table 5.2: Austronesian glossing

Pivot	Absolutive, Nominative, Topic
non-Pivot Agent	Genitive, Oblique, Ergative
Actor Voice	Actor Focus, Intransitive, Antipassive
Patient Voice	Patient Focus, Transitive
Locative Voice	Locative Focus, Applicative
Circumstantial Voice	Instrument/Benefactive Focus, Applicative

Beyond voice, it is also common for verbs to encode other categories, such as aspect and mood. As is illustrated in the examples below, Isbukun Bunun relies on CV-reduplication to encode a range of imperfective aspect interpretations, such as progressive (166a) and habitual (166b).

(166) *Isbukun Bunun* (L. L.-Y. Li, 2018, pp. 294, 296)

a. ma-ku-kulut tina titi tu na=kaun-un sangan=in
AV-RED-cut mother meat LNK IRR=eat-PV just.now=PERF
'Mother is cutting the meat that will be eaten in a moment.'

b. pi-pinuk-an saia ma-diul tu p<in>ainuk
RED-wear-LV DEM.SG.DIST.NOM AV-red LNK <OBJ.NMZ>wear
'S/he often wears red clothes.'

Mood and voice often interact. In Isbukun Bunun, the realization of the mood marker is dependent upon the voice value of the clause, with a binary contrast between actor and undergoer voices. Mood is encoded via a suffix, and for PV and LV (both of which are marked with suffixes) voice and mood form a portmanteau affix. They are also syncretic, since locative and patient voice in the imperative mood are marked with the same suffix *-av*. Examples are given in (167).

(167) *Isbukun Bunun* (L. L.-Y. Li, 2018, p. 240)

a. ma-saiv-a (mas) kamasia mas u'vaz=tia
AV-give-IMP.AV (OBL) candy OBL child=DIST.OBL
'Give a candy/candies to that child!'

b. saiv-av (a) u'vaz=a mas kamasia
give-IMP.UV (NOM) child=DIST.NOM OBL candy
'Give a candy/candies to that child!'

c. 'i(s)-saiv-av (a) kamasia=an mas u'vaz=tia
CV-give-IMP.UV (NOM) candy=MED.NOM OBL child=DIST.OBL
'Give this candy/these candies to that child/those children!'

In (167a), imperative mood is marked with the suffix *-a*, whereas in (167b) and (167c), which both are undergoer clauses, the imperative mood is marked with *-av*. Note that while patient and locative voice use a portmanteau suffix for both voice and mood, CV and AV have independent prefixes expressing voice, while the mood suffix still is marked for whether the verb is in the actor voice or in undergoer voice. The form of the imperative suffix illustrates some of the empirical support for making a distinction between actor voice and undergoer voices, since the form of the imperative (*-av*) is the same across all three undergoer voices (PV, LV, CV), while it remains distinct for the actor voice (*-a*).

Like in Isbukun Bunun, Puyuma verbs can also inflect for aspect and mood, in addition to voice. Aspect encoded via Ca-reduplication can encode a wide range of imperfective aspectual interpretations, including progressive (168a) and habitual (168b).

(168) *Puyuma* (Teng, 2008, p. 116)

a. sa-senay i walegan
RED<av>-sing S.NOM PN
'Walegan is/was singing.'

b. m-a-ekan dra kuraw
AV-RED-eat ID.OBL fish
'He is/was eating fish / He has the habit of eating fish.'

Puyuma also relies on Ca-reduplication to encode irrealis mood, with the realization of the voice marker being different from that in realis mood clauses, thus formally distinguishing it from Ca-reduplication for imperfective aspect. Locative and patient voice are marked with the same affix in irrealis mood. These patterns are illustrated in (169) below. Had the verb encoded imperfective aspect instead, the verb forms would have been *tra-trakaw-aw* and *ba-bulu-anay*, respectively.

(169) *Puyuma* (Teng, 2008, p. 112)

a. tu=tra-trakaw-i idru na palridrin
3.GEN=RED-steal-IRR.PV that.NOM DF.NOM car
'He will steal that car.'

b. tu=ba-bulu-an na barasa kana kali
3.GEN=RED-throw-IRR.CV DF.NOM stone DF.OBL river
'He will throw the stone into the river.'

Now that the grammatical properties relevant for this chapter have been outlined, I move on to the next section, where I discuss the relevant morphosyntactic properties found for manner adverbial verbs across Formosan languages.

5.2 The Morphosyntax of Manner Adverbial Verbs

Here I discuss the grammatical properties of manner adverbial verbs across several Formosan languages, focusing on what kind of verbal morphology they can host, as well as their distributional properties within the clause. These criteria are used to determine where manner adverbial verbs are situated in the extended verbal projection, and if their distribution corroborates or falsifies the predictions made in light of the discussion of verb-internal manner modifiers in the previous two chapters.

As outlined above, a key assumption is that manner adverbial verbs in Formosan languages are syntactic heads that are merged in the clausal spine, following several previous accounts (H. Y. Chang, 2009, 2010; Holmer, 2010, 2012; H.-H. I. Wu, 2019). An important argument for this position is that adverbial verbs prevent the verbal morphology from being situated on lexical verbs. Under the assumption that they are functional heads, this is an expected consequence of the Head Movement Constraint. This pattern is illustrated using Seediq (*Atayalic Branch*) in (170) below.

(170) *Seediq* (Holmer, 2010, p. 165)

a. **m<n>hmet**-an=mu m-imah sino kiya
<PST>**at.will**-LV=3S.ERG AV-drink wine that
'I drank that wine with no thought about the consequences.'

b. ***m<n>hmet**-an=mu mah-an / n-mah-an
<PST>**at.will**-PV=3S.ERG drink-LV / PST-drink-LV

In the examples above, it is necessary for the adverbial verb 'at will' to host the distinctive voice morphology and the tense morphology of the clause. If the voice morphology is instead situated on the lexical verb, the clause is ungrammatical. This restriction is also referred to as the *AF-only Restriction* (cf. H. Y. Chang, 2006, 2017), although note that it does not apply to languages with voice concord. The conservative Austronesian languages discussed here does not have distinct infinitive verb forms, and H. Y. Chang (2017) shows that the actor voice form shares many distributional properties with a prototypical infinitive, including being the complement of auxiliary verbs and appearing in restructuring clauses. The assumption is that since tense and voice are realized on the adverbial verb, they must both be merged in functional heads that are situated in a higher position than where the adverbial verb is externally merged. The adverbial verb thus prevents tense and voice from being realized on the lexical verb under the Head Movement Constraint (Travis, 1984). It can thus be concluded that any morphology hosted by an adverbial verb must be situated higher in the clause than the adverbial verb.

Another important assumption concerns the sequence of adverbial verbs. Since Formosan languages broadly speaking are head-initial, we can assume that in a sequence of two adverbial verbs, the one situated furthest to the left is merged in the higher position. This assumption is further supported if the leftmost adverbial verb hosts morphology unavailable to the rightmost adverbial verb. This pattern in illustrated in the example below from Takituduh Bunun.

(171) *Takituduh Bunun*

ucqa'-un	cia	ma-**tacqait**	ma-ludaq	ca	nauba
suddenly-PV	3S.ERG	AV-**hard**	AV-hit	NOM	younger.sibling

'He suddenly hit the younger sibling hard.'

In example (171a), the aspectual adverbial verb *ucqa'un* is situated further to the left than the manner adverbial verb *matacqait*, and it is also hosting the distinctive voice morphology of the clause (*-un*). Both the manner adverbial verb *matacqait* and the lexical verb *maludaq* are instead realized in the default actor voice. The sequence would thus be [Voice [AspV [MnV [LexV]]]], with 'AspV' representing an aspectual adverbial verb, 'MnV' representing a manner adverbial verb, and 'Voice' as a pretheoretical label for the position where the patient voice morphology of the clause is located. Now that the methodological assumptions have been clarified, I move on to discuss the findings.

5.2.1 Adverbial Verbs and Verbal Morphology

Manner adverbial verbs across Formosan languages can host imperative mood morphology and voice morphology. Examples illustrating this pattern are given below from Takituduh Bunun.

(172) *Takituduh Bunun*

a. ma-**cihal**-a ma-patas
AV-**well**-IMP AV-write
'Write well!'

b. *ma-**cial** ma-patas-a
AV-**well** AV-write-AV.IMP

c. **picihal**-i ca tingami dii ma-patas
well-IMP.UV NOM letter DEM AV-write
'Write this letter well!'

d. *ma-**cial** patas-i ca dii
AV-**well** write-IMP.UV NOM DEM

As is shown in examples (172a-b), it is the manner adverbial verb that hosts the imperative morphology in actor voice clauses, not the lexical verb, and in examples (172c-d) it is shown that the same is true for non-actor voice clauses. We can see a similar pattern in Seediq in example (173) below, where the portmanteau suffix encoding (patient) voice and imperative mood are realized on the manner adverbial verbs, whereas the lexical verb is realized with the default actor voice morphology.

(173) *Seediq* (Holmer, 2012, p. 909)
bleq-i s(m)ino ka sama kiya
well-PV.IMP AV.wash NOM vegetables that
'Wash those vegetables properly!'

The same pattern can also be reproduced for Kavalan (*East Formosan Branch*), as illustrated in examples (174a-b) below, where it is the manner adverbial verb that hosts the imperative morphology (both in actor and non-actor voice clauses), while the lexical verb has the default actor voice morphology.

(174) *Kavalan* (H. Y. Chang, 2006, p. 46)

a. **paqanas**-ka saqay
slow-AV.IMP walk<AV>
'Take it easy! (goodbye, host to guest)'

b. **paqanas**-i-ka m-uysis
slow-UV-IMP AV-move
'Move (it) slowly!'

Thao (*Western Plains*) likewise has manner adverbial verbs that can host imperative morphology, while the lexical verb appears in the default actor voice. Note that the difference between declarative actor voice and the imperative actor voice for the manner adverbial verb *uhiav* in example (175) is simply a matter of not having the overt prefix for actor voice.

(175) *Thao* (Jian, 2018, p. 114)
uhiaw m-alalia
fast.AV.IMP AV-run
'Run quickly!'

Similarly, across the Formosan languages, manner adverbial verbs exhibit at least a binary distinction between actor voice and non-actor/patient voice. Example (176) from Takituduh Bunun below illustrates this pattern.

(176) *Takituduh Bunun*

a. ma-**hiav** ca tina=naak ma-kulut is sanglav
AV-**fast** NOM mother=1S.POSS AV-cut OBL vegetable
'My mother cuts vegetables quickly.'

b. **haiv**-un tina=naak ma-kulut ca sanglav
fast-PV mother=1S.POSS AV-cut NOM vegetable
'My mother cuts the vegetables quickly.'

c. *ma-**hiav** tina kulut-un ca qasu
AV-**fast** mother cut-PV NOM meat

In (176a), the clause is in the actor voice (the agent is marked with the nominative case) and both the lexical and the manner adverbial verb are in actor voice. In contrast, in (176b) the manner adverbial verb hosts the patient voice

morphology of the clause, with the lexical verb in the default actor voice. (176c) shows that it is impossible for the patient voice morphology to end up on the lexical verb in such clauses. A similar pattern is illustrated for Puyuma in (177).

(177) *Puyuma* (C.-L. Li, 2007, p. 55)

a. **patawar**-ø=ku m-aip dra tilril
slowly-AV=1S AV-read OBL book
'I read books slowly.'

b. ku=**patawar**-ay m-aip na tilril
1S=**slowly**-LV AV-read NOM book
'I read the book slowly.'

In (177b), the manner modifier hosts locative voice morphology, instead of the expected patient voice morphology. It is a pattern found across several Formosan languages, where adverbial verbs exhibit a binary distinction between actor voice and non-actor voice and the overt marker for the non-actor voice is either patient voice or locative voice. Still, the overall pattern remains the same, where the manner adverbial verb hosts the distinctive non-actor voice morphology of the clause.

Manner adverbial verbs in Seediq likewise have the ability to host the distinctive non-actor voice morphology of the clause, as is illustrated in example (178) below. In this example, the patient voice morphology is realized on the manner adverbial verb 'slowly', whereas the lexical verb 'drink' takes the default actor voice morphology.

(178) *Seediq* (Holmer, 2012, p. 904)
knhwa-un=mu m-imah ka begu
slowly-PV=1S.ERG AV-drink NOM broth
'I'll drink the broth slowly.'

The Thao language likewise has manner adverbial verbs that can host the distinctive non-actor voice of the clause, marked with the suffix *-in* in (179), whereas the lexical verb is realized with the default actor voice morphology, overtly marked by the infix *-um-*.

(179) *Thao* (Jian, 2018, p. 239)
numa **uhiaw**-in izai k<m>airuru s izai thithu a
and **quickly**-PV DEM <AV>remove DET DEM it.GEN LNK
lina...
heartwood...
'and (you have to) remove the heartwood quickly...'

In languages with tense and aspect morphology associated with finite verbs, manner adverbial verbs also host this morphology. When manner adverbial verbs are present in the clause, this morphology cannot be hosted by the lexical verb, but must appear on the manner modifier.

(180) *Seediq* (Holmer, 2010, p. 165)
m<n>hmet-an=mu m-imah sino kiya
<PST>**at.will**-LV=3S.ERG AV-drink wine that
'I drank that wine with no thought about the consequences.'

(181) *Kavalan* (H. Y. Chang, 2006, p. 48)
paqanas-pa-iku pasaqay tu qRitun
slow-FUT-1S.NOM drive.AV OBL car
'I will drive slowly.'

(182) *Paiwan* (H. Y. Chang, 2010, p. 190)
na-**galu**-aken a kim tua hung
PERF-<AV>**slowly**-1S.NOM LNK search.AV OBL book
'I searched a book slowly.'

(183) *Takituduh Bunun*
q<in>asmav-an zaku ma-tapha ca qasu mangki
<PRV>**diligent**-LV 1S.ERG AV-grill NOM meat these
'I have diligently grilled these meats.'

In example (180), the Seediq manner adverbial verb hosts the past tense infix *<n>*, in (181) the Kavalan manner adverbial verb hosts the future tense suffix, in (182), the Paiwan aspect prefix is hosted by the manner adverbial verb, and

(183) shows that the manner adverbial verb can host the Takituduh Bunun perfective aspect morphology (a combination of the infix *<in>* and the suffix *-an*).

To summarize the findings so far, in clauses with manner adverbial verbs, imperative mood, the distinctive voice morphology of the clause, and tense and aspect morphology must be hosted by the adverbial verbs, and cannot be realized on the lexical verb. This observation has led to the formulation of the *AF-Only Restriction* and the *TAM-less Condition* (H. Y. Chang, 2010). According to these principles, when modified by manner adverbial verbs, the lexical verb may only have the actor voice morphology, and cannot host tense, aspect and mood morphology of the clause. An interim summary of the findings so far is given below.

(184) Interim Summary Morphology 1
Above Manner: Imperative Mood, Voice, Tense, Aspect

However, the *TAM-less Condition* needs to be modified slightly. In Takituduh Bunun, imperfective aspect is encoded using CV-reduplication, illustrated in example (185a). This piece of morphology cannot be hosted by a manner adverbial verb, but must be hosted by a lexical verb, illustrated in example (185b). If the manner adverbial verb is reduplicated, it can only get an intensifier reading or a distributive reading, illustrated in (185c). This example cannot result in an imperfective aspect interpretation.

(185) *Takituduh Bunun*

a. ku-kulut-un cia ca sanglav
RED-cut-PV 3S.ERG NOM vegetables
'He is cutting the vegetables.'

b. **daukdauk**-un cia ma-ku-kulut ca sanglav
slowly-PV 3S.ERG AV-RED-cut NOM vegetables
'He is cutting the vegetables slowly.'

c. ma-qa-**qasmav** bunun mangki kuzakuza
AV-RED-**diligent** person DEM work
'All those people worked diligently.'

My proposal is that the reduplication for imperfective aspect in Takituduh Bunun is an overt reflex of what Travis (2010) refers to as inner aspect, similar

to her analysis of CV-reduplication in the Austronesian language Tagalog. Inner aspect here is connected to a functional projection situated inside the VP, below the functional projection responsible for introducing the external argument (in contrast to 'outer' aspect, which is situated outside the expanded VP). This allows for the possibility of aspect to be merged in a very low position in the clausal spine, even below manner modifiers. An interesting parallel can be made here between the patterns found in Takituduh Bunun and those discussed for West Greenlandic in chapter 3. For West Greenlandic, it was shown that a subset of aspect functional projections can merge in a position below manner, however, no instances were found of productive aspect morphology that must be merged below manner, since alternation in height was always possible. However, based on the work of Cinque (1999), Travis (2010), and Ramchand and Svenonius (2014), it is expected that it is possible for some aspectual material to merge below manner. An up-dated interim summary is given below.

(186) Interim Summary Morphology 2

a. **Above Manner:** Imperative Mood, Voice, Tense, Aspect

b. **Below Manner:** CV-reduplication (Inner Aspect)

I now move on to discuss valency changing morphology, focusing on applicatives (locative voice and circumstantial voice in the traditional terminology) and causatives. It has previously been observed that adverbial verbs in Formosan languages have the ability to host causative morphology. Examples form Paiwan, Mayrinax Atayal, Saisiyat and Isbukun Bunun are given below, all of which include manner adverbial verbs that host causative morphology. Note that Isbukun Bunun exhibits causative concord, with both the lexical and the adverbial verb being marked with causative morphology.

(187) *Paiwan* (H. Y. Chang, 2010, p. 201)
pa-ka-**tjaljav**-u a djavac
CAU-INCH-**fast**-IMP LNK <AV>walk
Lit. 'Make yourself walk faster!', 'Walk faster!'

(188) *Mayrinax Atayal* (H. Y. Chang, 2010, p. 201)
pa-pa-k-**hailag**-ci' 'iä m-irai cu' kuru'
IRR-CAU-INCH-**fast**-ls.NOM LNK AV-drive OBL car
lit.: 'I will make myself drive a car faster!', 'I will drive faster!'

(189) *Saisiyat* (H. Y. Chang, 2010, p. 201)
pa-k-**'alikaeh** sowiti' manra:n
CAU-INCH-**fast** a.little walk.AV
'Walk a little faster!'

(190) *Isbukun Bunun* (L. L.-Y. Li, 2018, p. 354)
ma-pi-**kaskas** saia 'uvaz pa-kuzakuza
AV-STAT.CAU-**diligent** NOM.3S.DIST child CAU-work
'S/he makes/made a child/children work diligently.'

H. Y. Chang (2010) takes the ability of manner adverbial verbs to host causative morphology as evidence that they exhibit lexical properties, and cannot be reduced to functional items. However, it is not necessary to make this assumption to account for the ability of manner adverbial verbs to host causative morphology. As was discussed for West Greenlandic in chapter 3, it is possible for causatives to be merged in a higher position than manner in the clausal spine, which in West Greenlandic is reflected in the linear order of the verbal affixes (example reproduced below). If the same hierarchical structure is found in Formosan languages, we would expect manner adverbial verbs to host the causative morphology, while simultaneously preventing the causative morphology from being realized on the lexical verb. Therefore, the hierarchical order remains the same ([Causative [Manner [Verb]]]), the only difference being that in West Greenlandic both manner and the causative are realized as suffixes to the verb, whereas the manner modifier is independent in Formosan languages.

(191) *West Greenlandic*
anipallatsippai
ani-**pallag**-tit-pa-i
exit-**quickly**-CAU-IND-3S.ERG.3P.ABS
'She made them go out quickly (She made them go out and they went out quickly).'

If we compare the Formosan languages to West Greenlandic, it is predicted that it should also be possible for the causative functional projection to be merged below manner, in which case causative morphology would be hosted by the lexical verb, resulting in a different scope interpretation. This prediction is borne out in Takituduh Bunun, as illustrated in the examples below.

(192) *Takituduh Bunun*

a. na=pi-**qasmav**-un tina ca uva'az ma-patas is
IRR=CAU.STAT-**diligent**-PV mother NOM child AV-write OBL
tingami
letter
'Mother will make the child diligently write the letter.'

b. **qasmav**-un tina ca uva'az pa-patas tingami
diligent-PV mother NOM child CAU.AV-write letter
'Mother, in a diligent manner, made the child write a letter.'

In (192a), it is the manner adverbial verb 'diligently' that hosts the causative morphology of the clause, and the causative is situated above the manner modifier. As such, the interpretation is that the mother will cause the child to, in a diligent way, write the letter. The causative is thus situated above both the event (write a letter) and its manner modifier (diligently). Compare this to (192b), where the causative morphology is hosted by the lexical verb. Here the manner modifier is situated above the causative morphology, yielding a different interpretation where it is the mother who, in a diligent manner, makes the child write the letter. I argue that the difference in interpretation and linear order in this minimal pair can be reduced to a difference in the hierarchical order, where in (192a) the causative is merged above the manner modifier ([Causative [Manner [Verb]]]), and in (192b) the causative is merged in a lower position ([Manner [Causative [Verb]]]). See Section 3.2.4 in chapter 3 for a detailed semantic analysis of the difference between the two interpretations.

As mentioned above, it has been claimed in the literature that adverbial verbs only exhibit a binary distinction between actor voice and non-actor voice (cf. H.-H. I. Wu, 2019), the latter encoded via either patient voice or locative voice. However, in both Isbukun Bunun (L. L.-Y. Li, 2018) and Takituduh Bunun, at least manner adverbial verbs are not restricted to this binary distinction. Examples of a three-way voice distinction for a manner adverbial verb in Isbukun Bunun are given below.

(193) *Isbukun Bunun* (L. L.-Y. Li, 2018, p. 268)

a. kali-**daukdauk**=ik ma-ludah saitia
HIT-**slow/light**=1SG.NOM AV-hit OBL.3SG.DIST
'I hit him/her slowly.'

b. kali-**daukdauk**-un=ku saia ma-ludah
HIT-**slow/light**-PV=1SG.OBL NOM.3SG.DIST AV-hit
'I hit him/her lightly.'

c. 'is-kali-**daukdauk**=ku halaisva ma-ludah saitia
CV-HIT-**slow/light**=1SG.OBL tree.branch AV-hit OBL.3SG.DIST
'I hit him/her with a tree branch/tree branches slowly.'

In example (193a), the clause is in the actor voice, with no overt voice-marker on the manner adverbial verb. In example (193b), the clause is in the patient voice, whose marker is realized on the manner adverbial verb. Finally, in example (193c), the clause is in the circumstantial voice, with 'tree branch' functioning as the pivot with an instrument thematic role. The voice morphology *'is-* is realized on the adverbial verb, with the lexical verbs in the default AV in all three examples.

At least some Manner adverbial verbs in Takituduh Bunun exhibit a four-way voice contrast, being able to take actor voice, patient voice, locative voice and circumstantial voice. All four alternations are illustrated below using the manner adverbial verb *daukdauk*, which, depending on the context, means 'slowly' or 'gently'.

(194) *Takituduh Bunun*

a. **daukdauk** ca tina=naak ma-kulut sanglav
AV.**gently/slowly** NOM mother=1S.POSS AV-cut vegetables
'My mother cuts the vegetables slowly/gently.'

b. **daukdauk**-un cia ma-ludaq ca tuqas=cia
gently/slowly-PV 3S.ERG AV-hit NOM older.sibling=3S.POSS
'He hit his older sibling gently/slowly.'

c. **daukdauk**-an cia sadu haqail ca sipulan aiza
gently/slowly-LV 3S.ERG AV.read book NOM school DEM
'The child is reading a book in that school slowly.'

d. is-**daukdauk** uva'az ma-sinav is tipin ca tavasi
CV-**gently/slowly** child AV-wash OBL pot NOM brush
'The child is washing the pot gently/slowly with the brush.'

If one assumes that that circumstantial voice and locative voice are the overt reflexes of applicative functional heads, as is done in ergative analyses of the Austronesian voice system (see 5.1.2), this pattern can be accounted for if manner modifiers are the reflexes of functional heads merged below the applicative head. The manner modifier then prevents the applicative morphology from appearing on the lexical verb, similar to the pattern discussed for causatives. This is also the expected pattern in the light of the typological survey in chapter 4, where it was shown that applicatives can be merged above manner modifiers. However, it was also shown in the previous two chapters that it is possible for applicative morphology to be merged below manner modifiers, which was reflected in the linear order of affixes in West Greenlandic. It should therefore, in principle, be possible for applicative morphology to be hosted by the lexical verb, while modified by a manner adverbial verb. This prediction is borne out in Takituduh Bunun, as illustrated in the examples below.

(195) *Takituduh Bunun*

a. is-**qalmang** tama ma-kulut is qasu ca via
CV-**sloppily** father AV-cut OBL meat NOM knife
'Father cut meat with the knife sloppily.'

b. **qalmang**-un tama is-kulut is qasu ca via
sloppily-PV father CV-cut OBL meat NOM knife
'Father cut meat with the knife sloppily.'

In (195a), the circumstantial voice morphology (the distinctive voice morphology of the clause, as is seen by the fact that the nominative argument is an instrument) is hosted by the adverbial verb, while the lexical verb is in the default actor voice morphology. However, in (195b), CV morphology is hosted by the lexical verb, and while the adverbial verb is in patient voice, the nominative argument is the instrument. Like with the discussion of the causative, this pattern can be derived if we allow for variation in the hierarchical sequence of functional projections, where example (195a) reflects the hierarchical structure [Applicative [Manner [Verb]]], and (195b) reflects [Manner [Applicative [Verb]]]. Note that these kinds of alternations are not possible for Locative Voice in Takituduh Bunun.

An interesting issue is that of the voice morphology of the adverbial verb in (195b). This data has important implications for our understanding of the Austronesian voice system, which is beyond the scope of this dissertation. However, as a preliminary proposal, I suggest that voice is primarily a binary distinction between actor voice and non-actor voice, a distinction that is encoded on the highest verb in any given sequence. If this binary voice and any applicative morphology are hosted by a single verb, a single exponent will spell out both of them via spanning (Svenonius, 2012). In contrast, if they are hosted by phonologically independent constituents, as in (195b), both are spelled-out independently. The fact that the subject of the clause is not the external argument (i.e. the agent) is reflected in the patient voice morphology on the adverbial verb.

These patterns from Takituduh Bunun shows that the *AF-Only Constraint* needs to be modified slightly, as it is possible for at least circumstantial voice to be hosted by the lexical verb when it is modified by a manner adverbial verb. The pattern is rather that the primary distinction between actor voice and non-actor voice cannot be encoded on the lexical verb, but must be reflected on the manner adverbial verb. Note that it would be ungrammatical for the adverbial verb in example (195b) to have AV morphology. Additional evidence for this position is found in the examples in (196), where the instrument applicative is included in structures with two adverbial verbs.

(196) *Takituduh Bunun*

a. uqna-un tama is-**qalmang** ma-kulut sanglav ca via
again-PV father CV-**sloppily** AV-cut OBL vegetables NOM
'His father cut vegetables with the knife diligently again.'

b. uqna-un tama **qalmang** is-kulut is qasu ca via
again-PV father AV.**sloppily** CV-cut OBL meat NOM knife
'Father cut meat with the knife sloppily again.'

In example (196a), the lexical verb is in the default AV morphology, the manner adverbial verb hosts the applicative prefix, and the aspect adverbial verb hosts the patient voice. In contrast, in (196b), the applicative prefix is hosted by the lexical verb, and the higher aspect adverbial verb hosts the PV morphology of the clause, while the manner adverbial verb is in the default actor voice. These patterns further suggests that the binary actor-undergoer voice distinction is connected to a functional projection higher in the clause than both aspect and manner adverbial verbs, and that the applicative functional projection can merge both above and below manner. If it is merged below manner, no mor-

phology (neither undergoer voice nor the applicative) will be available for the manner adverbial verb, and it is realized in the default actor voice. If the applicative functional projection is merged above manner, no morphology will be available for the lexical verb, and it will be realized in the default actor voice. Overall, the pattern supports the basic assumption of the Split-Voice Hypothesis (H. Y. Chang, 2010), according to which voice is split into a primary distinction between Actor Voice and Undergoer Voice on the one hand, and applicatives on the other, which are merged in a lower position in the clause. I leave the implications of these findings for our understanding of the Austronesian Voice System for future research.

Another interesting morphological phenomenon found on adverbial verbs in Tsou and different varieties of Bunun is what is known as 'prefix concord'. The adverbial verb appears to agree with the lexical verb, hosting a prefix correlating broadly with the semantics of the lexical verb. Examples from Isbukun Bunun and Tsou are given below.

(197) *Isbukun Bunun* (L. L.-Y. Li, 2018, p. 268)
kali-**daukdauk**-un=ku saia ma-ludah
HIT-**slow/light**-PV=1SG.ONL NOM.3SG.DIST AV-hit
'I hit him/her slowly.'

(198) *Tsou* (H. Y. Chang, 2009, p. 464)
mi-ta a-bohtʉ' po-**poha'o** ho mi-ta po-kuyai.
AV-3S ADV-careless.AV PUSH-**slow**.AV SUB AV-3S PUSH-car
'Fortunately, he drove his care slowly.'

In the Isbukun Bunun example, the manner adverbial verb 'slowly' takes the prefix *kali-*, which correlates with the lexical verb 'to hit'. In Tsou, the manner adverbial verb 'slowly' takes the prefix *po-*, correlating with the verbalizer 'push'. H. Y. Chang (2009) argues that prefix concord is the overt reflex of a *v*-head, and L. L.-Y. Li (2018) notes that these prefixes are particularly common on manner adverbial verbs. For Tsou and Isbukun Bunun, these patterns can be taken as further support for placing manner adverbial verbs in a low position in the clausal spine. Similar structures are found in Takituduh Bunun, which also exhibit prefix concord for manner adverbial verbs. Examples are given in (199) below.

(199) *Takituduh Bunun*

a. tu-**haiv**-un cia taqu ca qalinga dii
SPEAK-**fast**-PV 3S.ERG teach NOM word DEM
'He quickly taught this.'

b. sa-**qasmav**-un cia sadu ca haqail dii
SEE-**diligent**-PV 3S.ERG read NOM book DEM
'He diligently read this book.'

c. si-**qalmang** acia siza is cui
TAKE-AV.**reckless** 3S.NOM take OBL money
'He recklessly took money.'

All three examples in (199) include prefix concord, including prefixes corresponding to 'speak', 'see' and 'take', respectively. Note also similarities in forms to the lexical verbs (the prefix *tu-* is similar in form to the lexical verb *tupa*, meaning 'to say' or 'to call'). However, these forms appear to be falling out of use. They are always optional, and speakers today generally prefer to avoid using them, showing that the variety is probably in the process of losing this grammatical feature. Prefix concord needs further study, in order to better understand its grammatical properties and its historical origin. However, prefix concord seems to primarily appear on adverbial verbs that are merged in a relatively low position in the clausal spine, which can be taken as additional (albeit relatively weak) support for placing manner adverbial verbs in a low position in the clausal spine. I leave this topic for future research.

To recap, both applicative and causative morphology are shown to be able to be merged both above and below manner modifiers, a pattern illustrated across Formosan languages, albeit with a focus on Takituduh Bunun. This falls in line with the findings of the previous two chapters, where variation in the hierarchical position of manner, causatives and applicatives was observed. Furthermore, since all three categories are expected to be found in the lowest EVENT domain of the clause, this is also the pattern predicted by the theoretical framework developed in the previous two chapters. In contrast, morphology that is introduced by functional projections in a higher position, namely imperative mood, tense, view-point aspect and irrealis mood, must all be hosted by the manner adverbial verb if one is present, and cannot appear on the lexical verb. This distributional pattern follows naturally if it is assumed that manner adverbial verbs are the overt realizations of functional projections limited to the lowest EVENT domain of the clausal spine.

So far, the distribution of manner in relation to other functional categories follow the predictions made by the model developed in the previous two chapters. Tense, viewpoint aspect and mood all are consistently merged above manner, whereas causatives and applicatives allow for variation in height, and inner aspect is consistently situated below manner. I will now see if the same results can be reproduced for sequences of adverbial verbs across Formosan languages.

(200) Final Summary Morphology

a. **Above Manner:** Mood, Voice (AV/PV-distinction), Viewpoint Aspect

b. **Variable Order:** Applicative (CV), Causative

c. **Below Manner:** CV-reduplication (Inner Aspect)

5.2.2 Adverbial Stacking

H. Y. Chang (2009) provides an extensive discussion on the morphosyntactic properties of adverbial verbs in Tsou. He shows that in instances where several adverbial verbs are present within a single clause, the ones encoding manner information will always be situated closer to the lexical verb than any other adverbial verbs. He postulates a syntactic hierarchy where manner is merged as a head below aspectual, epistemic, evaluative and tense projections. An example is given below, illustrating the ordering between evaluatives and manner modifiers. In example (201a), the manner modifier *popoha'o* is situated closer to the lexical verb than the adverbial verb that encodes evaluative information *a-bohtʉ*, glossed as 'careless'. If the order of the two is reversed, as in example (201b), the clause is ungrammatical. Note that the evaluative *abohtʉ* can also function to encode the meaning 'carelessly' in addition to the evaluative interpretation 'fortunately' that it has in the example below, which is why it is glossed to 'carelessly' by H. Y. Chang (2009).

(201) *Tsou* (H. Y. Chang, 2009, p. 464)

a. mi-ta a-bohtʉ' po-**poha'o** ho mi-ta po-kuyai.
AV-3S ADV-careless.AV PUSH-**slow**.AV SUB AV-3S PUSH-car
'Fortunately, he drove his care slowly.'

b. *mi-ta po-**poha'o** A-bohtʉ' ho mi-ta po-kuyai.
AV-3S PUSH-**slow**.AV ADV-careless.AV SUB AV-3S PUSH-car

H. Y. Chang (2009) adopts a cartographic analysis of Tsou, with a strict syntactic hierarchy for the different functional projections. In this cartographic analysis, the manner functional head is placed at the very bottom of the clause, in close proximity to the lexical verb. While this analysis can account for sequences of adverbial verbs in Tsou, it was shown in the previous two chapters that there are important drawbacks behind adopting a cartographic analysis for manner modifiers as syntactic heads. In contrast, the model developed in the previous two chapters is compatible with the Tsou data discussed above, where manner modifiers are limited to the lowest EVENT domain of the clause, preventing higher functional projections from intervening between the manner modifier and the lexical verb. Since the domain model can account for both the morphosyntactic properties of manner adverbial verbs and verb-internal manner modifiers, it is preferable to adopt this model over a cartographic approach.

H.-H. I. Wu (2019) presents an in-depth discussion on the sequence of adverbial verbs in Isbukun Bunun, including a discussion on manner adverbial verbs. I do not discuss speaker-oriented modifiers or modal auxiliary verbs here, but restrict the discussion of aspect and manner adverbial verbs. Looking at the examples in (202), repetitive aspect must appear further from the root than prospective aspect. If the ordering between the two is reversed, as in example (202b) below, the structure is ungrammatical.

(202) *Isbukun Bunun* (H.-H. I. Wu, 2019, p. 13)

a. mu-uhna sa'ia mungaa ma-pizaipuh mas lulubunun.
AV-again 3SG.NOM AV.almost AV-boil OBL egg
'He almost boiled eggs again.'

b. *mungaa sa'ia mu-uhna ma-pizaipuh mas lulubunun.
AV.almost 3SG.NOM AV-again AV-boil OBL egg

In turn, prospective aspect must appear further away from the root than manner adverbial verbs. This pattern is illustrated in the two examples below. In (203a), the aspect adverbial verb *mungaa* 'almost' is situated further to the left than the manner adverbial verb *mabiskav* 'quickly'. If the ordering is reversed, as in example (203b) below, the structure is ungrammatical.

(203) *Isbukun Bunun* (H.-H. I. Wu, 2019, p. 13)

a. (mais balivus-an hai,) mungaa naia ma-**biskav**
(when typhoon-LV TOP) AV.almost 3P.NOM AV-**quickly**
munhanu.
AV.float
'During the typhoon, they almost floated away quickly.'

b. *(mais balivus-an hai,) ma-**biskav** naia mungaa
when typhoon-LV TOP AV-**quickly** 3P.NOM AV.almost
munhanu.
AV.float

Based on the assumptions outlined above regarding the relationship between linear order and hierarchical order, we can draw a few conclusions based on the data above. Repetitive aspect is situated above prospective aspect, and prospective aspect in turn is situated above manner. H.-H. I. Wu (2019) provides a larger inventory of adverbial verbs, with the overall structure deduced to being speech act > epistemic > volitional > repetitive > prospective > manner, where the modifier to the left of the symbol > is situated higher than those to the right. This order is rigid, with no variable orderings. In broad terms, this structure is compatible with the model developed in the previous two chapters, since it predicted that manner adverbial verbs should be merged lower in the structure than adverbial modifiers belonging to the other aforementioned categories. This structure is reflected in the linear order. The patterns discussed for Isbukun Bunun are all compatible with the current framework.

Interestingly, the ordering of a sequence of manner adverbial verbs is variable. This pattern is illustrated in the two examples below, where the relative positioning of the manner adverbial verbs *madaukdauk* 'slowly' and *mananulu* 'carefully' is variable, as either one can follow the other. The differences in semantic interpretation between different orderings of manner modifiers appears to be negligible.

(204) *Isbukun Bunun* (H.-H. I. Wu, 2019, p. 14)

a. mu-**daukdauk** sa'ia ma-**nanulu** ka-libus.
AV-**slowly** 3S.NOM AV-**carefully** AV.cut-tree
'He cut the tress carefully and slowly.'

b. ma-**nanulu** sa'ia mu-**daukdauk** ka-libus.
AV-**carefully** 3S.NOM AV-**slowly** AV.cut-tree
'He cut the tress slowly and carefully.'

We observe a pattern in Isbukun Bunun that is very similar to that found in Tsou, where manner adverbial verbs must always be closer to the lexical verb than any other adverbial verbs. Interestingly, it is possible for the order of multiple manner modifiers to vary, providing further support that their distribution is determined by domains, rather than by a strict functional sequence. Broadly summarizing the findings so far, we can determine that a sequence of adverbial verbs must adhere to the following generalisations: Manner adverbial verbs must appear closer to the lexical verb than aspectual adverbial verbs, and aspectual adverbial verbs must appear closer to the lexical verb than discourse-oriented modifiers.

The morphosyntactic properties of manner adverbial verbs in Seediq as discussed by Holmer (2006, 2010, 2012) are likewise compatible with the model as developed so far. An interesting pattern for variable ordering is given below, based on data from Holmer (2012). As illustrated in (205), the ordering of *mhmetun/mhemuc* 'wanton' and *kntteun/knteetu* 'often' is variable. In example (205a), *mhmetun/mhemuc* 'wanton' is situated further away from the lexical verb, whereas in example (205b) it is situated closer to the verbal root. Note that in both examples the adverbial verb further to the left hosts the voice morphology of the clause.

(205) *Seediq* (Holmer, 2012, p. 912)

a. **mhmet**-un=daha knteetu mimah ka sino.
wanton-PV=3P.ERG AV.often AV.drink NOM wine
'They never think of the consequences, just drink wine often.'

b. kntte-un=daha **mhemuc** mimah ka sino.
often-PV=3P.ERG AV.**wanton** AV.drink NOM wine
'They often drink wine for no reason.'

In example (205a), the modifier *mhmetun/mhemuc* is situated above the frequency adverbial verb, encoding the information that 'drinking often' is wanton behavior more generally. It reflects a subject-oriented meaning, implying that the subjects in the clause drink often without any consideration of the consequences, or a speaker-oriented, evaluative interpretation is triggered (Holmer,

2012, p. 912). In contrast, in example (205b), the modifier *mhmetun/mhemuc* is situated below the frequency modifier, in which case it rather receives a manner interpretation, with connotations such as 'easy-going'.

This pattern can be accounted for using the model developed in the previous two chapters. In example (205b) above, *mhmetun/mhemuc* is merged inside the EVENT domain, and a manner interpretation of the modifier is possible. In contrast, in example (205a), a manner interpretation is not available. If we assume that the frequency modifier is merged in the medial domain, it is predicted that the manner interpretation should be unavailable. Instead, it receives a subject-/speaker-oriented interpretation, which is expected from modifiers higher in the clausal spine. Therefore, the Seediq data is also compatible with the claim that manner modifiers are merged in the lower reaches of the clausal spine, below aspect, subject-oriented and speaker-oriented functional projections.

I now turn to sequences of adverbial modifiers in Takituduh Bunun. I start by looking at epistemic and evaluative modifiers in relation to manner modifiers, as illustrated in the examples below.

(206) *Takituduh Bunun*

a. maupas **kamanaut** ca uva'az sadu haqail
apparently **slowly** NOM child see book
'Apparently, the child reads a book slowly.'

b. ***kamanaut** maupas ca uva'az sadu haqail
slowly apparently NOM child see book

(207) *Takituduh Bunun*

a. kabahi ma-**qasmav** ca bananaz icia kukuza
luckily AV-**diligent** NOM man 3S.POSS work
'Luckily, her husband works diligently.'

b. *ma-**qasmav** kabahi ca bananaz icia kukuza
AV-**diligent** luckily NOM man 3S.POSS work

In sequences of manner and epistemic modifiers, the manner modifier must be situated closer to the lexical verb (206a-b), and the same ordering pattern holds for sequences of evaluative and manner modifiers (207). This is evidence that the speaker-oriented evaluative and epistemic modifiers must be merged in a

position higher in the clausal spine than manner modifiers. There are also important clues from the position of the absolutive agent, illustrated in the examples below.

(208) *Takituduh Bunun*

a. sadu ca uva'az haqail
AV.see NOM child book
'The child reads a book.'

b. **kamanaut** ca AV.uva'az sadu=s haqail
AV.**slowly** NOM child see=OBL book
'The child reads a book slowly.'

c. maupas sadu uva'az is haqail
apparently AV.see child OBL book
'Apparently, the child is reading.'

d. *maupas uva'az sadu is haqail
apparently child AV.see OBL book

As was mentioned above, the basic word order for Takituduh is VSO, with the agent standing immediately to the right of the finite verb. In clauses with auxiliary and adverbial verbs, the agent is situated immediately to the right of the auxiliary or adverbial verb, not the lexical verb. The difference in word order is illustrated in (208a-b). In clauses with epistemic and evaluative modifiers, the agent must stand immediately to the right of the lexical verb, illustrated in examples (208c-d). The differences in the position of the agent shows that a manner adverbial verb like *kamanaut* above stands in a different position than an epistemic modifier like *maupas*. The differences follows naturally if we assume that the verb-initial word order is derived via movement of the verb to a higher position, past the internally merged position of the external argument (cf. the analysis developed by Shih (2017) for the closely related Takibakha language, where it is argued that the verb-initial word order is derived via movement of the verb to C). Speaker-oriented modifiers (here, evaluative and epistemic modifiers) are merged in a higher position than the final position of the finite verb, and therefore does not affect the derivation of the word order. Compare this to adverbial verbs, which take the role of the finite verb of the clause.

A slightly different pattern can is seen for the modal auxiliary *asa* 'want'. It consistently appears further away from the lexical verb than manner adverbial verbs, as expected. This is illustrated in (209a-b). *asa* can host voice morphol-

ogy, unlike the speaker-oriented modifiers discussed above, presumably because it is merged in a lower position in the clausal spine. When patient voice is the distinctive voice morphology of the clause, it must be hosted by *asa*, and cannot appear on the manner adverbial verb, as illustrated in (209c). Note that the interrogative clause in (209c) is pseudo-cleft, and the relevant subordinate relative clause with patient voice morphology is marked with square brackets.

(209) *Takituduh Bunun*

a. asa ca uva'az **manaut** sadu=s haqail
AV.want NOM child AV.**slowly** AV.see=OBL book
'The child wants to read the book slowly.'

b. ***manaut** ca uva'az asa sadu haqail
AV.**slowly** NOM child AV.want AV.see book

c. ma'az ca [asa-un=s uva'az **kamanaut** sadu-k=a]
what NOM [want-PV=OBL child AV.**slowly** read-E=MOD]
haqail
book
'What is the book that the child wants to read slowly?'

The same pattern can be reproduced for aspect adverbial verbs encoding 'often' (*maqanglac*), 'suddenly' (*mucqa*) and 'still' (*maldauk*), as well. If a clause has a sequence of any of these aspect adverbial verbs and a manner adverbial verb, the aspect adverbial verb will always appear further away from the lexical verb than the manner adverbial verb, and it will always host the patient voice morphology (if one is present).

(210) *Takituduh Bunun*

a. ma-qanglac ca uva'az ma-**qasmav** ma-patas
AV-often NOM child AV-**diligently** AV-write
'The child often writes diligently.'

b. *ma-**qasmav** ca uva'az ma-qanglac ma-patas
AV-**diligently** NOM child AV-often AV-write

c. qanglac-un tina=cia ca uva'az pi-**qasmav** ma-patas
often-PV mother=3S NOM child CAU.STAT-**diligent** AV-write
'Mother often makes the child write diligently.'

(211) *Takituduh Bunun*

a. ucqa'-un cia ma-**tacqait** ma-ludaq ca nauba
suddenly-PV 3S AV-**hard** AV-hit NOM younger.sibling
'He suddenly hit is younger sibling hard.'

b. *__qait__-un cia m-ucqa ma-ludaq ca nauba=cia
hard-PV 3S AV-suddenly AV-hit NOM younger.sibling=3S.POSS

(212) *Takituduh Bunun*

a. m-aldadauk=ang cia ma-**qasmav** ma-asik is bukzavan
AV-still=IMPF 3S AV-**diligent** AV-sweep OBL floor
'The child is still diligently sweeping the floor.'

b. *ma-**qasmav** acia m-aldauk ma-asik is bukzavan
AV-**diligent** 3S.NOM AV-still AV-sweep OBL floor

So far, the patterns discussed for Takituduh adhere to the generalisations made above, where manner is always the lowest in a sequence of adverbial verbs. However, it is possible for a subset of the aspectual adverbial verbs found in Takituduh Bunun to be merged both to the left and the right of manner adverbial verbs, with the expected difference in scope interpretation. This pattern has been observed for *kitnga* 'begin' and *muqna* 'again'. The pattern for *kitnga* 'begin' and manner adverbial verbs is illustrated in the examples below.

(213) *Takituduh Bunun*

a. kitngab-un=in uva'az ma-**qasmav** ma-patas ca paitasan
start-PV=PERF child AV-**diligent** AV-write NOM letter
'The child started to diligently write the letter.'

b. **qasmav**-un uva'az kitnga ma-patas ca paitasan
diligent-PV child start AV-write NOM letter
'The child diligently started to write the letter.'

In (213a), the aspectual adverbial verb is situated further to the left than the manner modifier, and it also hosts the distinctive voice morphology of the clause (PV). In this sentence, 'begin' is situated above both the event denoted by the verb as well as the manner modifier, yielding the interpretation that the child began the diligent writing of the book. In contrast, in (213b) the manner mod-

ifier is situated further to the left and it hosts the distinctive voice morphology of the clause, with differences in scope interpretation. This sentence yields the interpretation that the that starting of the writing of the letter was done in a diligent manner. The same pattern is illustrated in the examples below for *muqna* 'again'.

(214) *Takituduh Bunun*

a. uqna-un uva'az ma-**qasmav** sadu ca haqail
again-PV child AV-**diligent** look NOM book
'The child read the book diligently again (did it diligently last time as well).'

b. in-**qasmav**-un uva'az muqna=ang sadu ca haqail
INCH-**diligent**-PV child again=IMPF look NOM book
'The child read the book again, diligently (this time).'

In (214a), it is the aspectual adverbial verb that hosts the distinctive morphology of the clause, and it is situated further away from the lexical root than the manner adverbial verb. It is also situated above both the event denoted by the verb and the manner modifier, yielding the interpretation that the diligent reading was repeated. In contrast, in (214b) the manner adverbial verb hosts the distinctive voice morphology of the clause, and is situated further away from the lexical verb than the aspectual modifier. It is situated above the aspectual modifier, yielding the interpretation that the reiteration of the event denoted by the verb was done in a diligent manner (see (96) and (95) in section 3.4 in chapter 3 for a formal description of the semantic differences yielded by the variation in scope for manner and repetitive aspect).

These findings fall in line with data discussed in previous chapters, where it was shown that some aspect modifiers can merge below manner. This observation also has theoretical support, as it has been argued that at least a subset of aspect markers can be merged in a low position in the clause (cf. Cinque, 1999; Travis, 2010; Ramchand, 2018).

By looking at sequences of adverbial verbs across Formosan languages, additional evidence in favour of a less strictly ordered functional hierarchy was found. Data from Takituduh Bunun showed that adverbial verbs that we expect to find in a relatively low position in the clause (repetitive aspect, inchoative aspect, manner) can vary in terms of their relative position, with differences in scope interpretation. In contrast, modifiers that are expected to be merged in a higher

position in the clausal spine (volition, evaluative and epistemic markers, higher aspect markers) are consistently situated further away from the lexical verb than manner modifiers. This pattern suggests that while functional projections exhibit a degree of freedom in terms of hierarchical ordering within a given domain, the hierarchical ordering between the domains is fixed.

5.2.3 Manner Adverbial Verbs as Independent Verbal Predicates

Another important morphosyntactic property of manner adverbial verbs is that many of them can function as independent verbal predicates. This is the case across several Formosan languages, and suggests that they are not simply functional projections, since it would leave unexplained their ability to function as independent verbal predicates. An illustration using two examples from Kavalan is given below, where the lexeme *qasiR* functions as a manner modifiers in (215b), while functioning as an independent verbal predicate in (215a). In example (215a) below, the 'adverbial verb' has its own argument structure and function as an independent verbal predicate.

(215) *Kavalan* (H. Y. Chang, 2010, p. 200)

a. m-**qasiR** ti utay
AV-**fast** NOM Utay
'Utay is fast.'

b. m-**qasiR** m-RaRiw ti utay
AV-**fast** AV-run NOM Utay
'Utay runs fast.'

The same pattern can be found in other Formosan languages as well, as illustrated by the examples from Isbukun Bunun below. In example (216a), *nanulu* functions as an independent verbal predicate (be careful), denoting a state. In (216b), it instead functions as a manner modifier to the lexical verb *'unting*.

(216) *Isbukun Bunun* (L. L.-Y. Li, 2018, pp. 256, 266)

a. ni saikin ma-**nanulu** mais 'unting lai'lai.
NEG 1S.NOM STAT-**be.careful** when/if AV.drive car
'I am/was not careful when driving cars.'

b. ka-**nanulu**-av 'unting lai'lai!
STAT-**be.careful**-IMP.UV AV.drive car
'Drive carefully!'

While the overall semantics of the word remains broadly the same, its function in the different sentences differs significantly. It has the formal properties of an adverbial verb in example (216b), as its hosts the voice and mood morphology of the clause, while also preventing said morphology from being realized on the lexical verb.

In Seediq, at least some manner adverbial verbs can function as independent verbal predicates, although only as intransitive predicates. Even when the lexical verb is retrievable from context, it is still obligatory, illustrated in examples (217a-b), showing that the manner adverbial verb cannot function as an independent transitive verbal predicate. Example (217c) shows that it can function as an independent intransitive stative verb.

(217) *Seediq* (Holmer, 2012, p. 909, p.c.)

a. **bleq**-i s<m>ino sama kiya!
well-PV.CNG <AV>wash vegetables that
'Wash those vegetables well!'

b. un, **bleq**-un=mu *(s<m>ino).
yes, **well**-PV=1S.ERG <AV>wash
'Yes, I will!'

c. m-bleaq tnluungan.
AV-good life
'Life is comfortable.'

In Takituduh Bunun, many manner adverbial verbs also have the ability to function as stative verbs. In (218a) the predicate of the clause is the stative verb *malmiming* 'quiet', however, the same lexeme functions as a manner modifier to the lexical verb *sadu* in (218b).

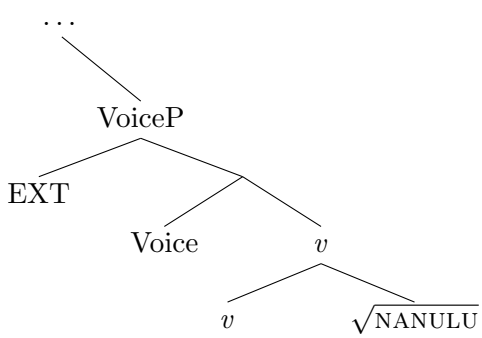
(218) *Takituduh Bunun*

a. m-almiming ca ha'an kumbu is sipulan
AV-quiet NOM at inside GEN school
'It is quiet inside the school.'

b. **almiming**-un cia sadu ca siesiu
quietly-PV 3S.ERG see NOM bible
'She read the bible quietly.'

In order to account for this pattern, it is necessary to adopt a framework that can account for this multifunctionality, allowing (a subset of) adverbial verbs to function both as modifiers of lexical verbs and as independent verbal predicates. In light of the discussion in the previous two chapters, the preliminary steps towards an account of these patterns have already been taken. The way the multifunctionality of incorporated manner adverbial modifiers was accounted for in the typology chapter was by having them contain afeatural lexical roots. Following Distributed Morphology assumptions, these lexical roots are not specified to belong to a specific lexical category in the pre-syntactic lexicon, but rather are assigned one in the syntactic derivation (Harley, 2014). This way the multifunctionality inherent to many lexical roots can be accounted for in a straight-forward manner. I use the examples from Isbukun Bunun above (repeated below) to illustrate how this can be implemented. In (219), the lexical root *nanulu* 'careful' functions as an independent stative verb. This function is licensed by having the lexical root merged with a verbalizer *v*. Voice in the tree structure refers to projection that introduces the external argument. 'EXT' refers to the external argument. Additional projections and the subordinate clause are omitted for the sake of simplicity.

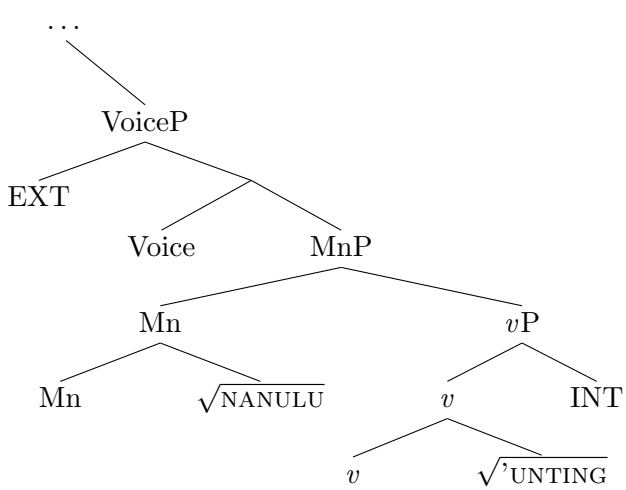
(219)



(220) *Isbukun Bunun* (L. L.-Y. Li, 2018, p. 456)
ni saikin ma-**nanulu** mais 'unting lai'lai.
NOM 1S.NOM STAT-**be.careful** when/if AV.drive car
'I am/was not careful when driving cars.'

The function as manner modifiers can be derived for such lexical roots by allowing them to be merged with a manner functional head (represented by Mn in (221)) in a separate work space from the rest of the derivation. This complex head is then merged to the clausal spine projected from the lexical verb via merge. This structure is illustrated below, where *'unting* functions as the lexical verb and denotes a verbal event, a function which is licensed by little *v*. The internal and external arguments are introduced as specifiers. The manner adverbial verb *nanulu* and the functional head Mn are merged to this structure. 'EXT' refers to the external argument, and 'INT' to the internal argument. Note that the representation both above and below are simplifications. The purpose is only to illustrate that how the different functions for the same lexical root are derived.

(221)



(222) *Isbukun Bunun* (L. L.-Y. Li, 2018, p. 466)

ka-**nanulu**-av	'unting	lai'lai!
STAT-**be.careful**-IMP.UV	AV.drive	car

'Drive carefully!'

Some manner adverbial verbs can also take internal arguments when functioning as independent verbal predicates. This pattern is illustrated below with Kavalan, where the manner adverbial verb *satawaR* can take an internal argument, both with actor and undergoer voice morphology. These kinds of structures can also be accounted for using the framework adopted here. The lexical root found in *satawaR* is inserted into a transitive clause structure, and its function as a transitive verb is derived from this frame (cf. Borer, 2005; Lohndal, 2012).

(223) *Kavalan* (H. Y. Chang, 2006, p. 47)

a. **satawaR**-ka tu razing
careful-AV.IMP OBL sea
'Beware of the sea!'

b. **satawaR**-i-ka ya sunis-su
careful-UV-IMP NOM child-2S.GEN
'Take good care of your child!'

An interesting follow-up question to explore is why some adverbial verbs cannot appear as independent stative verbs. It is not necessarily the case that a single answer can be provided for all adverbial verbs. For instance, H. Y. Chang (2006, 2010) notes that frequency adverbial verbs generally cannot appear as independent verbal predicates. There might be a simple semantic explanation for this pattern, where a word meaning 'often' cannot semantically denote a verbal event, and is restricted to an aspect modifying function. However, simply referring to semantic constraints is not enough. This is illustrated using the examples from Isbukun below. In (224a) *daukdauk* functions as a manner adverbial verb, whereas (224b) below illustrates that the same item cannot function as an independent verbal predicate.

(224) *Isbukun Bunun* (L. L.-Y. Li, 2018, p. 488)

a. ma-**daukdauk** saia palinanutu
AV-**slowly** 3S.DIST talk
'S/he talks/talked slowly.'

b. *ma-daukdauk saia
AV-slowly 3S.DIST

There is no a priori semantic reason for why the second example should be ungrammatical (based on comparisons to similar structures, we would expect it to mean something along the lines of 'S/he is slow'). It is therefore necessary to appeal to some grammatical restriction in order to account for this pattern. One possible solution is that since *daukdauk* can only appear as an adverbial verb, it is grammatical in nature, rather than lexical. It could thus be the case that it lacks a lexical root, instead consisting of only a functional head (Mn), thereby predicting that it should lack the multifunctionality found in some of the other manner adverbial verbs discussed above. This pattern also falls in line with the diachronic developed of manner affixes discussed the previous chapter (4.4).

There I proposed that manner affixes can develop from lexical verbs, via an intermediate stage as auxiliary verbs (i.e. adverbial verbs). If this proposal is on the right track, *daukdauk* might be more grammaticalized than the other manner adverbial verbs discussed for Isbukun Bunun, which restricts its distribution.

This proposal leads to certain predictions regarding the semantic content of manner adverbial verbs. Since they may contain lexical roots, manner adverbial verbs should exhibit a greater degree of variation in terms of their semantic content when compared to that of manner affixes, which I proposed do not contain lexical roots. In the previous two chapters, five basic semantic categories for manner modifiers were proposed. I proposed that these five basic semantic types are recurring across languages, and that functional manner heads are limited to these five categories. However, manner modifiers that contain lexical roots (e.g. the incorporated manner modifiers discussed in the previous chapter) were predicted to be able to encode semantic content beyond these basic categories. This prediction was borne out in the typological sample explored in this dissertation (see 4.1 for discussion). The same prediction holds for manner adverbial verbs, since I propose that these likewise may contain lexical roots. This prediction is borne out for manner adverbial verbs in Takituduh Bunun. Not only does Takituduh Bunun allow for manner adverbial verbs with semantic content beyond the basic five types, but it also allows loan words from Mandarin Chinese to be used in this function. As an example, the Takituduh Bunun stative verb *maz'av* means 'to be polite', and it can also function as a transitive verb, meaning 'to respect (someone)', as illustrated in (225a). In (225b), it function as a manner adverbial verb, modifying the main predicate with the interpretation 'politely'. In (225c), the Mandarin Chinese lexeme *zhijie* 'direct' functions as a manner adverbial verb while hosting the distinctive voice morphology of the clause.

(225) *Takituduh Bunun*

a. kaz'av-un=ku ca tataqu=naak
respect-PV=1S.ERG NOM teacher=1S.POSS
'I respect my teacher.'

b. ma'az ca [**kaz'av**-un=s uva'az dii antalam]
what NOM [**polite**-PV=OBL child DEM answer]
'What did the child answer politely?'

c. **zhijie**-un=s uva'az bazbaz ca dii
directly-PV=OBL child speak NOM DEM
'The child said this directly.'

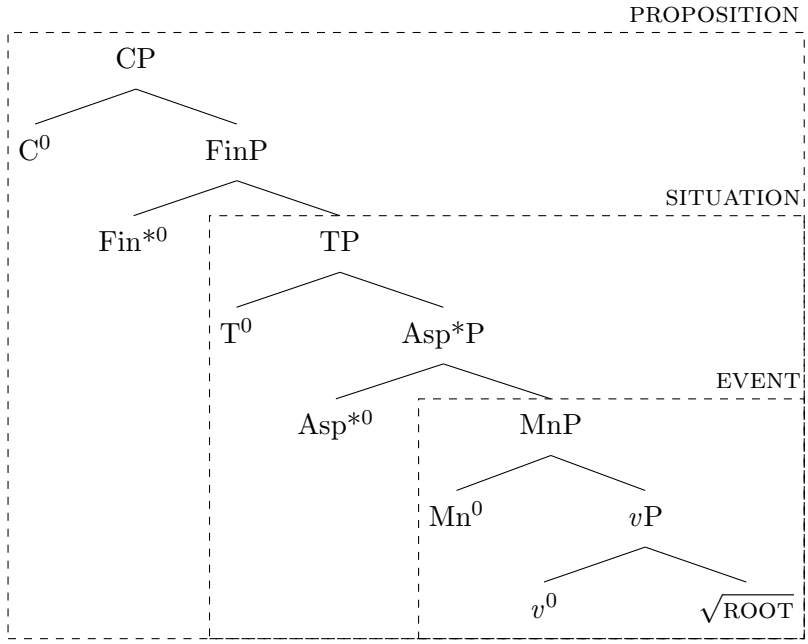
Another prediction made by this proposal is the inverse of the one discussed above. Manner adverbial verbs that cannot function as independent predicates should not contain lexical roots. The prediction is then that the semantic content of such manner adverbial verbs is restricted to the five basic types (SPEED, VALUE, NOISE, CARE, STRENGTH), since any other semantic content would require a lexical root. So far, this prediction is borne out in the language sample explored in this chapter, since the manner adverbial verbs with broader semantic content can also function as independent verbal predicates. However, this prediction must be tested further, and there might also be some additional constraint limiting their ability to appear as independent verbal predicates. Overall, the data discussed so far lend support to the claim that manner adverbial verbs in Formosan languages have the ability to contain a lexical root.

I return to the topic of the semantic content of manner adverbial verbs in 5.4, but first I move on to present an analysis that captures the distributional properties of manner adverbial verbs, as discussed in this section.

5.3 Capturing the distribution of Manner Adverbial Verbs

The overall structure of clausal spine as it was discussed in the previous two chapters is illustrated in the tree structure in (226). The lowest domain of the clause, the EVENT domain, is where the event denoted by the verb is introduced, as well as arguments and related morphology, in addition to any potential manner modifiers. This is illustrated using *v*P and MnP. The EVENT domain is embedded inside the SITUATION domain, when tense, aspect and modality is encoded, after existential closure has occurred. This is illustrated using TP and Asp*P. Finally, the SITUATION domain is embedded inside the PROPOSITION domain, where we find grammatical information related to linking a proposition to the general discourse (Ramchand & Svenonius, 2014).

(226)



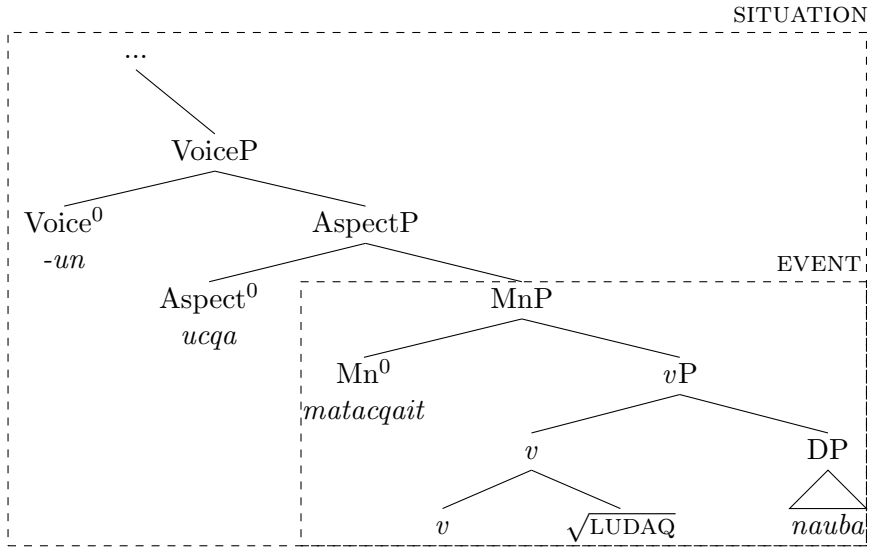
In clauses where there is a sequence of an adverbial verb introduced in the medial domain and a manner adverbial verb, the manner adverbial verb must be situated closer to the lexical verb. This is the case because the manner modifier is limited to the lowest domain, whereas a modifier related to the viewpoint of the event (e.g. 'suddenly') or a modifier encoding modality distinctions (e.g. 'want') is limited to the medial domain. I take the two clauses in (227) from Takituduh Bunun as examples. The hierarchical structure of (227a) is illustrated in (228), and (227b) is illustrated in (229). 'Voice' in the tree structures refer to the Austronesian Voice, not the projection that introduces the external argument.

(227) *Takituduh Bunun*

a. ucqa'-un cia ma-**tacqait** ma-ludaq ca nauba
suddenly-PV 3S.ERG AV-**hard** AV-hit NOM younger.sibling
'He suddenly hit is younger sibling hard.'

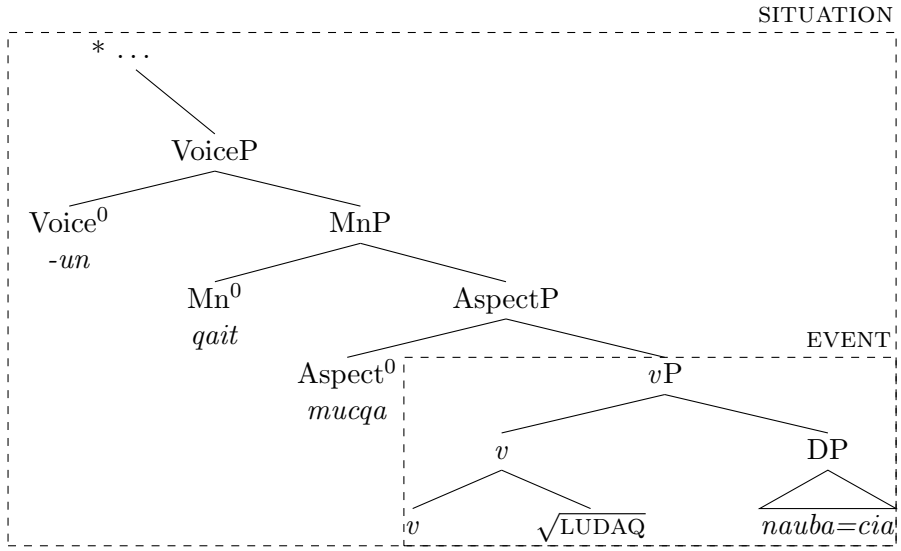
b. ***qait**-un cia m-ucqa ma-ludaq ca
hard-PV 3S.ERG AV-suddenly AV-hit NOM
nauba=cia
younger.sibling=3S.POSS

(228)



In the (227a), the manner modifier is merged inside the EVENT domain, illustrated using the dashed lines in the tree structure. However, when the order of the two is reversed, the clause is ungrammatical. According to the model employed here, this could be due to two reasons. Either the aspect projection is merged inside the EVENT domain, or the manner projection is merged outside of the EVENT domain. I adopt the later proposal, although this is just for expository purposes. This structure is illustrated in (229), where the manner modifier is merged outside of the event domain, again illustrated using the dashed line. The star next to the highest node marks the structure is ungramamtical.

(229)



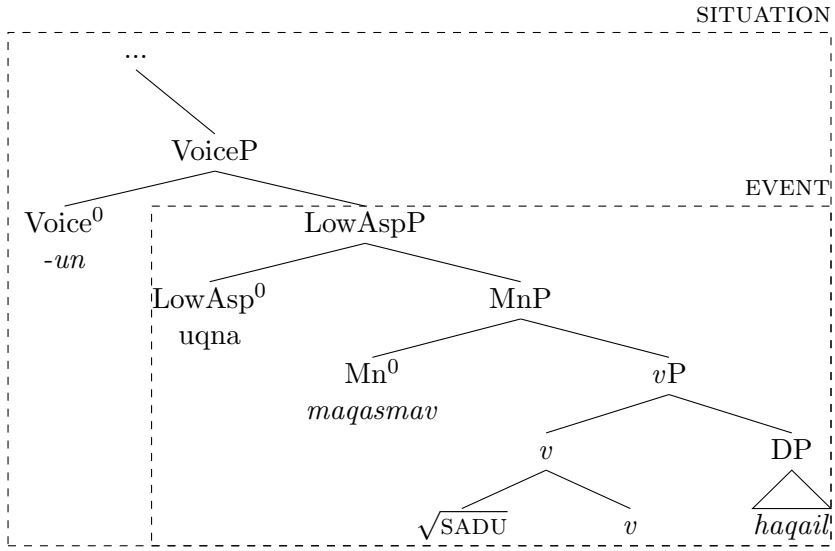
This model can thus be used to account for the limited distribution of manner adverbial verbs in the clause in the Formosan languages discussed above. Since they are limited to the lowest domain of the clause, they are unable to merge in a position above the aspect projection. It is only in the lowest domain that manner interpretations are available. However, if two adverbial verbs belonging to the event domain are present in the same clause, there are no constraints regarding their ordering, and they can be merged in different orders, yielding different interpretations in scope. This variation is illustrated below, with examples reproduced from above in (230). The clause structure for (230a) is illustrated in (231), where both low aspect 'again' and manner 'diligently' are merged in the lowest EVENT domain, with the higher functional projection taking the distinctive voice morphology of the clause. 'Voice' in the tree structure represents Austronesian Voice.

(230) *Takituduh Bunun*

a. uqna-un uva'az ma-**qasmav** sadu ca haqail
again-PV child AV-**diligent** look NOM book
'The child read the book diligently again (did it diligently last time as well).'

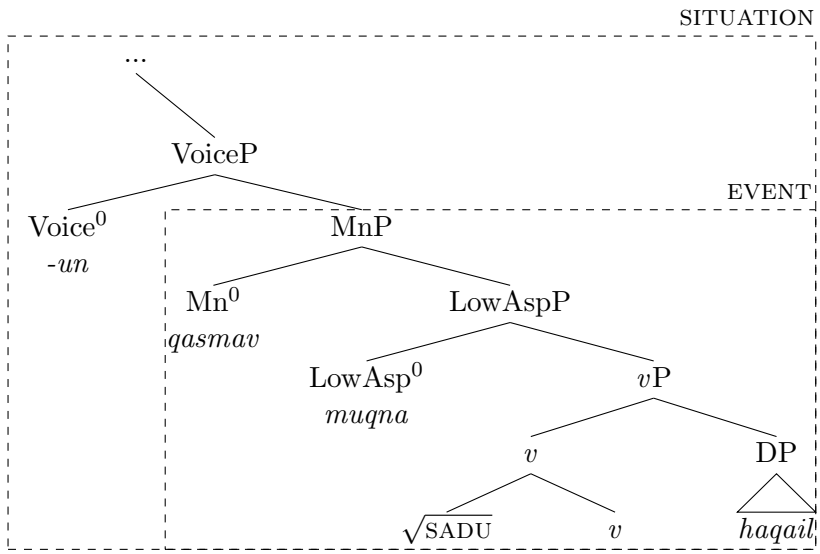
b. in-**qasmav**-un uva'az muqna=ang sadu ca haqail
INCH-**diligent**-PV child again=IMPF look NOM book
'The child read the book again, diligently (this time).'

(231)



The reverse ordering of 'again' and 'diligently' is illustrated in (232). Since both functional projections are situated in the event domain, there is no constraint determining their relative order, so both orders are possible. 'Voice' in the tree structure represents Austronesian Voice.

(232)



The same assumptions can also account for how manner adverbial verbs prevent verbal morphology from being realized on the lexical verb. As was discussed in

2.1.2, there are many different theoretical implementations of how syntactic heads are concatenated. For West Greenlandic, I adopt a relatively conservative approach, according to which it is not possible for syntactic heads to skip intervening syntactic heads when concatenating, although I remained agnostic as to the exact technical implementation of this concatenation. In the discussion on West Greenlandic, an important empirical prediction derived from this theoretical assumption is that the linear order of syntactic heads is restricted by the hierarchical order (following the Mirror Principle).

An important empirical prediction that this theoretical assumption derives for manner adverbial verbs is that it is impossible for a syntactic head that asymmetrically c-commands a manner adverbial verb to be concatenated together with the lexical verb to the exclusion of the adverbial verb. It is therefore not possible for a functional projection that is situated higher in the structure than an adverbial verb to skip the adverbial verb and instead be realized on the lexical verb. I use the two examples from Takituduh Bunun below to illustrate how this theoretical assumption can be used to derive the correct empirical predictions for adverbial verbs in Formosan languages.

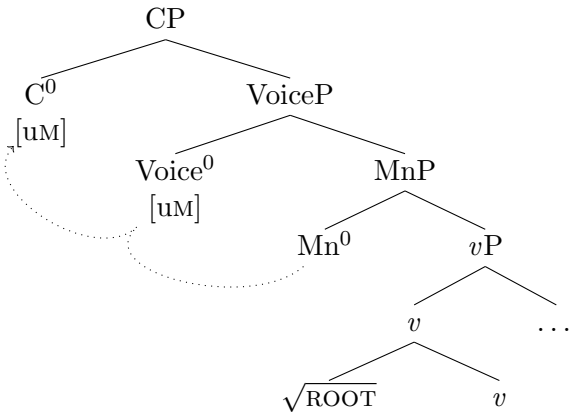
(233) *Takituduh Bunun*

a. **picihal**-i ca tingami dii ma-patas
well-IMP.NAV NOM letter DEM AV-write
'Write this letter well!'

b. *ma-**cial** patas-i ca dii
AV-**well** write-IMP.NAV NOM DEM

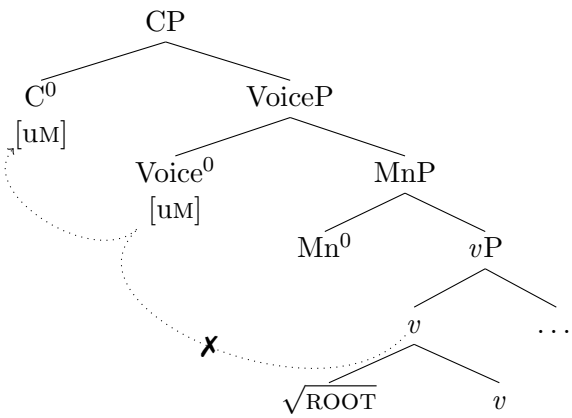
In (233a), undergoer voice and imperative mood are realized as a portmanteau affix on the adverbial verb. The tree structure below illustrates the concatenation of these syntactic heads, to the exclusion of the lexical verb. Since there are no relevant features on the manner adverbial verb that would trigger a concatenation with the lexical verb, the latter is left isolated from the other functional heads in the clausal spine. The features that trigger head concatenation with the closest syntactic head in its complement is illustrated using [uM] below the relevant nodes, following the notational convention of Pietraszko and Arregi (2021). Once the concatenation is complete, the voice and C heads are spelled-out by a single morphological exponent via spanning (Svenonius, 2012). 'Voice' in the tree structures below represents Austronesian voice.

(234)



In contrast, in the ungrammatical sentence in example (233b), the Voice and C heads have instead concatenated with the lexical verb, skipping the manner functional head intervening between them, thus making the structure ungrammatical. As illustrated using these tree structures, the observed grammatical patterns can be derived from the Head Movement Constraint (Travis, 1984).

(235)



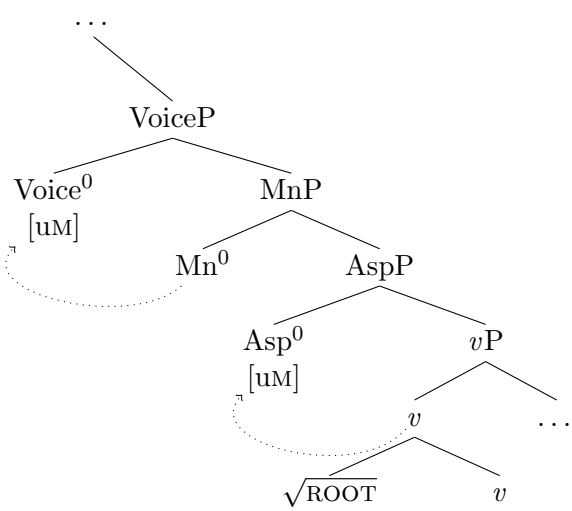
Finally, I provide an illustration of how the morphological exponents of different functional projections can be realized on different verbs. This pattern is illustrated using an example from Takituduh Bunun below, where the voice morphology is realized on the manner adverbial verb, whereas the aspect affix is realized on the lexical verb.

(236) *Takituduh Bunun*

daukdauk-un cia ma-ku-kulut ca sanglav
slowly-PV 3S.ERG AV-RED-cut NOM vegetables
'He is cutting the vegetables slowly.'

Taking inspiration from the analysis of Tagalog proposed by Travis (2010), I assume that the functional projection introducing CV-reduplication for encoding imperfective aspect (glossed as RED above) is merged in a low position in the clause, in the *v*P, below the manner functional head. Since there is no other material intervening between the aspect head and the lexical verb, it is concatenated together with the lexical verb. However, there are no features on the manner adverbial verb that trigger a further concatenation. Instead, the voice morphology concatenates with the manner functional head only, causing the verbal morphology of the clause (voice and aspect) to be distributed across different verbs (the adverbial verb and the lexical verb, respectively).

(237)



This concludes the discussion on the morphosyntactic properties of manner adverbial verbs across Formosan languages. I have argued that they are connected to a manner functional head, which is limited to the lowest parts of the clausal spine. These manner modifiers may also include lexical roots. It was shown that these two assumptions are enough to account for the morphosyntactic properties of manner adverbial verbs. Now I move on to discuss the semantic content that they encode.

5.4 Semantic Properties of Manner Adverbial Verbs

In this section, I discuss the semantic properties of manner adverbial verbs. In the previous two chapters, five basic semantic categories are used to classify verb-internal manner modifiers, namely [SPEED], [VALUE], [CARE], [NOISE] and [STRENGTH] adopted from Hallonsten Halling (2018), with the addition of the [STRENGTH] category. I proposed that each of these categories can be assigned a negative or a positive value, yielding ten basic manner modifiers. More formally, manner functional heads have the possibility of containing a semantic feature corresponding to one of the basic categories above, which is assigned a positive or a negative value.

It was demonstrated in the chapter 4 that the typological distribution of the different semantic categories is predictable based on statistical implicational universals. The category [SPEED] is the most common, so a statistical universal stating that if a language has verb-internal manner modifiers, [SPEED] will be among them was proposed. Furthermore, if a language has verb-internal manner modifiers of either the [NOISE] or [STRENGTH] category, it will also have verb-internal manner modifiers of either the [VALUE] or [CARE] category, which in turn imply the presence of the [SPEED] category. An interesting follow up question is then to determine if languages with manner adverbial verbs obey the same implicational universals. The proposed implicational universals are reproduced below.

(238) Semantic Universal 1
If a language has verb-internal manner modifiers, one of them will be of the category SPEED, with either a positive or a negative value.

(239) Semantic Universal 2
$\text{SPEED} \Leftarrow (\text{VALUE} \vee \text{CARE}) \Leftarrow (\text{STRENGTH} \vee \text{NOISE})$

In the previous sections of this chapter, I argue that manner adverbial verbs do not all have the same syntactic status. Some of them are realizations of simplex functional manner heads, whereas others are complex, consisting of a lexical root and a functional manner head. Simplex manner heads have their specific semantic interpretation licensed by semantic features on the functional head, whereas complex manner heads do not require such semantic features, since the specific semantic interpretation is provided by the lexical root rather than by the functional head. As a tentative assumption, for complex manner adverbial

heads, the lexical root and the functional head do not both contribute semantic content. The lexical root provides all the semantic content.

It has been pointed out previously that manner adverbial verbs in Formosan languages appear to exhibit lexical properties. For instance, Holmer (1996) observes for Seediq that manner adverbial verbs appear to constitute an open class, or at least that there are no observable direct limitations on lexemes belonging to this class. Moreover, De Busser (2009) suggests that what he calls auxiliary verbs (manner adverbial verbs would be a subclass within this category) in Takivatan Bunun might be an open class. H. Y. Chang (2010) points out that adverbial verbs exhibit properties both associated with lexical and functional items, thus blurring the line between the two categories. Since the language sample in this chapter is very small and all belong to the same family, testing the semantic implicational universals reiterated above will tell us little about the semantics of manner adverbial verbs. A larger and more genealogically and geographically diverse sample would be needed for this to be meaningful. Instead, I show that the categories outlined in the previous two chapters are useful for describing the semantic content of manner adverbial verbs as well, not just verb-internal manner modifiers and manner adverbs. I will also highlight the diversity in semantic content found for manner adverbial verbs in Formosan languages. Here, I focus on Takituduh Bunun, Puyuma, Seediq, Tsou and Kavalan, all which belong to different primary branches of the Austronesian language family.

In Takituduh Bunun, all five of the basic manner categories are represented in the inventory of manner adverbial verbs. The language has adverbial verbs of the [SPEED] category, both with negative and positive values (*kamanaut* and *daukdauk* 'slowly', *mahiav* 'quickly'). The language also has an adverbial verb of the [VALUE] category, *macial* 'well') and of the [CARE] category (*qalmang* 'sloppily', *maqasmav* 'diligently'), both with negative and positive values. For the [NOISE] category, both positive (*palilipas*, 'loudly') and negative (*malmiming*, 'quietly') manner adverbial verbs are found. For the [STRENGTH] category, positive (*matacqait*, 'hard') and negative (*daukdauk*, 'gently') values are found.

Like Takituduh Bunun, Puyuma also adheres to the proposed universal. For the category [SPEED], the language has the two adverbial verbs *patawar* 'slowly' and *ʔariʔi* 'quickly'. Interestingly, the manner adverbial verb *pasəkət* can be used to encode (at least) both 'carefully' and 'well', depending on the morphosyntactic context. One would therefore have to classify it into either the [CARE] or the [VALUE] category. This pattern constitutes an additional corroboration of the claim that [CARE] and [VALUE] form a natural class, since they are semantically

very close to one another. The [NOISE] category is represented by the manner adverbial verb (*paʔuləkˈ*) 'quietly' and the [STRENGTH] category is represented by the adverbial verb *makəsərˈ* 'laboriously'.

Going through the same categories in Seediq, we see that the [SPEED] category is represented by *knhwa* 'slowly'. For the [VALUE] category, only a manner adverbial verb with a positive value (*bleq*) has been attested, which appears to have a fairly wide range of possible interpretations, as indicated by the different possible translations, such as 'well', 'properly' and 'meticulously', indicating that perhaps like in Puyuma there is somewhat of an overlap between the [VALUE] and [CARE] categories. Seediq also has the adverbial verb *hmet* 'recklessly', representing the [CARE] category with a negative value. The adverbial verb *geeguy* 'quietly/secretly' represents the [NOISE] category. Note that as in most (if not all) Formosan languages manner adverbial verbs in Seediq exhibit a degree of multifunctionality. The adverbial verb *geeguy* 'quietly/secretly' can also function as an independent verb meaning 'to steal'. I have not found any manner adverbial verbs in Seediq that could be classified into the [STRENGTH] category.

Moving on to Tsou, it has adverbial verbs representing the [SPEED] category, including *amayhe* 'quickly' and *aupopoha'va* 'slowly'. The [CARE] category can be represented by *ahoha'va* 'carefully'. The [NOISE] category can be represented by *asoeza* 'stealthily' and *asngxcx* 'secretly'. A representative of the [STRENGTH] category is *butaso* 'violently'. Interestingly, I have not found any examples of a prototypical representative to the [VALUE] category. However, there are several manner adverbial verbs with a positive value that can be classified under the [CARE] category, including *bumemeala* 'skillfully', *anana'va* 'diligently' and *sno'zona* 'diligently', in addition to the example given above.

In Kavalan, the [SPEED] category is instantiated by *paqanas* 'slowly' and *qasir* 'quickly'. The [CARE] category is represented by *satawaR* 'carefully' and perhaps also *maremes* 'diligently', although it could be argued that the latter is better categorized in the [VALUE] category. As have been discussed previously, while the prototypical representatives of the two categories can be identified in a fairly straight-forward fashion, some have semantic content that appears to overlap between [VALUE] and [CARE]. The [STRENGTH] is represented here by *palames* 'violently'. No clear-cut example of a manner adverbial verb for the [NOISE] category has been identified for Kavalan.

Table 5.3 contains a summary of the findings. Note that the inventory for each language is not exhaustive, but only include a subset of the adverbial verbs

mention in this section. Parenthesis are added for those that might be classified into different categories.

Table 5.3: Basic semantic categories across Formosan manner adverbial verbs

Category	**Value**	Takituduh	Puyuma	Seediq	Tsou	Kavalan
SPEED	+	*mahiav*	*ʔariʔi*		*amayhe*	*qasir*
	-	*kamanaut*	*patawar*	*knhwa*	*aupopoha'va*	*paqanas*
VALUE	+	*macial*	(*pasəkət*)	(*bleq*)		(*maremes*)
	-					
CARE	+	*maqasmav*	(*pasəkət*)	(*bleq*)	*ahoha'va*	*satawaR*
	-	*qalmang*		*hmet*		
STRENGTH	+	*matacqait*	*makəsər*	*geeguy*	*butaso*	*palames*
	-	*dakdauk*				
NOISE	+	*palilipas*				
	-	*malmiming*	*paʔulək*		*asoeza*	

In this chapter, I argued that it is possible for manner adverbial verbs in Formosan languages to be syntactically complex, consisting of both a lexical root and a functional head. This analysis makes the prediction that manner adverbial verbs in these languages should have the potential to encode other semantic content than those available in the basic semantic categories discussed in the previous two chapters. Furthermore, another prediction is that within each basic semantic category, more fine-grained distinctions ought to be possible. At least tentatively, both predictions are borne out in the Formosan languages. For instance, Isbukun Bunun has the adverbial verbs *mantuk*, encoding 'honestly' and *thas*, encoding 'clearly', representing semantic content that cannot readily be classified into any of the five basic semantic types. Both can also function as independent stative verbs (L. L.-Y. Li, 2018). For Tsou, H. Y. Chang (2009) lists several manner adverbial verbs that can be classified under the type CARE with a positive value, giving slightly different English translations for the different adverbial verbs. These include *bumemeala* 'skillfully', and *anana'va*, *ahoha'va* and *sno'zona* for 'diligently'. This suggests that in Tsou more fine-grained semantic distinctions are found in manner adverbial verbs than can simply be captured by negative and positive values on the basic semantic features outlined above. Finally, it was also shown that lexemes with other semantic content can function as manner adverbial verbs in Takituduh Bunun, including *makaz'av* 'polite' and the Mandarin Chinese loan word *zhijie* 'direct' (see (225) above for examples). This further highlights the broad semantic range of manner adverbial verbs in Takituduh Bunun.

The proposal that manner adverbial verbs may contain lexical roots makes predictions regarding their semantic content and morphosyntactic distribution. If a

manner adverbial verb encodes some other semantic category than the five basic types, the assumption is that it should contain a lexical root. Barring any other restrictions, it is predicted that such manner adverbial verbs should also be able to appear as independent verbal predicates. No counterexamples to this prediction have been found in the data discussed here, as manner adverbial verbs that encode other semantic content than the basic five categories can also appear as independent predicates. On the other hand, if a manner adverbial verb is unable to appear as an independent verbal predicate, its semantic content is predicted to be limited to the five basic semantic categories. No counterexamples to this prediction have been found in the language sample explored here.

The language sample discussed for manner adverbial verbs is very small, and they all belong to the same family. It is therefore not possible to draw any significant conclusions regarding the distribution of the different basic semantic categories across languages with manner adverbial verb. However, it can be argued that this at least shows that the categories used to classify manner adverbs (Hallonsten Halling, 2018) and verb-internal manner modifiers (previous two chapters) can also be used to classify manner adverbial verbs as well. In the next section, I provide a summary of the findings and the conclusions of this chapter.

5.5 Concluding Remarks

The aim of this chapter is to investigate the morphosyntactic and semantic properties of manner adverbial verbs across different Formosan languages. Previous researchers have argued that manner adverbial adverbs are the overt reflexes of functional projections in the clausal spine (H. Y. Chang, 2010; Holmer, 2012; H.-H. I. Wu, 2019). The findings here can thus be directly compared to the verb-internal manner modifiers discussed in the previous two chapters to further investigate the position of manner in the clausal spine and the relationship between morphology and syntax.

A few important empirical observations regarding the morphology of manner adverbial verbs were made. In line with previous findings, manner adverbial verbs host much of the morphology associated with lexical verbs, including tense, aspect and mood, while also preventing this morphology from being realized on the lexical verb. However, it was shown that some aspect markers can be situated on the lexical verb, even though it is modified by a manner adverbial verb, resulting in small modification of the *TAM-less Condition*. Furthermore, valency

changing morphology (specifically causatives and applicatives) were shown to be able to appear on manner adverbial verbs as well as lexical verb modified by manner adverbial verbs, contrary to the *AF-Restriction*, which prompted a slight modification of this generalisation.

Regarding the syntactic distribution of manner adverbial verbs, it was shown that most other types of adverbial verbs consistently appear further away from the lexical verb than manner adverbial verbs, including aspect, mood and modality modifiers. However, contrary to previous claims, a subset of aspect adverbial verbs can be situated both closer to and further away from the lexical verb than manner adverbial verbs, with predictable differences in scope interpretation. It was also concluded that many (if not most) manner adverbial verbs can also function as independent verbal predicates, in some instances both as transitive and intransitive verbs.

The distribution of manner adverbial verbs in relation to other adverbial verbs, as well as the morphology they hold, led me to propose that they are limited to the lowest [EVENT] domain of the clause. I argue that there are no universal restrictions on the ordering of functional projections within this domain, allowing for the limited variation in the ordering of adverbial verbs and placement of valency changing morphology. It was also argued that manner adverbial verbs may contain lexical roots, (externally merged with a manner functional head). These lexical roots can also appear as independent verbal predicates. This accounts for their multifunctionality, and this proposal was corroborated by the diversity in semantic content found of manner adverbial verbs in Formosan languages. It was also shown that the basic semantic categories outlined in the previous chapters were useful for describing the semantics of manner adverbial verbs.

The distribution of manner adverbial verbs in the extended verbal projection falls in line with their synthetic counterparts, verb-internal manner modifiers. In other words, the predictions made by the model developed in the previous two chapters were shown to hold for the Formosan languages discussed in this chapter. These findings corroborate the claims made in the previous chapters, as well as the basic anti-lexicalist approach assumed in this dissertation. These findings also provide further support for the Mirror Principle. The parallel patterns for manner modifiers found in these three chapters highlight the usefulness of this kind of approach to morphosyntactic structures. In the next chapter, I summarize the findings of this dissertation and discuss their implications, as well as outline some paths for future research.

Chapter 6

Discussion and Conclusion

The main topic of this dissertation has been manner modification, particularly as encoded by manner adverbial verbs, manner affixes and incorporated manner modifiers. These typologically unusual ways of encoding manner have important implications for our understanding of the relationship between morphology and syntax, the ordering of functional projections in the clausal spine, and cross-linguistic variation. Here I bring together the findings from the three main chapters (chapter 3 on West Greenlandic, chapter 4 for the typological survey, chapter 5 on Formosan languages) and discuss my conclusions and present suggestions for future research.

In chapter 3, I discussed the morphosyntactic and semantic properties of manner affixes in West Greenlandic. I showed that functional categories associated with either a medial (e.g. viewpoint aspect, modality) or a high position (e.g. mood) in the clausal spine must be situated further away from the lexical root than manner modifiers. However, some aspect markers and valency changing morphology were shown to be able to appear closer to the root than manner affixes, and a subset of them could alternate their position in relation to manner affixes, yielding differences in scope interpretation.

In chapter 4, I attempted to recreate the generalisations made for West Greenlandic in a typological sample of 31 languages. In this sample, it was shown that mood, tense and viewpoint aspect are situated further away from the lexical root than verb-internal manner modifiers, closely mirroring the patterns found in West Greenlandic. Valency changing morphology exhibited cross-linguistic variation in terms of their linear order in relation to verb-internal manner modifiers. The typological survey showed that it is necessary to make a distinction

between incorporated manner modifiers and manner affixes, although the two exhibit striking similarities in the linear position within finite verbs. I also showed that languages with verb-internal manner modifiers will adhere to a basic semantic implicational hierarchy in terms of their inventory of such modifiers, with SPEED being the most common semantic category.

In chapter 5, I attempted to recreate the generalisations made in chapter 3 and 4, but on a clausal level, by looking at auxiliary verbs that encode manner information (manner adverbial verbs) in Austronesian languages spoken on Taiwan. It was shown that manner adverbial verbs can host mood, viewpoint aspect and tense morphology, as well as Austronesian Voice morphology, while also preventing said morphology from being realized on the lexical verb of the clause. Morphology related to argument structure was shown to be able to appear on both the manner adverbial verb and on the lexical verb, mirroring the variation in ordering found in chapters 3 and 4. Manner adverbial verbs were shown to be situated closer to the lexical verb than modal auxiliary verbs and most aspect adverbial verbs, although it was shown that some variation in linear order and corresponding scope interpretation was possible, mirroring the findings in chapter 3.

This dissertation has made some important empirical contributions by presenting novel data on manner affixes and manner adverbial verbs from understudied languages (West Greenlandic and Takituduh Bunun, respectively). I also touched upon several theoretical issues, including the relationship between morphology and syntax, the organization of the clausal spine, the relationship between lexical and functional categories, and the typology of manner modifiers. I discuss how the topics explored in this dissertation inform our understanding of these issues below.

6.1 Morphology and Syntax

A central issue discussed throughout this dissertation is the relationship between morphology and syntax. I took anti-lexicalism as my starting-point, according to which morphology and syntax belong to the same grammatical domain. This is not a novel proposal developed here. Instead, the main contribution made by this dissertation to this issue is that I was able to test some of the predictions made by an anti-lexicalist stance on novel data. In essence, I tested the predictions in two ways. In chapters 3 and 4, I investigated if it was possible to account for the distribution of verb-internal manner modifiers using a strictly

syntactic approach to morphological structure, where the linear order of verbal affixes and incorporated constituents necessarily reflects a hierarchical syntactic structure. In these chapters, I showed that the distribution of verb-internal manner modifiers (manner affixes and incorporated manner modifiers) in relation to other verbal affixes and incorporated constituents can be accounted for in a straight-forward manner, if one assumes that the ordering patterns reflect a hierarchical syntactic structure. These findings corroborate the anti-lexicalist approach to morphosyntax. These findings likewise highlight the predictive force of anti-lexicalism. It makes strong predictions regarding the linear order of morphemes, and it provides an explanatory account of word-internal ordering of such morphemes without making additional postulations.

In chapter 5, I took another approach to testing the predictions made by the anti-lexicalist stance adopted here. Since I proposed that verb-internal manner modifiers are the overt reflexes are functional syntactic heads, the analytic counterpart to them should be auxiliary verbs that encode manner information, referred to as manner adverbial verbs. This constitutes another way of testing the predictions explored here, since it is predicted that manner adverbial verbs should have the same distribution as verb-internal manner modifiers in the hierarchical structure, which in turn should be reflected in their linear distribution. The fact that the linear distribution of manner adverbial verbs could be predicted based on the linear distribution of verb-internal manner modifiers (via mapping them to a hierarchical syntactic structure) should be taken as a strong empirical argument in favour of anti-lexicalism.

6.2 The Clausal Spine

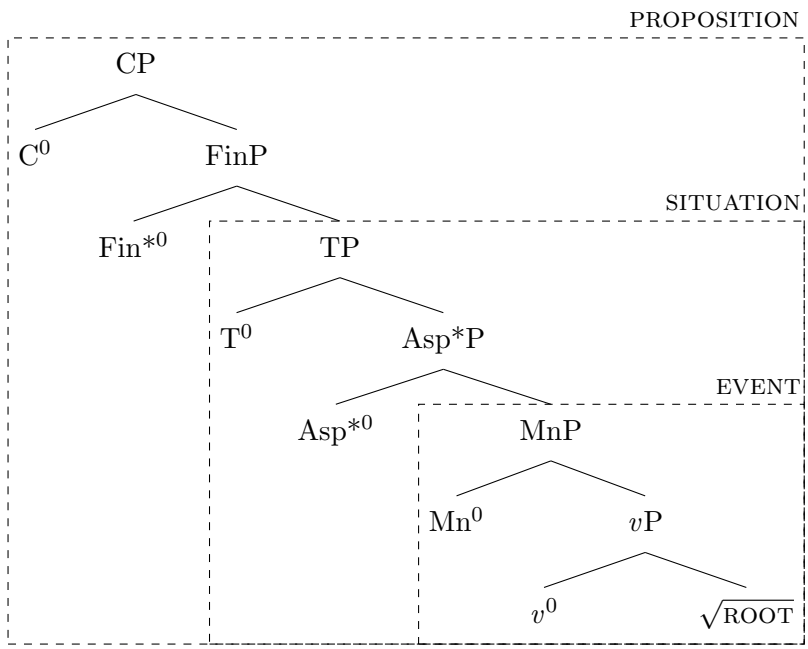
Another important issues explored in this dissertation was the organization of the clausal spine. I took as my starting point the position that the clausal spine is divided into different sortal domains. Crucially, these sortal domains impose restrictions on the ordering of functional projections in the clausal spine, while also allowing for some degree of variation in the hierarchical ordering of these projections, both within and across languages. This is not a novel proposal introduced here, but I contributed to the discussion by introducing novel data that could be used to test the predictions of different approaches to the organization of the clausal spine.

One of the primary contributions to this discussion made here was to provide novel evidence for the claim that manner modifiers are limited to the lower

parts of the clausal spine. Since the manner modifiers explored here were taken to be the overt realization of functional syntactic heads, their position in the clausal spine could be determined with greater accuracy. A crucial point that I make throughout this dissertation is that the position of manner modifiers in relation to other functional heads in the clausal spine is variable, both within and across languages. Therefore, I was able to provide novel data against cartographic proposals that claim that functional projections in the clausal spine adhere to a strict hierarchy. The data explored here illustrates the need for allowing for a degree of variation in the ordering of functional projections, both within and across languages, while still showing the importance of providing clear restrictions on the possibilities of such variation.

To capture the distribution of the manner modifiers discussed here, it was sufficient to divide the clausal spine into three distinct sortal domains, EVENT, SITUATION and PROPOSITION, respectively, as illustrated in the tree structure in (240) below. Since manner modifiers are limited to the lowest EVENT domain of the clause, they only varied in hierarchical order with other functional projections situated in this domain, primarily functional projections related to argument structure, as well some functional projections encoding aspectual information. A key assumption here is that there are no inherent restrictions upon the ordering of functional projections in the lowest domain of the clause. This was sufficient to account for all the variations in order related to manner adverbial verbs and verb-internal manner modifiers.

(240)



Since manner modifiers are limited to the lowest domain, any functional categories situated in the medial domain must be merged in a higher position in the clausal spine. This notion provided most of the necessary limitations upon the linear order for manner adverbial verbs and verb-internal manner modifiers. Beyond this, selectional restrictions on functional heads in the EVENT domain constituted the other necessary restriction to capture the distribution of manner adverbial verbs and verb-internal manner modifiers. Variation in selection restrictions on the functional heads in the EVENT domain was proposed to be an important source of the cross-lingustic variation regarding the linear order of manner adverbial verbs and verb-internal manner modifiers.

6.3 Lexical and Functional Items

Another important issue that I touched upon in this dissertation, although it was not a central research question, was the distinction between lexical and functional items. To account for differences in semantic content and morphosyntactic properties for verb-internal manner modifiers and manner adverbial verbs, I resorted to proposing that some of them contain lexical roots, whereas other are morphosyntactically simplex, being the overt realizations of functional syntactic heads. I made the novel proposal that lexical roots are not limited to being merged with functional syntactic heads that license their lexical category (i.e. *v*, *n*, *adj*) at bottom of an extended projection, but they can also merge with a manner functional head in a parallel workspace.

The manner modifiers that contain lexical roots have their semantic content given directly by the lexical root, while the manner functional head provides the morphosyntactic function as a manner modifier. Since manner adverbial verbs without lexical roots and manner affixes lack lexical root, their semantic interpretation must come from somewhere else. I proposed that the five basic semantic categories for manner modifiers (SPEED, VALUE, CARE, STRENGTH and NOISE) are features on manner functional heads with either a positive or a negative value. These features provide the semantic content.

Some important predictions were made depending on whether or not a lexical root was present in the structure. For verb-internal manner modifiers, the proposal predicts that if the manner modifier only appears as a verbal affix, the semantic content is limited to the five basic semantic categories. Contrary, if a verb-internal manner modifier encodes semantic content beyond these five basic categories, it is predicted that it should also be able to appear as an indepen-

dent constituent, barring any additional restrictions. The same predictions are made for manner adverbial verbs. If a manner adverbial verb cannot appear as an independent verbal predicate, it is predicted that it should be limited to the five basic semantic categories. Contrary, if a manner adverbial verb can encode semantic content beyond these five basic categories, it is predicted that it should also be able to appear as an independent verbal predicate, barring any additional restrictions.

By allowing lexical roots to be merged with functional projections in the clausal spine, not just with the lexical category licensing heads at the bottom of the extended projection, an intermediate category between lexical and functional is introduced. It is functional in the sense that it takes on the syntactic function associated with the functional head to which it is merged, rather than the function of a lexical category like nouns or verbs, but it is still lexical in the sense that it contains a lexical root. By analysing manner adverbial verbs this way, I was able to capture the fact that manner adverbial verbs exhibit both lexical and functional categories. By having the semantic interpretation given by features on functional manner heads, I was able to capture the semantic content of functional manner heads, while still providing strong restrictions regarding the semantic content that they can encode.

6.4 Typology of Manner Modifiers

One of the major issues explored here was the typology of manner modifiers. In this dissertation, I focus on manner modifiers that contain functional heads, and I propose that they can be divided into two categories, namely manner adverbial verbs and verb-internal manner modifiers. The two categories are distinguished on formal grounds. Manner adverbial verbs appear as auxiliary verbs, whereas verb-internal manner modifiers are integrated into the finite verb of the clause. Verb-internal manner modifiers can be subdivided into two categories, depending on whether or not they contain lexical roots. I referred to verb-internal manner modifiers that contain lexical roots as incorporated manner modifiers, and those that only are the overt reflex of a manner functional head as manner affixes. The same basis can be used to divide manner adverbial verbs into two categories, namely those that contain lexical roots, and those that only are the overt reflexes of manner functional heads.

An interesting question is where manner adverbs fit into this typology. In this dissertation, I adopted a cartographic approach to adverb licensing, and pro-

posed that manner adverbs are merged as specifiers in a projection headed by a functional manner head. This functional manner head serves to license the manner-modifying function of manner adverbs. A key prediction is that manner adverbs, verb-internal manner modifiers and manner adverbial verbs have the same hierarchical distribution, since they are all connected to the same functional category in the clausal spine. Other manner adverbials could be analysed in the same way (e.g. prepositional phrases like *with haste*), although this is not a topic that I have explored here.

Languages may make use of several different types of manner modifiers, so it should be clarified that the typology of manner modifiers developed here is one of grammatical structures, not languages. For instance, English makes use of adverbs, prepositional phrases and adjectives (among others) to encode manner information, whereas West Greenlandic makes use of manner affixes, oblique nouns and subordinate clauses to do the same, while Takituduh Bunun manner modifiers appear to be limited to adverbial verbs. Similarly, Yimas has both manner affixes and incorporated manner modifiers, while Itzaj makes use of both manner adverbial verbs and verb-internal manner modifiers, showing that these different types of manner modifiers are not mutually exclusive.

6.5 Future Research

The findings outlined in this dissertation open up interesting avenues for future research. I proposed that there are two types of verb-internal manner modifiers, namely manner affixes and incorporated manner modifiers. Chapter 3 on West Greenlandic provided an in-depth study on the grammatical and semantic properties of manner affixes, and this in-depth study proved essential for developing some of the arguments against a strict ordering of functional projections in the clausal spine. It would therefore be relevant to conduct a similar in-depth study on a language that uses incorporated manner modifiers, to see if some of the findings from West Greenlandic could be replicated, and to further test the predictions made by the model developed here.

I have primarily looked at manner modifiers in relation to tense, aspect and mood, and valency changing morphology. I only briefly touched upon how manner interacts with argument structure, and the functional projections that are responsible for introducing external and internal arguments. As I briefly hinted at in the discussion on verb-internal manner modifiers and noun incorporation, manner modifiers as syntactic heads might provide further insights into how the

argument structure of verbs map onto syntactic structures since they are merged in the lowest domain of the clausal spine. Similarly, it might also provide further insight into the mapping between event structure and the syntactic hierarchy, for the same reasons.

The typological survey in chapter 4 is an important first step towards a better understanding of verb-internal manner modifiers. However, the language sample was very small, and it has clear geographical and genealogical biases. The next step would be to conduct a typology study that has a larger language sample, and that is able to better control for geographical and genealogical biases. This way, the implicational universals formulated here can be tested against a larger sample to determine if they are truly universal tendencies, or simply the result of a sample bias.

Moving on to discuss manner adverbial verbs, the in-depth study on Takituduh Bunun presented led to the reformulation of some previous generalisations regarding adverbial verbs. Similar in-depth studies on manner adverbial verbs, and also adverbial verbs more broadly, in other languages will likely yield further interesting results, since the category as such is poorly understood. Moreover, the discussion on manner adverbial verbs was restricted to Formosan languages. An avenue for future research would be to conduct in-depth studies on languages in other families to see if the generalisations made here hold, or if they must be revised. Another way to approach this would be to conduct a typological survey of manner adverbial verbs to see if the grammatical patterns found in Formosan languages are particular to those languages, or part of a broader pattern.

6.6 Concluding Remarks

In this chapter, I have summarized and discussed the major findings presented in this dissertation and some of the theoretical implications. I hope to have shown the validity of the anti-lexicalist claim that morphology and syntax belong to the same grammatical domain. I also hope to have shown that manner modifiers can be realized as syntactic heads, and that these manner syntactic heads may contain a lexical root. Furthermore, I provide novel evidence in favour of dividing the clausal spine into distinct sortal domains that impose restrictions on the ordering of functional projections. Manner modifiers are limited to the lowest of these sortal domains, but within this domain there is room for variation in the hierarchical ordering of functional projections, reflected in linear order and scope interpretation. Finally, I hope to have shown that

studying rare linguistic phenomena, documenting under-researched languages, and adopting a comparative approach to grammatical research are all essential for our understanding of the possibilities of and limitations on cross-linguistic variation.

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Manner Modifiers as Syntactic Heads

THE PRESENT DISSERTATION concerns typologically unusual ways of encoding manner information, namely verbal affixes (manner affixes), incorporated constituents (incorporated manner modifiers) and auxiliary verbs (manner adverbial verbs). A key proposal is that all three are overt realizations of syntactic heads merged in the clausal spine, thereby presenting novel data that can be used to probe into the relationship between morphology and syntax.

Fieldwork data from West Greenlandic forms the basis of the discussion of manner affixes (chapter 3). This study was complemented by a typological survey of languages with manner affixes and incorporated manner modifiers (chapter 4). The study of manner adverbial verbs was based on linguistic fieldwork on Takituduh Bunun, and on already published data on other Austronesian languages spoken on Taiwan (chapter 5).

I show that these manner modifiers are limited to a low position in the clausal spine, which is reflected in their linear order in relation to other functional categories merged in the clausal spine (TAM, negation, valency changing morphology), both on a word and clausal level. The hierarchical position of these manner modifiers in West Greenlandic and Takituduh Bunun exhibits limited but productive variation, which is reflected in linear order and scope interpretation. This constitutes novel arguments against a cartographic conception of the clausal spine, instead favouring a conception of the clausal spine as divided into distinct sortal domains that constrain the distribution of functional categories, but that still allow for a degree of variation in hierarchical ordering within the different sortal domains. Novel statistical implicational universals are also presented, covering both the semantic and morphosyntactic properties of manner affixes and incorporated manner modifiers.

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