

Centre for Languages and Literature, Lund University
Bachelor's Paper in General Linguistics, 15 Credits
Fall Semester of 2018



LUNDS
UNIVERSITET

Scope Effects on Linearization

in Polysynthetic Languages

Name: Lukas Häusler
Supervisor: Mikael Roll

ABSTRACT

This paper adopts a generative approach to investigating the influence of scope on linearization of affixes in polysynthetic languages. From a typological perspective, polysynthetic languages distinguish themselves morphosyntactically by being non-configurational, using noun incorporation, and by their ability to produce (near) one-word sentences by way of agglutinativity on verbs. These features discern them from languages more commonly associated with generative syntactic research. The purpose of this paper was to investigate whether scope relations may be predicted based on the linearization of affixes in verbal complexes. Along the lines of previous generative research (Baker, 1988, 1996, Ouhalla, 1991), my results suggest that scope relations can indeed be reliably predicted when viewed in light of certain well-established generative principles and restrictions which they describe. To avoid family-internal bias, I opted for a comparative analysis of empirical data from three polysynthetic languages from separate language families. The languages were: Mohawk (Iroquoian), Chukchi (Chukotko-Kamchatkan), and Nuuchahnulth (Wakashan).

TABLE OF CONTENTS

Abstract.....	2
Table of Contents.....	3
Abbreviations.....	4
CHAPTER 1: Introduction.....	6
1.0 Purpose and Research Questions.....	6
1.2 Hypotheses.....	7
CHAPTER 2: Theoretical Assumptions.....	8
2.0 Introduction.....	8
2.1 Universal Grammar.....	8
2.2 Principles of Derivation.....	9
2.2.1 X-Bar Theory.....	9
2.2.2 C-command.....	10
2.2.3 Case and Theta Theory.....	11
2.2.4 Merge.....	12
2.2.5 Movement.....	14
2.2.6 Head Movement.....	15
2.2.7 Affixation.....	16
CHAPTER 3: Polysynthesis.....	18
3.0 Introduction.....	18
3.1 Incorporation and Agreement.....	19
3.2 Status of Overt Nominals.....	21
CHAPTER 4: Linearization.....	23
4.0 Introduction.....	23
4.1 Nuuchahnulth.....	24
4.2 Chukchi.....	26
4.3 Mohawk.....	28
CHAPTER 5: Discussion.....	31
5.0 Introduction.....	31
5.1 Common Denominators.....	31
5.2 Typological Variation.....	32
5.3 Results.....	33
5.4 Further Research.....	34
CHAPTER 6: Conclusion.....	35
References.....	36

ABBREVIATIONS

<i>Abbreviation</i>	<i>Function</i>	<i>Language</i>
A	agent	
AN	(high) animate noun	Chukchi
ABS	absolutive	Chukchi, Mohawk
ACC	accusative	
APPR	approximative	Chukchi
BEN	benefactive	Mohawk, Nuuchahnulth
CAU	causative	Chukchi, Mohawk
CIS	cislocative (movement toward)	Mohawk
COLL	collective quantifier	Chukchi
COMP	complementizer	
COND	conditional	Nuuchahnulth
DAT	dative	
DEP	dependent	Nuuchahnulth
DESID	desiderative	Chukchi
DET	determiner	
DUP	duplicative	Mohawk
E	epenthetic schwa	Chukchi
EMPH	emphatic marker	Chukchi
ERG	ergative	
FACT	factual	Mohawk
FUT	future	
HAB	habitual	
IMPF	imperfective	Mohawk
INCH	inchoative	Chukchi
IND	indicative	Nuuchahnulth
INT	intentional	Chukchi
IT	iterative	
LOC	locative	
M	masculine	
NE	nominal particle (function unclear)	Mohawk
O	object	
P	plural	
PASS	passive (voice)	
PART	partitive	Mohawk
PLACE	derivational suffix for place names	Chukchi
POSS	possessive marker	
PRF	perfective	
PST	past tense	
PUNC	punctual	Mohawk
PURP	purposive	Mohawk
Q	interrogative	
S	subject	

S	singular	
SEQ	sequential aspect converb	Chukchi
SIM	simultaneous	Mohawk
STAT	stative aspect	Mohawk
TRANS	translocative (motion away from)	Mohawk
VB	verb derivational suffix	Chukchi
Z	zoic gender	Mohawk

CHAPTER 1

Introduction

It is well known within the generative literature that distribution of functional categories in the syntax may offer clues to the derivational process. The purpose of this paper is to examine the extent to which scope may be consistently predicted based on linearization of functional morphemes. To this end, I apply accepted generative principles in my analyses primarily of verbal complexes in polysynthetic languages. Polysynthetic languages distinguish themselves morphosyntactically in that they are non-configurational (i.e., have relatively free word order), use noun incorporation, and form verbal complexes—aggregate morpheme clusters centered on the verb root. As I will argue below, the tendency for aggregation on verbs should be of great interest to syntactic research, since the overt expression of functional categories seen in polysynthetic languages offers a view into the mechanics of syntax which is harder to attain in more isolating languages. If more functional morphemes are expressed on the verb, syntactic analysis can be more straightforward by virtue of leaving more clues pertaining to scope and its role in the derivational process. Of course, whether or not this is true depends entirely on one's theoretical assumptions. My arguments for this hypothesis—that a higher number of functional morphemes correlates with better chances at accurately estimating scope relations—will become clear as the reader progresses through the theoretical background.

My results suggest that scope plays a determinative role in *how* and *why* constituents are linearized in a given way (cf. Baker, 1988, 1996, Ouhalla, 1991), and lend support to some of the generative theory discussed in this paper. Understood to be located in the upper echelons of the structural hierarchy, functional categories such as TAM, negation, and agreement are my primary subjects of investigation, since their distribution has semantic effects which span the utterance level.

1.0 Purpose and Research Questions

This paper seeks to investigate which effects scope might have on the linearization of affixes in polysynthetic languages, and whether or not predictions of scopal hierarchy can be made consistently based on accepted generative principles. Verbal complexes are chosen as the main focus of this paper for reasons stated above.

In agreement with Baker (1996), I argue that the grammatical uniqueness of polysynthetic languages make them of intrinsic value to syntactic research, not least by virtue of typologically diversifying the dataset. The more typologically diverse the empirical basis for syntactic research, the larger the competitive arena. As with all areas of science, the utility of any particular theory must prove itself through arduous scrutiny and comparison with competing theories. Just as more theoretical competition hopefully eliminates unsound theory, typological diversity fertilizes the empirical testing ground which is necessary for establishing good theory.

For my analysis, I comparatively examine empirical data collected primarily from three sources: Wojdak (2005) for Nuuchahnulth, Dunn (1999) for Chukchi, and Baker (1996) for Mohawk. I have taken the liberty to adapt the glossing from these works, insofar as they have been consolidated for consistency and decluttering purposes. The glossing for the various classes of agreement morphemes and thematic suffixes present in Chukchi have been unified,

and are represented for comprehensibility by glosses such as 2SS for a second person singular subject. My research questions are as follows:

- (1) How does scope inform linearization of functional categories above the VP-level in polysynthetic languages?
- (2) Why do polysynthetic languages produce verbal complexes?

1.2 Hypotheses

The hypotheses presented below build upon the premise (laid out in §2.0) that certain types of constraints exist which apply across language family boundaries. If such constraints can indeed be observed, then they are expected to facilitate reliable predictions about syntactic behavior. This possibility is the central topic of interest for this paper. As will become clear, many constraints of this type are both argued for and supported by extensive empirical evidence presented within the generative literature. My hypotheses are as follows:

- (a) Scope directly informs variations of linearization.
- (b) Constraints exist which limit the derivation to the extent that scope can be accurately deduced from the linearization of affixes.
- (c) A higher number of functional categories, when represented by morphologically distinct units, facilitates accurate estimations about scope.

CHAPTER 2

Theoretical Assumptions

2.0 Introduction

Before getting more intimately acquainted with polysynthetic morphosyntax, the current chapter offers an introduction to relevant generative theory. More advanced theoretical concepts will be presented as they become relevant to the arguments I propose in this paper. On this note, introduced readers may notice that some of the earlier descriptions and schematic figures have been oversimplified, a decision made in an attempt to make the theoretical background approachable to unacquainted readers. §3.0 establishes a working definition of polysynthesis as applied in this paper, and delineates some of the grammatical features with which it is typically associated. §4.0 offers my own analyses of scopal hierarchy in Nuuchahnulth, Chukchi, and Mohawk. This is followed by a discussion of how my results may be interpreted in §5.0, and, finally, my conclusion in §6.0.

Although I will be presenting my analyses within a generative framework, no rigorous affiliation will be made to any specific iteration of it. As mentioned above, the purpose of my thesis is to examine the role of scope in the derivation of polysynthetic morphosyntax—not primarily assessing the validity of the theory. In my analyses, I follow an extensive body of research conducted within the field of generative syntax.

Although adopting a generative approach in this paper, I am not necessarily arguing for GG as a superior theoretical paradigm. Instead, I hope for a wider empirical basis to widen the opportunities for testing syntactic theory in general, and that perhaps I may offer some minor piece in this puzzle. I have elected to adopt a generative perspective for the reason that, to my knowledge, other theoretical frameworks have yet to produce research examining polysynthetic morphosyntax in similar depth.

2.1 Universal Grammar

In his latest (1995) hatch of the Universal Grammar framework (henceforth UG), termed the *Minimalist Program*, Chomsky aims to streamline estimations about language production made within previous iterations of generative grammar, (e.g., *Government and Binding*, *Principles and Parameters*). He argues that, given the immense typological variation observed crosslinguistically, the language faculty must rest upon a common, biologically determined ability in order to permit some reasonable level of computational efficiency. The mechanics of this basic neurological ability is suggested by Chomsky to obey (presumably cognitive) constraints which in turn govern language production.

Researchers within generative grammar vary in their specific hypotheses about the mechanics of syntax, as well as in their views on whether its foundations are indeed innate. However, the proposition that common fundamental principles govern derivation is widely accepted, not least by virtue of the considerable body of evidence supporting this claim. Universal *principles* are assumed within the generative literature to be complemented by language-specific *parameters*, hence the term ‘Principles and Parameters,’ the theoretical framework posited by Chomsky (1986). Parameters may be likened to binary ‘toggle switches’

which may be either enabled or disabled in a language, hence causing grammars to enforce constraints which endow languages with unique superficial properties. The combination of (universal) principles and (language-specific) parameters constitute what Chomsky (1995) terms the *I-language*, or internal language, which may be paraphrased as speakers' intuitive knowledge of what qualifies as a grammatical utterance in their language.

Baker (1996) points out that the vast majority of generative research has focused its efforts on English and other Indo-European languages, thereby hampering attempts (a) to investigate the applicability of generative theory more broadly, and; (b) to establish a deeper understanding of syntactic derivation. Baker (1996) is not alone in adopting generative principles in his research on polysynthetic languages (Ouhalla, 1991), and has proposed both universal laws and parametric constraints to account for some distinctive properties of polysynthesis.

2.2 Principles of Derivation

The current section provides an overview of syntactic derivation as understood from a generative perspective. We start by assuming the basic premise that all utterances begin with the retrieval of lexical items from the lexicon. Once lexical items have been retrieved, they must be connected by means of a syntactic operation referred to within the literature as *Merge* (originally Chomsky, 1970). Merge takes an element α and combines it with an element β , forming a set, $\{\alpha, \beta\}$. Applied iteratively, this process yields a string of syntactic constituents (or *phrases*) which ultimately form what we think of as a sentence. Before going forward, we may informally summarize some of the concepts discussed so far:

- (a) **Principles**
Universal laws governing rudimentary operations of linguistic (for our purposes, *syntactic*) production
- (b) **Parameters**
Language-specific constraints which induce particular syntactic, morphological, or phonological behavior
- (c) **Scope**
The structural hierarchy of syntactic constituents in a clause

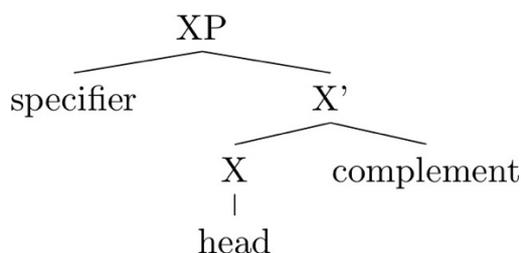
2.2.1 X-bar Theory

Originally proposed by Chomsky (1970), X-bar theory is a theoretical model aimed at mapping syntactic structure using tree diagrams. The template used for this, termed the *X-bar schema*, is proposed as a replacement model for classic tree diagrams (cf. (2.2.0)).

A central assumption within generative grammar is the Headedness Principle, which proposes that all syntactic constituents (such as VPs, NPs, or PPs) are projected from a single *head*, a word or morpheme the lexical category of which determines the type of phrase projected by it. In (2.2.0), the head X projects an intermediate projection, the X' (pronounced *ex-bar*),

then proceeding to a *maximal projection*, the XP. Maximal Projections (abbreviated MPs) define the outer perimeter of syntactic constituents.

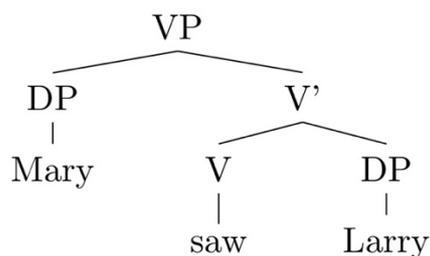
(2.2.0) *X-bar Schema* (Chomsky, 1970)



(adapted from Ouhalla, 1996)

By the adoption of binary-branching trees over previously common ternary-branching models, and by introducing *bar* nodes, the X-bar schema facilitates exhaustive mapping of hierarchic affiliation. Figure (2.2.1) exemplifies a VP maximal projection as commonly depicted using the X-bar schema, featuring the verb *saw* and its two arguments. The *specifier* position is occupied here by the subject *Mary*, the direct object *Larry* occupying the *complement* position (reserved for syntactic *objects*) seen in (2.2.0). The V' itself (pronounced *vee-bar*) does not represent a lexical item, but simply illustrates the hierarchic relationship between the verb *saw* and its arguments.

(2.2.1)



2.2.2 C-command

The aforementioned type of ‘exhaustive’ mapping of structural hierarchy that results from binary-branching trees can be understood in terms of its precise depiction of hierarchical government relations—an advantage absent from ternary-or-more-branching models. In other words, X-bar and similar types of tree diagrams illustrate dominator-dominee type relationships present between syntactic constituents. This kind of relationship is codified in the concept of c-command, short for *constituent command*.

(2.2.3) *C-command*

A constituent X c-commands its sister Y and any constituent Z which is contained within Y

(adapted from Radford, 2004:91)

There are two types of c-command: *symmetric* and *asymmetric*. Symmetric c-command is a relationship of mutual government between sister nodes (nodes sharing the same mother node), such as *saw* and *Larry* in (2.2.1) above. A relationship of *asymmetric* c-command is present between the specifier *Mary* and the daughter nodes of the V', i.e., the verb *saw* and its complement DP¹ *Larry*.

2.2.3 Case and Theta Theory

The study of thematic roles involves identification of the 'participants' present in an utterance and determining the semantic roles they play relative to other 'participants' in a clause. Such participants are referred to *arguments*. The type of constituent most commonly discussed in this context are *nominal* arguments to verbs, where verb phrases, or VPs, are the relevant type of maximal projection in which they are contained. In the case of a VP, the verb is understood to assign what are termed *thematic roles* (also *theta*-roles or *θ*-roles), to its arguments, defining the semantic function which they play in the clause. At any degree of earnest review, it quickly becomes clear that semantic relationships have ramifications on syntax and morphology. As we shall see, the observation that syntax, semantics, and morphology are deeply intertwined is so prerequisite that any productive discussion on the topic must include it.

As a transitive verb, the verb *saw* in (2.2.1) assigns the θ -roles of AGENT and THEME to *Mary* and *Larry*, respectively.² In research on case theory (Rouveret & Vergnaud, 1980, Chomsky 1981), all overt nominal arguments are suggested to be assigned both θ -roles and abstract case. This hypothesis is embodied in Chomsky's Visibility Condition.

(2.2.4) Visibility Condition (Chomsky, 1981:ch. 6)

A phrase is visible (eligible) for θ -assignment only if it is assigned abstract case.

The Visibility Condition conveys the idea that case assignment and θ -assignment, though not functionally identical, are partially coextensive. Another important premise within the literature is Chomsky's (1981) Θ -Criterion, which predicts that each type of θ -role may be assigned only once per clause, and that each argument may have only one θ -role. Thus, one constituent may never be both the AGENT and the THEME of a clause.³ A later revision of the Θ -Criterion (Chomsky, 1986:184) further adds the addendum that each assignable θ -role (i.e., every θ -role distributed by a verb) *must* be assigned to some argument. When combined, the Visibility Condition and the Θ -Criterion have the implications that (i) arguments must have (abstract) case, and; (ii) arguments must have θ -marking.

¹ I assume in this paper the validity of two hypotheses:

- (i) The DP Hypothesis (Abney, 1987), which suggests that NPs are in fact determiner phrases. The DP Hypothesis can be tested using substitution of bare nouns by determiner phrases: *The merchant sold handicraft/his products at the market*. See Radford (2004:140-144) for further elaboration.
- (ii) The VP-Internal Subject Hypothesis (Kuroda, 1992), positing that all arguments of a verb originate within the VP maximal projection.

² The θ -selectional properties of a verb, i.e., the number of arguments it takes and which θ -roles it assigns to them, are known as *θ-grids*.

³ Note that while two semantic AGENTS can be represented in the form of two noun phrases, e.g. *Jack and Dexter* in *Jack and Dexter hit the road*, these are in fact syntactically coordinated (cf. Fillmore, 1968:10), that is, they comprise a single syntactic constituent. Similarly, a coreferent may carry two (or more) θ -roles over the course of a *multi-clausal* utterance. We may say *I slapped the man that slapped me yesterday*, whereby each coreferent gets to play the role of AGENT and THEME once over the course of the utterance.

(2.2.5) *The θ -Criterion* (Chomsky, 1981:36)

For every θ -role, there must be one and only one argument; for every argument there must be one and only one θ -role.

In this context, “case” does not necessarily imply *overt* morphological case marking as described in traditional grammars. Instead, case is proposed to have a deeper structural function which may or may not be realized phonologically.⁴ Case assigners are commonly verbs, but prepositions, adjectives, and adverbs may equally enact case marking on nouns. In Arabic, certain quantifiers assign accusative case, and temporal adverbs are commonly marked for accusative (cf. Abu-Chacra, 2009). Consider that in (2.2.6), the German preposition *mit* ‘with’ assigns dative case to the DP *große Ohren*. The determiner, the adjective *groß* ‘big’ and the noun *Ohren* ‘ears’ are inflected for dative case. This leaves the impression that prepositions can be *transitive*, thereby taking arguments in the form of syntactic complements—an understanding which is uncontroversial within the literature.

It should be noted that, while the Visibility Condition necessitates that verbal arguments have abstract case to be eligible for θ -marking, it crucially does *not* perforce entail that all case-bearing elements must be θ -marked. The German preposition *mit* ‘with’ in (2.2.6) assigns case to its complement, though it is unclear why the dative is assigned. Indeed, *die großen Ohren* ‘the big ears’ can hardly be the BENEFICIARY of anything in this context. We should therefore assume that case does not, by itself, imply θ -marking.

(2.2.6) *de-r* *Mann* *mit* *de-n* *groß-en* *Ohre-n*
DET-MS.NOM man.NOM with DET-P.DAT big-P.DAT ear-P.DAT
‘The man with the big ears.’

By the above analysis, θ -roles and case have similar characteristics, but seem to operate independently. Just as German prepositions, English transitive prepositions may assign oblique case to pronoun complements: *He have the ball to me*, but **He gave the ball to I*. A further argument in support of abstract case is the fact that all languages seem to successively convey argument structure whether or not morphologically marked (Mandarin, for example, has no morphologically distinct object pronouns).

2.2.4 Merge

Having reviewed basic concepts above, the current section aims to delineate the mechanics of syntactic derivation. At this stage in the discussion, the three components of semantics, morphology, and syntax converge. First, rudimentary syntactic operations will be described.

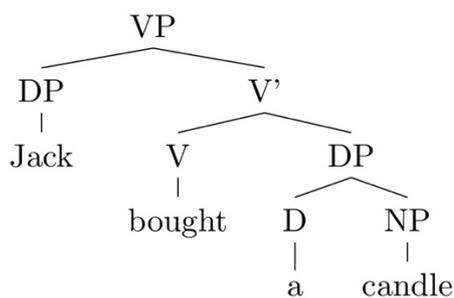
Syntactic Merge was suggested in the Minimalist Program (Chomsky, 1993, 1995) as the principal syntactic operation that concatenates lexical items after their retrieval from the lexicon. The operation is understood to pair elements in a binary fashion, merging two new items for every new iteration, ultimately yielding the type of structure featured in the above schemata. Widely sanctioned within the literature, this notion was embodied in Kayne's (1984)

⁴ English, for example, only overtly distinguishes *pronouns* for accusative and genitive case, not nouns. In pretheoretical descriptions, English is not normally described as a case language.

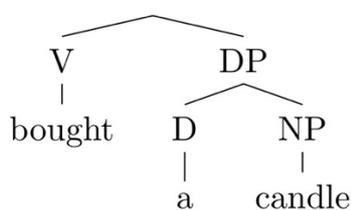
Binarity Principle, which stipulates that a binary-branching structure would be superior to n -ary branching in terms of computational efficiency.⁵

Further, Merge is argued to apply in a ‘bottom-up’ manner, i.e. it begins by merging lexical items which occur at the bottom end of the syntax. The requisite for a bottom-up approach follows from the Binarity Principle. To illustrate why this is, consider (2.2.7a). A top-down application of Merge would entail an initial merger of *Jack* with *bought*. By the Headedness Principle, this maximal projection would need to be headed either by *Jack* or *bought*. However, *Jack bought* is invalid as a DP maximal projection, and since *buy* is a transitive verb, *Jack bought* is invalid equally as a VP maximal projection.⁶ We must instead assume that the initial merger corresponds to that shown in (2.2.7c), the determiner *a* and *candle* the first iteration, resulting in the DP *a candle*.

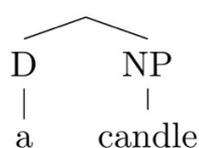
(2.2.7) a.



b.



c.



The Earliness Principle, proposed by Pesetsky (1995), suggests the constraint that all syntactic operations apply as early in the derivation as possible. In sentences such as (2.2.7a), operations such as case and θ -assignment would thereby apply at the second iteration of Merge, shown in (2.2.7b), where the transitive verb is merged with the DP *a candle*. As case and θ -assigner, *bought* assigns abstract accusative case and the θ -role of THEME to *a candle*. The resulting V' is then merged with the subject *Jack* to render the full sentence in (2.2.7a).

⁵ If we assume that natural selection, when faced with competing systems, favors those which expend minimal resources, it seems plausible that syntactic derivation, being a natural system, would follow the same trend. Guevara (2007) states: “By Occam’s razor, given two competing grammars (or theories) of equal descriptive power, the one that is less complex should be preferred.” If only two lexical items are adjoined at a time, the process of derivation could be speculated to be computationally more efficient than if n -ary branching applies, although perhaps not for obvious reasons: N -ary branching could be argued to demand less resources by virtue of minimizing structural complexity, as argued for by Culicover and Jackendoff (2005) in their Simpler Syntax Hypothesis. However, such a lack of structure likely poses difficulties to interpreting argument structure. In the end, despite greater complexity, binary branching may therefore render lower computational expenditure. Guevara (2007) offers a valuable exposé on this issue, arguing for the latter model.

⁶ If pursued further, this model would yield a structure whereby the VP would be c-commanded by its own complement. On the basis of the theoretical concepts described above, the only logically possible outcome of top-down merger is an n -ary-branching syntax, i.e., one lacking argument structure.

2.2.5 Movement

Finally in a position to address the process of syntactic movement, we shall explore below its central role in the derivation and the ways in which it applies differently in polysynthetic syntax when compared to more isolating languages. When language-specific syntactic or phonological constraints are enforced, linearization and morphology are impacted in ways which lead to languages' unique grammatical traits.

The previously mentioned *I-language* (internal language), is developed early in children's language development, and the brain appears to produce language based on generalizations made from their linguistic environment. Overgeneralizations about grammar and phonology are not uncommon amongst children and L2 learners, suggesting that a powerful statistical engine resides in the brain, capable of identifying consistencies in morphosyntax and phonology and implementing them in the linguistic output.

One type of relevant effect is the displacement of syntactic elements—known as syntactic *movement*. Movement is typically restricted (both by proposed universals and language-specific constraints) in ways that render consistent patterns of linearization. In pretheoretical terms, such patterns might be referred to as *word order requirements*. However, as will become clear below, this term is too vague to accommodate our discussion, insofar as canonical word order is a surface phenomenon and may arise from a multitude of factors.

Although the superficial word order of (2.2.8a) is obviously ungrammatical, constituents are preserved in their *base-generated* positions, i.e., in the positions where they are thought to spawn as a result of initial concatenation.

- (2.2.8) a. *Did Mary hit who?
b. Who did Mary hit?

The enforcement of language-specific requirements on syntax and phonology shapes the character of linearization and morphological processes such as affixation. In this context, lexical items are widely understood within the literature to be inherently *unordered* (cf. Wojdak, 2005). To summarize, our premises are (i) that (2.2.8a,b) are syntactically equivalent, and; (ii) neither semantic nor structural interpretation should be expected to be contingent upon any particular order of lexical elements—word order is a result of the enactment of syntactic, phonological, or other types of constraints.

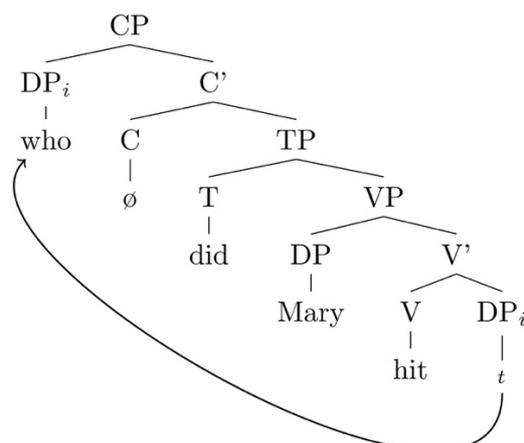
In the case of (2.2.8a), the tense verb *did* c-commands the VP *Mary hit who*. English requires wh-words to feature at the beginning of sentences, forcing the object *who* to move to the beginning through a process termed *copy and deletion* (Radford, 2004), rendering *Who did Mary hit?* In other words, *who* is copied (or moved) from its *base-generated* position in the VP to the specifier terminal of C by the requirement for Modern English wh-words to be clause-initial (Radford, 2004).⁷ The null head of C is understood to attract the interrogative pronoun *who*, since it changes Force⁸ from declarative to interrogative.⁹

⁷ Studies on children's early language acquisition have yielded cases where the *copying* of a constituent is carried out, but *deletion* fails to apply. This produces results such as reduplication of auxiliaries in wh-questions, e.g., "Can its wheels *can* spin?", "Did the kitchen light *did* flash?" (Radford, 2004:156, originally Crookston, unknown year). This evidence favors the hypothesis that copy and deletion is indeed a two-step operation.

⁸ Illocutionary force (abbreviated Force) is the grammatical feature determining distinctions such as whether an utterance is *declarative*, *interrogative*, or *imperative*. There is good support for the existence of Force as a separate functional category (cf. Radford, 2004:124-128).

⁹ The VP-Internal Subject Hypothesis, proposed by Kuroda, 1992) suggests that all verbal arguments originate within the VP maximal projection, the main reason being that the verb is understood to be the sole θ -assigner. A generative approach to our topic rules out a situation where the subject *Mary* is base-generated in C, since *Mary*

(2.2.9)¹⁰



Introduced by Baker (1988), the Uniformity of Theta-Assignment Hypothesis (UTAH) suggests that θ -marking corresponds to syntactic origin, i.e., base-generated syntactic position. Just as *the bank robber* in (2.2.2c), being the object, carries the θ -role of THEME, the UTAH proposes that in (2.2.2b), *the bank robber*—being the semantic THEME—is merged as the complement of the verb. *The bank robber* is a subject only in a pretheoretical sense, hence the technical term *superficial subject* (cf. Radford, 2004:260). It follows from the above that (2.2.2b,c) differ (i) not at all in a broad semantic sense, and; (ii) syntactically only by virtue of employing of a passive or active verb, respectively.

- (2.2.2) a. *Was arrested the bank robber by the police.
b. The bank robber was arrested by the police.
c. The police arrested the bank robber.

2.2.6 Head Movement

Thus far, we have looked at movement of maximal projections, more specifically arguments of verbs. X-bar Theory implies two types of projections that are represented by lexical items—*heads* (minimal projections) and *phrases* (maximal projections). While both can be shown to undergo movement, certain constraints are proposed on how they might move and the consequences of their movement. In the examples above, only MPs moved, and they did so exclusively to *specifier* terminals, and this is no coincidence. Phrases and heads are understood only to be able to move to terminals corresponding to their type, i.e., heads may move to heads and MPs may only move to *specifier* or possibly *adjunct* positions.¹¹

would then c-command its θ -assigner. Processes such as case and θ -properties are thought to proceed mainly (though not always—cf. Chomsky's (1981) notion of Exceptional Case Marking) within the boundaries of MPs as discussed by Ouhalla (1991).

¹⁰ The deleted direct-object DP in (10) has a *t* for *trace*, denoting its syntactic origin. Since they are coreferential, both subject DPs are marked with an *i* for *index*. Further, the introduced reader may note that the subject *Mary* is not shown to undergo A-movement, a decision made since this movement process has not yet been discussed.

¹¹ Cf. Emonds (1976) and Chomsky (1986b) for a description of the Structure Preserving Constraint.

Equally, constraints on the length of head movement are proposed to exist. One of them is Travis' (1984) Head Movement Constraint, which suggests that heads may only move to the immediately superjacent c-commanding head. For our purposes, we will assume that this holds for both minimal and maximal projections.

(2.2.3) Head Movement Constraint (HMC)

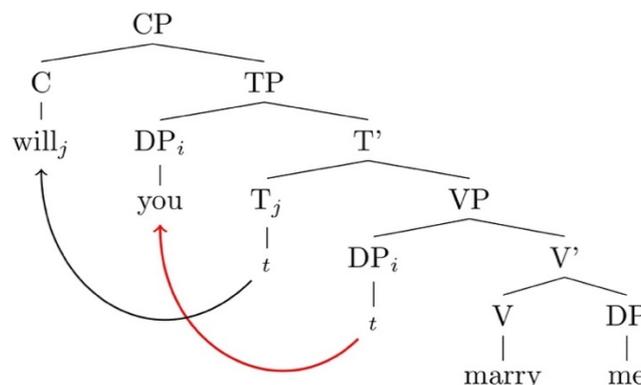
Movement from one head to another is only possible between a given head and the closest head which asymmetrically c-commands it (i.e. between a given head and the next highest head in the structure containing it).

(adapted from Radford, 2004)

Previous sections have treated the process of movement, but deeper inquiry into the subject begs the question of whether grammatical traits may be identified which induce reordering in the syntax. Radford (2004) discusses Chomsky's concept of *strong features*—the ability for heads to attract other elements, e.g., the type of auxiliary inversion seen in English *yes/no* questions, known as T-to-C movement. In questions like (2.2.4), the null head of C is understood to have a strong *Tns* feature [+T], attracting movement of T (*will*) to C.

English T is argued¹² to have what is referred to as an EPP (Extended Projection Principle) requirement, a parametric constraint proposed by Chomsky (1982) which causes a phrase to project an empty specifier branch. The empty branch requires a suitable MP, and causes movement of the VP subject to T's specifier branch. Empirical evidence for this exists in the fact that, assuming the VP-Internal Subject Hypothesis (Kuroda, 1992), the placement of the subject in *Garfield did go to school* suggests either (i) that *did* is base-generated within the VP, or; (ii) that *Garfield* has been moved out of the VP to a position preceding *did*. Since *did* is understood as a tense particle which commands the verb, the former hypothesis is ruled out. For a sentence such as *Will you marry me?*, we hence arrive at the analysis shown in (2.2.4).

(2.2.4)



2.2.7 Affixation

We saw above how movement may occur by virtue of strong features inducing head movement. While affixation may occur by head movement as caused by *strong* features, some categories are understood to have *weak* features (Radford, 2004). Weak features lack the 'strength' necessary to induce movement of an element. Radford (2004) argues that in Modern English,

¹² See Radford (2004:197-202) for a description of English T's EPP requirement.

T has a weak [+V] feature, which prevents it from attracting the movement of a verb. Since English T is a bound element modifying the verb, it can only be phonologically realized if it finds a suitable verbal host.

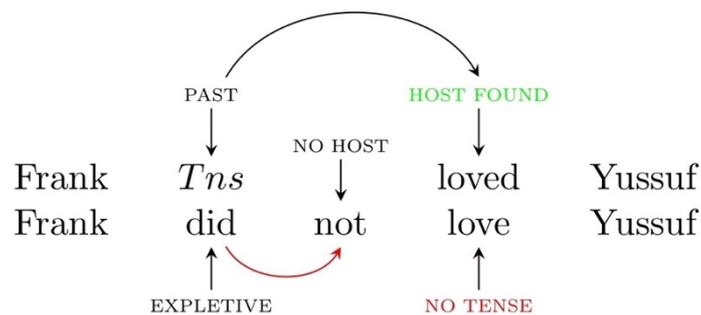
(2.2.5) *Affix Hopping*

In the PF (phonological processing) component, an unattached bound affix is lowered onto the closest head c-commanded by the affix, provided that the lower head is of an appropriate category.

(adapted from Radford, 2004:118)

We may observe this property in English negated sentences. Since Affix Hopping only works if the relevant category is immediately subjacent, complications can be expected to arise when interfering categories exist. If we think of the derivation as a computer component, we might say that the derivation ‘crashes’ if it encounters a fatal error, such as bound element failing to find a host. Baker (1988) proposes the Stray Affix Filter (SAF), a phonological failsafe which prevents crashes in the derivation by ensuring bound elements receive a host. DO-support in English negated sentences are used as support for this hypothesis. The process is illustrated in (2.2.6), where T attempts to lower its bound affix to V. In the upper example, this process is successful since V is right-adjacent to T. In the lower example, an intermediary Negation Phrase (NegP) prevents Affix Hopping, forcing the verbal expletive *did* to be spawned.

(2.2.6)



CHAPTER 3

Polysynthesis

3.0 Introduction

The current section concerns itself with the mechanical characteristics of polysynthetic morphosyntax, honing in on the matter of verbal complexes. The intricacies of case marking and nominal inflection will not be explored in-depth here. Verbal complexes offer an intriguing window into the mechanics of syntax, since, as I will argue below, they enable us to make fair estimations of scope and its effects on movement in the syntax. Thus, analyses conducted within the theoretical framework outlined above can yield consistent results with respect to scope.

A discussion of what distinguishes polysynthetic morphosyntax from that of more isolating languages necessitates some terminological considerations. The term ‘polysynthetic’ has been used somewhat inconsistently diachronically, being used more loosely by early typologists, e.g., Boas (1911), Sapir (1921). The Utrecht Lexicon of Linguistics defines polysynthetic languages as those which “permit processes such as noun incorporation”, and languages where “a single word can encode a meaning which would require a fairly elaborate sentence in many other languages.” While these two phenomena are both related and relevant to our topic, one-word sentences are not an automatic consequence of noun incorporation. Hence, this is too vague a definition for our purposes. More generally, polysynthesis is associated with non-configurationality (free word order), head-marking, incorporation, and agglutinativity—though none of these traits in and of themselves imply polysynthesis. When combined, however, they do tend to yield at least the capability of producing one-word sentences, the property perhaps most universally associated with polysynthesis. The extent to which languages in fact do this is subject to variation.

One-word sentences are comprised of what I will refer to as *verbal complexes*, strings of affixes aggregated on a verb root. Typically, most of these morphemes express functional categories such as TAM, agreement, negation, and valency functions, though lexical categories or clausal complements may also be incorporated.

Baker (1996) proposes the Polysynthesis Parameter (cf. 3.0.0), a condition that requires polysynthetic languages to express arguments on the verb, forming a verbal complex. If we assume the validity of (3.0.0), then a language would be polysynthetic *if and only if* verbal complexes express *all core arguments*. If the relevant verb were a transitive verb such as the English *hit*, then a language subject to (3.0.0) would force the AGENT and THEME of *hit* to be expressed by morphemes on the verbal complex (e.g., *she-him-hit* or *3SA-3SO-hit*).

(3.0.0) *The Polysynthesis Parameter* (Baker, 1996:14)

Every argument of a head element must be related to a morpheme in the word containing that head.

Crosslinguistically, morphological traits are not generally exhibited binarily: The extent to which languages are isolating, fusional, or use overt case marking seems to exist on a spectrum that is fluid and hence ought theoretically to allow any number of states between the extremes. It would therefore seem reasonable to allow for a broader definition of polysynthesis than that of Baker (1996). We would otherwise have to exclude languages like Nuuchahnulth from our analysis on account of a lack of object agreement. But Nuuchahnulth shows virtually all other traits commonly associated with polysynthesis: Verbal complexes with aggregate functional

morphemes, obligatory subject agreement, and a seeming preference for NI. All the same, Baker's narrower definition is probably useful as a standard for one extreme of this dimension of the morphosyntactic spectrum, and will be treated as such herein.

On the issue of verbal complexes, we will stipulate that they must contain (i) a verb; (ii) at least one argument of that verb, and; (iii) functional categories such as TAM and agreement to the extent that they are present. In summary of the principles of θ -theory described in §2.2.3 above, we concluded (a) that predicates assign θ -roles, (b) that arguments visible (eligible) for θ -assignment must have abstract case, and; (c) θ -marking corresponds to a *base-generated syntactic position* as per the UTAH. These concepts now return to the foreground as we consider the Polysynthesis Parameter, which upon closer review strongly resembles Chomsky's Θ -Criterion. While the Θ -Criterion provides the conditions for θ -assignment at the clause level, the Polysynthesis Parameter applies the same conditions within verbal complexes.

3.1 Incorporation and Agreement

To the matter now of how arguments may be expressed in a verbal complex, we return to the topic of noun incorporation and agreement. Baker defines a polysynthetic language as one where “both agreement morphemes and lexical roots count as rendering an argument visible” (1996:17). What this means is that arguments can be expressed *either* by agreement or by incorporation of arguments (usually nouns) into the verbal complex. To show how (3.0.0) applies, Baker proposes the Morphological Visibility Condition (MVC):

(3.1.0) *Morphological Visibility Condition* (MVC) (Baker, 1996:17)

A phrase X is visible for θ -role assignment from a head Y only if it is coindexed with a morpheme in the word containing Y via:

- (i) an agreement relationship, or
- (ii) a movement relationship

On the topic of noun incorporation (henceforth NI), Baker (1996) argues that languages which have “productive” NI are likely to be [+MVC] and therefore polysynthetic by his definition. ‘Productive’ here means being grammaticalized, spontaneous, and applicable to most or all verbs—not limited only to a small number of verbs. He identifies a number of languages from separate families which correspond to these criteria and share other morphosyntactic properties. These languages include: Mohawk, Tuscarora, Wichita, Kiowa, Southern Tiwa, Huautla Nahuatl, and Chukchi. He states that all these languages have “full and obligatory agreement paradigms for both subject and object”, and relatively free word order.

It should be clarified at this stage that when referring to NI, the relevant candidates for incorporation must be *complements* to verbs (Baker, 1996, Wojdak, 2005). The primary languages of investigation in this paper differ in their requirements for arguments to be represented inside the verbal complex, where Mohawk and Chukchi are the more orthodox of the lot, requiring both subject and object agreement/NI.¹³

From structures like those seen below, we can observe this predicted tendency. In Chukchi and Mohawk, both subject and object agreement is obligatory, while Nuuchahnulth has obligatory subject agreement, but only on rare occasion and under certain conditions uses object agreement. Nuuchahnulth does, however, seem to prefer NI where possible. The primary

¹³ Chukchi alignment is highly complex, and agreement morphemes are not always spelled out in the ways one might predict. Particularly, certain two-way agreement morphemes are null, i.e., not realized phonologically.

limitation to Nuuchahnulth NI is the existence of two types of verb classes; *affixal* (cf. (3.1.1a)) and *independent* (cf. (3.1.1a,b)), which require and disallow prefixation, respectively (only the pre-verbal position is relevant for NI).

(3.1.1) *Nuuchahnulth*

- a. Čamas- 'int-mit-siiš.
sweets-serve-PST-1S.IND
'I served sweets.'
- b. Kuuwít-mit-ʔiiš huupuuk^{'was} čakup.
steal-PST-3.IND car man
'A man stole a car.'

(adapted from Wojdak, 2005)

(3.1.2) *Chukchi*

- a. ɲinqej rə-mejɲ-ew-nin əpəqey-te.
boy.3S.ABS CAU-big-VB-3SA/3SO granny-ERG
'The granny brought the boy up.'
- b. Eryat-ə-k ɲaw-ən-ra-yt-at-ɣʔe.
dawn-Ø-SEQ woman-CAU-house-go.to-CAU-3SS
'The next day he brought the bride home.'

(adapted from Dunn, 1999)

(3.1.3) *Mohawk*

- a. Shako-núhwe'-s (ne owirá'a).¹⁴
MSS/3PO-like-HAB NE baby
'He likes them (babies).'
- b. Ra-wir-a-núhwe'-s.
MSS-baby-Ø-like-HAB
'He likes babies.'
(lit. 'He baby-likes.')

(adapted from Baker, 1996)

As mentioned previously, Chukchi and Mohawk seem to follow Baker's (1996) Polysynthesis Parameter excellently in the sense that, regardless of whether arguments are expressed by agreement or by NI, their representation in the verbal complex seems obligatory. In (3.1.2a), nominal arguments are satellites to the verb, but are expressed by agreement morphology in the predicate. Conversely, in (3.1.2b), the object *woman* is incorporated and the predicate thus lacks object agreement. It should be clear, then, that the process of object incorporation reduces the valency of a verb by one, changing it from transitive to intransitive, as can be seen by the lack of object agreement in (3.1.3b).

¹⁴ The *ne* is a particle that accompanies nouns in Mohawk, but is apparently semantically empty.

3.2 Status of Overt Nominals

The term “non-configurational” denotes languages which allow a freer word order compared to say, English, where semantic interpretation is contingent on a rigid canonical word order. Verbal complexes (henceforth VCs) form a closely-knit semantic core that holds most or all information necessary to convey the intended interpretation. The order of external elements, to the extent that there are any, is therefore often relatively or completely free.¹⁵

Non-configurationality raises concerns about the status of overt NP arguments. As we have seen above, VCs may incorporate object nouns, but never subjects. Being that VCs are evidently capable of conveying fairly sophisticated messages without the help of peripheral elements, it would seem uneconomical to repeat arguments overtly. As it turns out, this prediction is not that far off. Dunn (1999) notes that in Chukchi, spontaneous writing (and presumably speech) often sees a complete absence of overt A and O arguments, only rarely cooccurring as free nominals: “overt A nominals are a statistically minor phenomenon” (1999:81). An example of the former can be seen in (3.2.1), where subjects are represented by agreement, and all O arguments are incorporated. Mohawk equally takes liberties in this area, as can be seen in (3.2.2), where overt nominals are equally absent. Nuuchahnulth is more restricted in this area, since it only has subject agreement.

(3.2.0) *Nuuchahnulth*

Context: Ken was out shopping. The speaker asks if Ken bought the new sweater lying on the couch.

Maakuk-mit-h ě'cupč'upšumł-łii?
 buy-PST-3.Q sweater-DET
 ‘Did he buy the sweater?’

(adapted from Wojdak, 2005)

(3.2.1) *Chukchi*

Context: unknown

Neme muu-lqət-γłe-t ləyen otcoj ye-myū-təle-linet
 again caravan-set.off-TH-3P really far PRF-caravan-go-3P

qelūq=łm ya-pker-ə-ηηo-lenat jara-k.
 because=EMPH PRF-arrive-Ø-INCH-3P house-LOC

‘Again they set off in a caravan. Because once they had travelled in their caravan for a long time, they started approaching the house.’

(adapted from Dunn, 1999)

¹⁵ In Chukchi, for example, all logically possible AVO-orderings are attested: V, AV, VA, OV, VO, AOV, OAV, AVO, OVA, VAO, and VOA (Dunn, 1999:81).

(3.2.2) *Mohawk*

Context: A man buys fish and is surprised at the good quality of the fish.

Tánu' ki' ne sáha' ye-s-ho-nehrakó'-u tsi kwáh
and that NE more TRANS-IT-MSO-surprise-STAT that even

akwéku skáthne tsi núwe ni-kutí-[i]teru-'
all together that where PART-ZPS-stay-IMPF
'He was even more surprised that they stayed all together in one piece.'

(adapted from Baker, 1996)

Baker (1996) argues that overt nominals are in fact *adjuncts* of their predicates¹⁶, partly since they are not subject to particularly strict order requirements. Much like English temporal adjuncts may be freely moved around based on pragmatic concerns, Baker shows that arguments in these languages are free in similar ways. He further shows that overt nominals constituents can be discontinuous in Mohawk and Chukchi, much like temporal adverbs in other languages:

- (3.2.3) a. I will go to the store.
b. I will go to the store tomorrow in the afternoon.
c. Tomorrow I will go to the store in the afternoon.

(adapted from Baker, 1996)

While NP arguments in polysynthetic languages are licensed by their verb and their representation in the VC (by agreement or NI), temporal adverbs can be thought of as being 'licensed' by T and serving as *modifiers* which specify the details of temporal events.

¹⁶ In line with Baker's (1988) Uniformity of Theta-Assignment Hypothesis (UTAH), thematic function is predicted to correspond to syntactic origin. This presumably entails that nominals which have an adverbial function must also have the syntactic origin of adjuncts. An example of this would be English INSTRUMENTAL *by*-phrases vis-à-vis Inuktitut instrumental-*case* nominals—same thematic function, same syntactic role.

CHAPTER 4

Linearization

4.0 Introduction

We have treated in some depth the status of verbal arguments in polysynthetic languages, arriving at the conclusion that VCs must generally have arguments represented within them. However, it is not immediately clear by this condition why functional categories like tense, aspect, mood, or negation must be expressed on the verb—a feature consistently seen above, and which recurs in many other languages.

Transitive verbs variously take nominal arguments, complementizer clauses, or adjuncts as their complements. By the theoretical assumptions I have outlined above, it is clear that all levels of constituency except terminal nodes take complements. That is, just as arguments of verbs are typically NPs or CPs occupying either specifier or complement positions, there are higher functional projections which take VP complements. If we set these ideas aside for a moment and consider (4.0.0) in its most literal sense, no mention of verbs is made. We might entertain the possibility that (4.0.0) applies also to functional projections, providing an elegant solution to the question of why functional elements tend to aggregate on verbs. Under this assumption, a more accurate description would be that the aggregation happens on the highest element which obeys (4.0.0).

(4.0.0) *The Polysynthesis Parameter* (Baker, 1996:14)

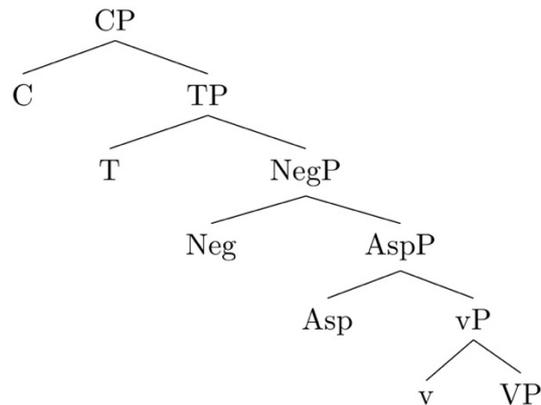
Every argument of a head element must be related to a morpheme in the word containing that head.

In syntactic terms, then, T may take a VP (or vP^{17}) complement, and is in turn a complement of some higher category such as C or I. In English, T is typically understood to take a VP complement or, if negation is present, a NegP.

If (4.0.0) holds for functional categories, then V must be affixed to v if v takes a VP complement. As mentioned above, one way to achieve affixation is by head movement. If V undergoes head movement to v , they are adjoined to form a complex head. This should be predicted to apply all the way up within the clause. Figure (4.0.1) shows the type of tree one might hypothesize for a language such as those examined in this paper.

¹⁷ vP here is short for *valency Phrase* (lower case italicized v avoids confusion with VP). Valency affects the θ -selectional properties of verbs, expressing, e.g., whether a verb is transitive, causative, or reflexive.

(4.0.1)



We saw above that head movement results in attachment of a moved head to the immediately superjacent head. The type of morphological effects exhibited by successive-cyclic head movement may be termed either ‘affixation’ or ‘inflection,’ depending on certain factors which will be outlined in §4.2. At any rate, successive-cyclic head movement yield strings of morphemes. Because of previously outlined restrictions on head movement, elements base-generated in higher positions are typically linearized farther away from the root verb.

Prior to presenting my analyses, I shall clarify the abbreviations used to represent functional projections. Unless stated otherwise, I have omitted the CP projection in my diagrams, partly since C is typically null in my examples, and partly since this category is assumed to always be present, as the highest projection.

(4.0.2) *Abbreviations for Syntactic Projections*

C or CP	Force, determines whether clause is, e.g., declarative, interrogative, or imperative
I or IP	mood, expression of speakers' attitude to or recognition of truth values pertaining to an utterance
Agr(S/O) or AgrP	agreement
T or TP	tense
Asp or AspP	aspect, the qualitative description of temporal properties events, e.g., perfective, habitual, progressive, or iterative
Neg or NegP	negation
v or vP	voice or valency, i.e., distinctions such as transitive/intransitive, active/passive, and reflexive/reciprocal

4.1 Nuuchahnulth

As in the sentence in (4.1.0), lexical heads are typically aligned to the *left* of the verb in Nuuchahnulth, while functional categories modifying main clause verbs are located to the *right* in the fashion described below. Nuuchahnulth is conveniently systematic in this way, usually allowing for a fairly straightforward analysis of scopal hierarchy.

Looking at the examples in (4.1.0), we can identify a hierarchy topped by I, closely followed by T and then V. (4.1.0a) has an incorporated complement clause, the possibility of which should not be unexpected since they are syntactic complements taken by transitive verbs. The first merger combines *children* with *jump*, forming the intransitive VP *jump children*. V then undergoes movement to the iterative Asp morpheme, forming the complex head *jump+IT*. This complex could subsequently merge with a null complementizer before being incorporated by the verb of the main clause. However, the incorporated clauselet in (4.1.0a) lacks a complementizer or any tense or mood morphology, leading to the suspicion that these categories are not present. We may assume that the type of incorporated clause in (4.1.0a) is an infinitival clauses headed by Asp.

Although unable to incorporate full complement clauses as that in (4.1.0b), the predicate in (4.1.0a) can incorporate a *non-thematic* version of the subordinate clause, creating a VC which may be directly translated to *The man repeatedly-jumping-observed the children*.

- (4.1.0) a. *Tux^w-a[+R]-ńak'uuḥ-mit-ʔiiš* *čakup t'aatńaʔis.*
 jump-IT-observe-PST-3.IND man children
 'A man observed the children jumping.'
- b. *ʔu-ńak'uuḥ[+L]-mit-siiš* [*ʔin tuux^w-a[+R]-mit-suuk*].
 Ø-observe-PST-1S.IND COMP jump-IT-PST-2S.DEP
 'I observed that you were jumping.'

(adapted from Wojdak, 2005)

Conversely, despite the verb *ńak'uuḥ* 'observe' in (4.1.0b) being bound, it seems unable to incorporate the full CP, which features mood and tense morphology. The verb is instead forced to take the expletive *ʔu-* as its host.

The complement clause in (4.1.0b) sheds some light on scope relations in Nuuchahnulth by showing higher elements such as mood located farther away from the root, supporting a hypothesis whereby I is outside both T and Asp.

Potential challenges to the hypothesis that infinitival clauses are headed by Asp can be found in (4.1.2a), where we encounter the passive *-ʔat-* located *outside* Asp. This is unexpected in an analysis where *v* is the category determining the thematic properties of the verb. Chomsky (1995:315) postulates that subjects are in fact base-generated in spec-*v*P, a proposition which fits into our assumption that verbs are θ -assigners. For example, the causative *-nup-* in (4.1.2b) is a 'light verb,' a valency-increasing particle which introduces transitivity to (4.1.2b): *I'll cause (it) to be in the box*. If the causative morpheme were not present, we would presumably be faced with a copular predicate: *It is in the box*.

- (4.1.2) a. *ʔu-cuk-ʔiiš* *ču-k^{wi}ʔ-ʔat-quu* *qaawic-ʔii.*
 Ø-need-3.IND wash-PRF-PASS-3.COND potatoes-DET
 'It is best to wash the potatoes.'
 (lit. 'It is necessary that the potatoes be washed.')
- b. *ʔu-či-nup-ʔaqʔ-siiš* *ʔaḥiqs-ʔii.*
 Ø-in-CAU-FUT-1S.IND box-DET
 'I'll put it in the box.'

It seems likely that the first person AGENT in (4.1.2b) is an argument of *v*, and not of V. The placement of the passive in (4.1.2a) can be explained by a model where the main verb undergoes

movement to *v* and then proceeds to Asp, but where the V+*v* complex does not attach to left of Asp, but instead receives it as an infix.

Alternatively, the ability for Nuuchahnulth verbs to incorporate non-thematic (i.e., infinitival) subordinate clauses may be an argument in support of Asp residing inside *v*. The incorporated clause in (4.1.0a) has no subject agreement, something which may be understood by the fact that it the subordinate clause has no subject. Wojdak notes that further research is necessary in this area:

It is not a crucial assumption for aspect to occupy *v*. I propose that the reduced clause is smaller than a TP, but it is possible that projections intermediate to TP and *v*P exist which could house aspectual morphology. The syntactic representation of aspectual morphology in Nuuchahnulth is in need of further research, as this will shed light onto how much smaller than TP the ‘clauselet’ is.

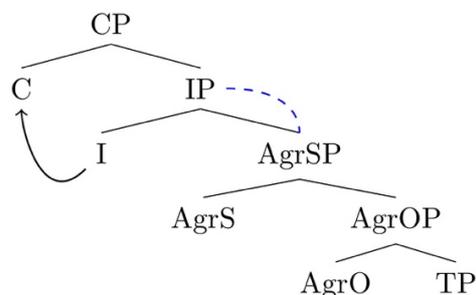
The fusional nature of mood and subject agreement in Nuuchahnulth complicates an analysis of their scopal relationship in all but a few instances. Figure (4.1.3) offers such examples. (4.1.3a) shows I/AgrS on either end of the predicate, while in (4.1.3b) AgrO is featured on the left, and I/AgrS on the right. The fact that agreement is represented by *two* morphemes suggests that there is indeed a separate AgrS projection. We might otherwise expect that no AgrS exists, and that I simply agrees with a null *pro*. Since Nuuchahnulth is nominative-accusative, it seems reasonable to stipulate that AgrS c-commands AgrO.

- (4.1.3) a. *Niwa-iic-hin?*
 1P-belong.to-1P.Q
 ‘Does it belong to us?’
- b. *Sut-ʔiip-mit-siiš* *taana.*
 2S-give.to-PST-1S.IND money
 ‘I gave you money.’

(adapted from Wojdak, 2005)

(4.1.3a) has what Wojdak analyzes as interrogative *mood*. Since interrogatives are generally thought of as particles of C, we might assume (i) that AgrS first moves to I, and that the complex then may proceed to C *if the modal particle modifies Force*, or; (ii) that I for some reason ‘wishes’ to agree with the subject, probing the hierarchy for the relevant element:

(4.1.4)



(4.1.5) *Hypothesis for scope of Nuuchahnulth*

C → I → AgrS → AgrO → T → *v*/Asp → *v*/Asp → V

4.2 Chukchi

Before providing my analysis of Chukchi, a small disclaimer is due. Chukchi alignment is quite complex, and agreement is variously expressed using (a) ‘thematic suffixes’ denoting subject or object agreement, (b) standard agreement morphemes which coreference only subjects, or; (c) agreement morphemes which coreference A and O arguments (Dunn, 1999). Interactions between transitivity with and TAM seem to influence which the type of agreement is used. As mentioned in §1.1, I have unified this glossing for simplicity, presuming in my analyses that they project AgrS and AgrO phrases, respectively.¹⁸

In (4.2.0), the Chukchi predicate *ra-γt-ə-ηηo-γʔe* ‘(he) went home’ has a subject agreement morpheme on the far right, followed by an *inchoative* aspect morpheme (denoting change of state), and finally the verb and the incorporated object. The second predicate has two-way A/O agreement linearized on the right. The first and second predicates are thus consistent with the patterns we saw in Nuuchahnulth, in that functional heads are linearized to the right of lexical heads.

The third predicate introduces a different structure. It resembles the Nuuchahnulth example in (4.1.3a) insofar as (i) the modal particle is fused with AgrS; (ii) an additional AgrS morpheme is present, and; (iii) the two are linearized on either end of the verb. It differs from (4.1.3a) by way of the directionality of these morphemes being inverse. Another contrast here is that AgrO is located farther away from the root than AgrS, suggesting that it belongs outside AgrS, i.e., it has scope over it. This hypothesis does not seem improbable given that Chukchi is an ergative language.

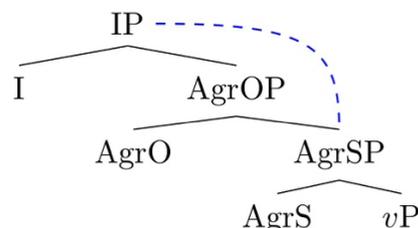
(4.2.0) <i>Qənwet</i>	<i>ra-γt-ə-ηηo-γʔe</i>	<i>əntuulpəre-te</i>	<i>iw-nin</i>
finally	house-go.to-Ø-INCH-3s	br.in.law-ERG	say-3sA/3sO
<i>eryat-ə-k</i>	<i>γən-in</i>	<i>ηel-wəl</i>	<i>q-ə-ret-γ-ə-n.</i>
dawn-Ø-SEQ	2s-POSS.3s.ABS	herd-3s.ABS	2sS.INT-Ø-bring-2sS-Ø-3s

‘Finally he got ready to go home; his brother-in-law said to him “Bring your herd tomorrow”.’

(adapted from Dunn, 1999)

A condition whereby AgrO is outside AgrS introduces the problem of how AgrS and I fuse to form the complex head *q-* if AgrO interposes between them. We may hypothesize again that I agrees with AgrS by way of probing downward for a suitable element with which to agree:

(4.2.1)



¹⁸ Dunn (1999) provides inflection tables for thematic suffixes and verb inflection, and I base my adaptations of his glossing upon these.

The sentences in (4.2.2) show a different structure, where the predicate is supposedly marked for aspect *twice*: For (4.2.3a), a combination of the perfective prefix *ya-* and the inchoative *-ŋŋo-*; in (4.2.2b) the habitual prefix *n-* and the iterative *-tko-*. However, the habitual prefix *n-* is always in the predicate-initial position—never in the postverbal position where aspect is otherwise expressed (Dunn, 1999). Further, it often cooccurs with other aspectual morphemes. It would seem unlikely that these preverbal morphemes are modals, as they seem to express more temporal traits. Further, they use agreement morphemes of a different class (on the right end of predicates) than those seen for mood. The *perfective* takes a third person plural *subject* agreement morpheme with the initial letter *q*, *-qenat*, while the *habitual* third person plural *subject* agreement morpheme starts with *l*, *-lenat*. This is consistent throughout Dunn's (1999) data. Additionally, they apparently never coincide with tense, which seems to occupy the same position. Dunn (1999) makes no mention of past tense, and consistently translates the habitual into English past tense. I therefore propose that the predicate-initial morphemes analyzed by Dunn (1999) as aspectual should be grouped with other morphemes expressing tense. For the purposes of this paper, I will designate this group as T, though the exact designation is perhaps not of significant importance.

If we apply previously assumed theoretical concepts to (4.2.2a), we might propose a successive-cyclic movement progression starting with the verb *pker* ‘arrive’ and terminating at the third person AgrS morpheme *-lenat*. The *approximative* morpheme to the right of the perfective is described by Dunn (1999) as conveying “that the action of the verb is carried out to a less intensively or less completely [*sic*]” (1999:264). This would appear to be a modal function, and the morpheme sits in the slot otherwise reserved for modals (cf. 4.2.2b), hence my hypothesis that it heads the modal projection. If these two hypotheses are correct, then Chukchi predicates may feature simultaneous expression of mood, tense, and aspect, as shown in (4.2.2a,b).

(4.2.2) a. *Mecic?* *ya-mac-ə-pker-ə-ŋŋo-lenat* *kawra-nce-nwək.*
 hardly PRF-APPR-Ø-arrive-Ø-INCH-3P around-turn-PLACE-LOC
 ‘They had hardly reached the turn-around point.’

b. *Cawcəwa-tko-t* *ənqen*
 reindeer.herder-COLL-3P.ABS that.3P.ABS

n-əra-n-kolqocaw-ŋ-ə-tko-qenat=ʔm.

HAB-Ø-DESID-CAU-be.in.kolxoz-DESID-Ø-IT-3PO=EMPH

They wanted to put the reindeer folk into kolxozes...

(adapted from Dunn, 1999)

The occurrence of a circumfix presents the possibility of moved heads receiving circumfixal morphology from their destination heads. (4.2.3) Shows an intriguing example where this process presumably takes place twice, featuring future and causative morphemes at either of the verb. (4.2.4) provides my hypothesis for the hierarchical structure of Chukchi.

(4.2.3) *T-ə-ra-n-lʔat-en-ŋə-n.*
 1sg-Ø-FUT-CAU-go-CAU-FUT-Ø-3sg
 ‘[...] I will lead off (a herd).’

(adapted from Dunn, 1999)

(4.2.4) *Hypothesis for scope of Chukchi*

$C \rightarrow \text{AgrO} \rightarrow \text{AgrS} \rightarrow T \rightarrow I \rightarrow \text{Asp} \rightarrow v \rightarrow V$

4.3 Mohawk

Mohawk is a language where Euro-centric labeling conventions may not always be useful. However, linearization is quite consistent. All the examples in (4.3.0) feature factual mood, punctual aspect, and A/O agreement. These occur in a fixed order, whereby mood is predicate-initial, followed rightward by agreement, the verb, and the aspectual affix. In (4.3.0b), a *duplicative* morpheme is present, presumably emphasizing the act of kissing. It is unclear to me to which category this morpheme should belong.

The *benefactive* affix in (4.3.0c) seems to be a valency affix resident in vP , similar to the causative seen in the same position in (4.3.1b). In the case of the reversive *-ko-* in (4.3.0d), which also occupies this slot, it seems to emphasize that *Mary's* dress was torn as opposed to someone else's. It is not entirely clear whether or why this function should be a head of the vP , since it would rather seem to be a type of topicalizer than a valency affix.

For (4.3.0c,d), there is the *benefactive* and *reversive* suffixed to the verb. This would imply successive-cyclic movement of V through v and into *Asp*. *Asp*, in turn, is again located inside *Agr* and *I*. In light of previous hypotheses, I suggest the following scope from the examples in (4.3.0): $I \rightarrow \text{Agr} \rightarrow \text{Asp} \rightarrow v \rightarrow V$

- (4.3.0) a. *John akwéku wa-shakó-ka-*'
John all FACT-MsS/3O-see-PUNC
'John saw everyone.'
- b. *Akwéku wa'-ti-shakoti-noru'kwányu-* ne raotí-skare.
all FACT-DUP-MPS/3PO-kiss-PUNC NE MP.POSS-friend
'All of them kissed their girlfriends.'
- c. *Wa-hake-natar-a-kwétar-A-*'
FACT-MsS/1sO-bread-cut-BEN-PUNC
'He cut the bread for me.'
- d. *Wa'-e-ratsú-ko-* kíká Uwári ako-[a]tyá'tawi
FACT-FsS-tear-REV-PUNC this Mary FSP-dress
'She tore this dress of Mary's.'

(adapted from Baker, 1996)

The examples in (4.3.1) introduce morphemes before the factual *-a-* morpheme. In (4.3.1a,b) the *cislocative t-* is prefixed to the factual, expressing movement toward the speaker. (4.3.1c) sees the iterative *s-* occupying the same position. Additionally, the second predicate in (4.3.1c) has the purposive *-hna-* in the slot *I* predicted to be the vP in my analysis of (4.3.0).

It seems as if traditional approaches to categorization may be less helpful in contexts such as (4.3.1c), where one predicate has an iterative *and* a punctual morpheme. The two functions are obviously closely related, both having to do with stative/durative and telic/atelic distinctions. We might expect elements whose semantic functions overlap to interact in subtle ways.

- (4.3.1) a. *Thíka Sak raó-[a]'share' t-a-hák-u-'*
 that Sak MsP-knife CIS-FACT-1sS/MsO-give-PUNC
 'He handed me that knife of Sak's.'
- b. *Uwari t-a-yú-[a]hsΛ-ht-e' ne á'share'.*
 Mary CIS-FACT-FsS-fall-CAU-PUNC NE knife
 'Mary dropped the knife.'
 (lit: 'Mary made the knife fall.')
- c. *Kwáh yáka' khé s-a-há-hket-e' kíkΛ rake-nuhá'a*
 right PRT there ITER-FACT-MsS-turn.back-PUNC this my-uncle
s-a-hΛ-[i]tsy-a-hseruny-á-hna-'
 ITER-FACT-MsA-fish-Ø-prepare-Ø-PURP-PUNC
 'Immediately my uncle turned back to go and prepare the fish.'

(adapted from Baker, 1996)

Notably, (4.3.2) shows examples where three functional morphemes are present outside the Agr level. The translocative *-y-* expresses motion *away* from the deictic center, and therefore unsurprisingly seems to occupy the position to the left of mood (I), where we saw the cislocative in (4.3.1a,b). Further, (4.3.2a) has a simultaneous aspect morpheme outside of the translocative. (4.3.2b) again sees the duplicative on the first predicate. In the second predicate, an *optative* modal particle occupies the position we would expect it to if we presume that it is the head of mood. Since we see no other categories outside of Agr, however, it is hard to tell.

- (4.3.2) a. *Kaná'tsa-a-ku sh-y-a-ha-[a]tketóta-' éso*
 pot-Ø-in SIM-TRANS-FACT-MsS-look-PUNC a.lot
wa-ha-tshári-' ne onhúhsa'.
 FACT-MsS-find-PUNC NE egg
 'When he looked in the pot, he found many eggs.'
- b. *Ka níkáya y-a'-te-sa-rihwayáta's-e*
 which TRANS-FACT-DUP-2sO-decide-PUNC
a-hs-hníni-' ne áthere'?
 OPT-2sS-buy-PUNC NE basket
 'Which basket did you decide to buy?'

(adapted from Baker, 1996)

In conclusion, Mohawk seems to have consistent word order for certain categories, and possibly linearizes verb particles on its VCs. I present my hypothesis for Mohawk scope below.

- (4.3.3) *Hypothesis for scope of Mohawk*
 $C \rightarrow I \rightarrow \text{Agr} \rightarrow \text{Asp} \rightarrow v \rightarrow V$

5.2 Typological Variation

As mentioned above, while certain constraints on syntax seem to hold universally, others are conspicuously subject to variation between languages, polysynthetic or not. Ouhalla (1991) argues at length for typological variation in the relationship between tense and agreement.

Mood can be described as expressing speakers' attitude toward, understanding of, or recognition of truth values concerning events described in a predicate. As with tense and aspect, this semantic relationship should be mirrored in the syntax. In contrast to the relationship between tense and aspect, however, the scope of modality can be predicted to vary depending on what mood expresses an attitude toward, or what it expresses an understanding of. Consider again the desiderative circumfix in (5.1.1), which based both on the linearization and the translation would appear to be placed *inside* Asp. This would seem to imply *a continuous desire to put* reindeer folk into kolxozes, as opposed to *a desire to repeatedly put* the reindeer folk into kolxozes. Hypothetically however, modal elements could be placed outside aspect to generate an interpretation where the desire was *to repeatedly or continuously put* reindeer folk into kolxozes. Such distinctions could be referred to as 'high' or 'low' modality, symbolizing its scope. In fact, this variation seems to occur in the Chukchi example in (4.2.2a), repeated as (5.2.0) below.

- (5.2.0) *Mecic?* *ya-mac-ə-pker-ə-ŋŋo-lenat* *kawra-nce-nwək.*
 hardly PRF-APPR-Ø-arrive-Ø-INCH-3P around-turn-PLACE-LOC
 ‘They had hardly reached the turn-around point.’

(adapted from Dunn, 1999)

The approximative *-mac-* is described by Dunn (1999:264) as “the reverse of the intensifier prefixes,” de-emphasizing the intensity of the action. Dunn translates it to English adverbs of degree such as *just, almost, rather, or might*. The approximative would seem to be a type of modal element reinforcing the *mecic?* ‘hardly,’ similar to how NPIs (Negative Polarity Items) emphasize or reinforce negation in English: *He didn't do anything at all*. Thus, the approximative *-mac-* may modify the inchoative (indicating a change of state), symbolizing something along the lines of (5.2.1a). Again, this type of semantic scope is predicted to correspond with syntactic position. If Asp were outside I on the other hand, this would seem to imply the interpretation given in (5.2.1b).¹⁹

- (5.2.1) a. They had hardly [INCH accomplished] [V arriving] [APPR at all].
 b. They had [INCH accomplished] [V arriving], [APPR but not so much].

Variation can equally be seen crosslinguistically, though Nuuchahnulth and Mohawk seem more rigid. We saw this in (4.1.0b) and (4.3.0a), repeated below as (5.2.2) and (5.2.3), respectively. The complement clause in (5.1.4) shows the typical order in Nuuchahnulth, i.e., mood being outside tense and aspect. As predicted in §5.1.1, T is always featured outside Asp in Nuuchahnulth. Similarly, Mohawk mood is consistently located outside aspect, as in (5.2.3). This could be explained by the fact that Mohawk and Nuuchahnulth mood seems to express ‘higher’ modal functions whose semantic reach encompasses the entire utterance: indicative, conditional, dependent, factual, and interrogative mood. We could therefore expect such categories to be situated higher in the syntax than Chukchi desiderative, approximative, or intentional mood, which would appear to be more closely related to *events* described by predicates.

¹⁹ The locative argument has omitted here, since it is irrelevant for the current analysis.

(5.2.2) *ʔu-ńak'uuń[+L]-mit-siiš* [*ʔin tuux^w-a[+R]-mit-suuk*].
 Ø-observe-PST-1S.IND COMP jump-IT-PST-2S.DEP
 'I observed that you were jumping.'

(5.2.3) *John akwéku wa-shakó-ka-*'
 John all FACT-MsS/3O-see-PUNC
 'John saw everyone.'

Based on the above, there seem to be at least three different possible distributions of I relative to T and Asp:

- (1) I → T → Asp
- (2) T → I → Asp
- (3) T → Asp → I

Agreement relations have been seen to be expressed (i) by separate AgrS and AgrO categories, (ii) by a single Agr category expressing subject, object, or two-way agreement, or; (iii) by a fusion of agreement with some other element such as mood, as we saw in examples from Nuuchahnulth and Chukchi above. According to my analyses, we additionally saw that AgrS may c-command AgrO or vice versa. cross-linguistically.

5.3 Results

The primary purpose of this paper has been to investigate which effects scope has on the linearization of affixes in polysynthetic languages, along with the extent to which scope can be determined. It seems clear that a decent understanding of established generative principles makes it possible to explain the derivational process fairly well, even for genetically unrelated languages with significant superficial differences relative (i) to one another, and; (ii) to languages more commonly researched within GG literature. The results of my analyses appear far too consistent to simply be coincidental.

As seen in the examples above, having complex predicates on hand is helpful, since it apparently helps in establishing which functional categories are present and in what order they occur if present all at once. It does become clear, however, that the categorization both of functional and lexical elements can not necessarily be expected to correspond directly to word classes established for English or other Indo-European languages. Categories expressing tense, aspect, and mood, for example, may be partially coextensive. Scope has been seen to differ between languages, and there is reason to assume that it may differ intra-language, too.

My first research question, addressing how scope informs the linearization of functional categories above the VP-level, can be answered partly by reciting my first hypothesis: *Scope directly informs variations of linearization*. It appears to do so because laws which are proposed within the generative literature to be universal (and seem to be relevant at least for the languages herein) limit the way in which the derivation proceeds. The distribution of functional projections therefore comprises the path that must be taken by elements undergoing movement. The 'footsteps' they leave in their wake can be used to track the derivational process, indicating an affirmative answer to my second hypothesis: *Constraints exist which limit the derivation to the extent that scope can be accurately deduced from the linearization of affixes*.

My second research question, regarding the reason why polysynthetic languages generate verbal complexes, clearly needs additional research in order to be addressed properly, but I offered a hint in §3.0 toward a direction that may be explored in future research, namely that Baker's (1996) Polysynthesis Parameter may apply to *functional categories* in addition to verbs, causing a 'chain reaction' of head movement among the relevant projections.

The seeming confirmation of my first hypothesis along with the latter proposition seems to answer to my third research question—*Does polysynthesis compel languages to reflect scope in linearization to a greater extent than isolating languages?* The answer, then, is 'sort of.' The more functional categories, the easier to track scope appears to be. My final hypothesis, that scope varies crosslinguistically, can be answered affirmatively.

5.4 Further Research

There is considerable empirical support for much of the theory I have outlined above, and my own results seem to lend it further support. As with any scientific discipline, linguistics must support its fundamental claims by good theory, but 'good theory' is only as useful as the extent to which it is applicable. Hence, credible conclusions about universal properties of language production can hardly be drawn from analyses of English, Italian, Russian, and Japanese alone.

Given my previously expressed hope for an expansion of the empirical basis on which syntax theory is tested, further syntactic research might extend its reach into the far corners of the world, both typologically and geographically speaking. Particularly in times when a substantial part of the world's languages face extinction, there is a sense of urgency to collect data from such languages while possible. Even disregarding the anthropological significance of inherent in the fact that every language has a unique perspective on existence, every language does also offer unique chances at more deeply understanding the language faculty.

If the language faculty is indeed based on a set of biologically determined cognitive abilities, then all languages may build their structure from a basic universal framework. Supposing said framework can be accurately described using generative theory, the latter might one day arrive at a stage where, most of the time, the syntactic behavior of any language can be accurately predicted and described. This would presumably be the 'true north' of any syntax theory. As such, the particular theoretical framework one chooses to employ is arbitrary so long as it yields strong predictions and has strong empirical support. Such theories are fit to enter the grand competition of linguistic theory.

CHAPTER 6

Conclusion

In this paper I have investigated patterns of affixation that result in verbal complexes; (near) one-word sentences that can be seen in polysynthetic languages. I have investigated three polysynthetic languages which have not been extensively researched by generative scholars. My results returned satisfactory answers to my research questions, and my hypotheses were relatively accurate: Verbal complexes can be dissected by means of generative syntax theory, and the derivational process ‘reverse-engineered’ to the point where one can get a decent view of the internal structure of a language. While a great deal can be learned here even from an Indo-European-biased perspective, there is good reason to assume that word class designation does not correspond one-to-one between, say, English, and these languages.

In the examples from Nuuchahnulth, Chukchi, and Mohawk, it can be seen that some functional categories are not always expressed or present, and certain functional categories may be mutually exclusive, regardless of whether they occupy the same ‘slot’ in the syntactic hierarchy. Hypothetically, this may happen when the semantic functions of those categories overlap. However, there seem to be similar ‘atomic’ components which exist in all these languages. Their specific application is subject to typological variation. In any case, further research in this area can, in my estimation, aid the maturation process of the field by deepening the understanding of these languages and exploring whether or not generalizations can be seen to hold in a broader context.

References

- Abney, Steven (1987). *The English noun phrase in its sentential aspect*. Ph.D. thesis, Massachusetts Institute of Technology
- Abu-Chacra, Faruk (2009). *Arabiska: grammatik med övningar*. 1. uppl. Lund: Studentlitteratur
- Baker, Mark C. (1988). *Incorporation: a theory of grammatical function changing*. Chicago: Univ. of Chicago Press
- Baker, Mark C. (1996). *The Polysynthesis Parameter*. New York: Oxford Univ. Press
- Boas, Franz (red.) (1911-1922). *Handbook of American Indian languages*. Washington: Government Printing Office
- Chomsky, Noam (1970). *Remarks on nominalization (Readings in English transformational grammar*, ed. R. Jacobs and P. Rosenbaum, 184-221). Waltham, Mass.: Ginn.
- Chomsky, Noam (1981). *Lectures on government and binding: the Pisa lectures*. Dordrecht: Foris
- Chomsky, Noam (1982). *Some concepts and consequences of the theory of government and binding*. Cambridge, Mass.: MIT Press
- Chomsky, Noam (1986a). *Barriers*. Cambridge, Mass.: MIT Press
- Chomsky, Noam (1986b). *Knowledge of language: its nature, origin, and use*. New York: Praeger
- Chomsky, Noam (1992). 'A Minimalist Program for Linguistic Theory'. *MIT Occasional Papers in Linguistics 1*
- Chomsky, Noam (1995). *The minimalist program*. Cambridge, Mass.: MIT Press
- Culicover, P. W. and Jackendoff, R. (2005). *Simpler Syntax*. Oxford University Press, Oxford.
- Dunn, M.J., 1999. *A Grammar of Chukchi: A Thesis Submitted for the Degree of Doctor of Philosophy Of Australian National University* (Doctoral dissertation, Australian National University).
- Emonds, Joseph E. (1976). *A transformational approach to English syntax: root, structure-preserving, and local transformations*. New York: Academic P.
- Guevara, Emiliano (2007). *Binary Branching And Linguistic Theory: LEL 2007 Example (Lingue e Linguaggio vi.2 1-11)*
- Jackendoff, R. (1997). *The Architecture of the Language Faculty*. Cambridge, Mass.: MIT Press
- Kayne, Richard S. (1984). *Connectedness and binary branching*. Dordrecht: Foris
- Kayne, Richard S. (1994). *Antisymmetry of Syntax (Linguistic inquiry monographs; 25)*. MIT Press
- Ouhalla, Jamal (1991). *Functional categories and parametric variation*. London: Routledge
- Pesetsky, David Michael (1995). *Zero syntax: experiencers and cascades*. Cambridge, Mass.: MIT Press
- Radford, Andrew (2004). *Minimalist syntax: exploring the structure of English*. Cambridge: Cambridge University Press
- Reinhart, Tanya (1976). *The syntactic domain of anaphora*. Cambridge, Mass.: Massachusetts Inst. of Technology
- Reinhart, Tanya (1983a). *Anaphora and semantic interpretation*. London: Croom Helm
- Sapir, Edward (1921). *Language: an introduction to the study of speech*. New York: Harcourt, Brace
- Travis, Lisa (1984). *Parameters and effects of word order variation*. Doctoral dissertation, Cambridge, Mass.: MIT Press

- Rouveret, A. and J. Vergnaud (1980). *Specifying Reference to the Subject (Linguistic Inquiry 11 ; 417 – 467)*. MIT Press
- Wojdak, R. (2005). *The linearization of affixes: evidence from Nuu-chah-nulth / R. Wojdak*. Springer