Scope Effects on Linearization in Polysynthetic Languages

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Abstract

This paper adopts a generative approach to investigating how scope influences the linearization of affixes in polysynthetic languages. From a typological perspective, polysynthetic languages clearly distinguish themselves in their morphosyntactic structure from languages more commonly associated with generative syntax research, commonly producing one-word or near-one-word sentences. Along the lines of previous generative research (Baker, 1988, 1996, Ouhalla, 1991), I argue that the linearization of functional affixes such as TAM and agreement mirror scope relations that span the clause level, allowing fairly accurate estimations of scope to be made for a given language. For my analysis, I make a comparative analysis based on empirical data collected primarily from three polysynthetic languages:

Mohawk (Iroquoian),
Chukchi (Chukotko-Kamchatkan), and
Nuuchahnulth (Wakashan).
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<td>agent</td>
<td>Chukchi</td>
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<tr>
<td>AN</td>
<td>(high) animate noun</td>
<td>Chukchi, Mohawk</td>
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<td>ABS</td>
<td>absolutive</td>
<td>Chukchi, Mohawk</td>
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<td>ACC</td>
<td>accusative</td>
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<td>APPR</td>
<td>approximative</td>
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<td>BEN</td>
<td>benefactive (valency)</td>
<td>Mohawk, Nuuchahnulth</td>
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<td>CAU</td>
<td>causative (valency)</td>
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<td>CIS</td>
<td>cislocative (movement toward)</td>
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<td>COLL</td>
<td>collective quantifier</td>
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<td>complementizer (subordinator)</td>
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<td>conditional mood</td>
<td>Nuuchahnulth</td>
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<td>continuous aspect</td>
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<td>dative</td>
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<td>dependent mood</td>
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<td>desiderative mood</td>
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<tr>
<td>DET</td>
<td>determiner</td>
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<tr>
<td>DIM</td>
<td>diminutive</td>
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<tr>
<td>DUP</td>
<td>duplicative (aspect?)</td>
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<td>DUR</td>
<td>durative aspect</td>
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<td>E</td>
<td>epenthetic schwa</td>
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<td>EDGE</td>
<td>(locative) on edge of...</td>
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<td>emphatic marker</td>
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<td>ergative</td>
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<td>factual mood</td>
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<td>future tense</td>
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<td>habitual mood/tense</td>
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<td>imperfective aspect</td>
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<td>inchoative aspect</td>
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<td>indicative mood</td>
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<td>intentional mood</td>
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<td>intensifier particle</td>
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<td>locative case</td>
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<td>nominal particle (function unclear)</td>
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<td>nominalizer</td>
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<tr>
<td>NSF</td>
<td>noun suffix</td>
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<tr>
<td>O</td>
<td>object</td>
<td>Chukchi</td>
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<td>P</td>
<td>plural</td>
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<td>PASS</td>
<td>passive (voice)</td>
<td>Mohawk</td>
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<td>PART</td>
<td>partitive (type of quantifier)</td>
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<td>PLACE</td>
<td>derivational suffix for place names</td>
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<td>POSS</td>
<td>possessive marker</td>
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<td>PRF</td>
<td>perfective aspect/tense</td>
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<td>PROG</td>
<td>progressive aspect</td>
<td>Chukchi, Mohawk</td>
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<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>PS</td>
<td>possessive mood</td>
<td>Nuuchahnulth</td>
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<td>PST</td>
<td>past tense</td>
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<td>PTV</td>
<td>partitive case</td>
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<td>subject</td>
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<td>s</td>
<td>singular</td>
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<tr>
<td>SEQ</td>
<td>sequential aspect converb</td>
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<td>SIM</td>
<td>simultaneous aspect</td>
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<td>STAT</td>
<td>stative aspect</td>
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<td>TH</td>
<td>thematic suffix</td>
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<tr>
<td>TR</td>
<td>transitivity suffix</td>
<td>Chukchi</td>
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<td>TRANS</td>
<td>translocative (motion away from)</td>
<td>Mohawk</td>
</tr>
<tr>
<td>VB</td>
<td>verb derivational suffix</td>
<td>Chukchi</td>
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<tr>
<td>z</td>
<td>zoic gender</td>
<td>Mohawk</td>
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1.0 Introduction

The purpose of this paper is to assess whether scope can be consistently predicted based on linearization. To this end, I apply established generative principles to my analyses primarily of affixal predicates in polysynthetic languages. These languages clearly distinguish themselves morphosyntactically by non-configurationality, noun incorporation, and a reasonably high degree of agglutinativity, typically in the form of affixal predicates. As I will argue below, the preference for affixation and the overt expression of functional categories should be of great interest to the field, since they happen not only to be highly intertwined, but may also shine a light on important topics concerning derivation in its entirety. I argue that their grammatical uniqueness make them of intrinsic value to syntactic research by virtue of typologically diversifying the dataset. In agreement with Baker (1996), I hold that examining samples from many different language families with differing morphosyntactic properties is crucial for establishing a deeper understanding of syntactic derivation, regardless of theoretical framework. I argue that scope plays a determinative role in how and why constituents are linearized in a certain way (cf. Baker, 1988, 1994, Ouhalla, 1991), and that a decent theoretical background applied to an analysis of linearization allows fairly accurate estimations to model scope relations in a language. Understood to be located in the upper echelons of the structural hierarchy, functional categories such as TAM and agreement are my primary subjects of investigation, since their distribution has semantic effects which span the utterance level. Polysynthetic languages are of special interest in this context, as they often overtly express these categories, as discussed at length by Baker (1988, 1994) and Ouhalla (1991).

1.1 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 can be made of scopal hierarchy of a particular language that yields reasonably consistent results. With regards to the latter, I do not rule out the possibility that scope may differ within a language depending on clause type. Affixal predicates are chosen as the main focus of this paper since they mirror clause-level scope relations by way of containing functional categories such as. This paper does not seek to prove or disprove the utility of generative principles. I will therefore restrict myself to applying them as tools for my analysis, not taking a stance with regards to their validity. For my analysis, I make a comparative analysis based on empirical data collected primarily from three polysynthetic languages: Mohawk (Iroquoian), Chukchi (Chukotko-Kamchatskan), and Nuuchahnulth (Wakashan). My research questions are as follows:

(1) How does scope inform the linearization of functional categories above the VP-level in polysynthetic languages?

(2) Why do polysynthetic languages produce affixal predicates?

(3) Does polysynthesis compel languages to reflect scope in linearization to a greater extent than isolating languages?
1.2 Hypotheses

Given the premise that syntactic derivation seems to follow certain constraints on constituency, I present the following hypotheses:

(a) Scope directly informs variations of linearization.

(b) Universal constraints on movement limit the possibilities for linearization to the extent that scope can be deduced from the order of morphemes in an affixal predicate.

(c) Scopal hierarchy varies between languages within certain limits.

2.0 Theoretical Assumptions

Before acquainting ourselves more intimately with the morphosyntax of polysynthesis, I shall begin by covering some basic concepts. Firstly, a brief introduction to the X-bar schema will be provided, being the model of choice for illustration throughout this paper. Secondly, basic principles governing syntactic movement will be discussed. Having offered a sufficient assembly of analytical methods, I then proceed to describing polysynthesis more in-depth, ultimately applying this understanding to the languages investigated in this paper. In his latest hatch of UG, termed the Minimalist Program (abbreviated MP), Chomsky (1995) streamlines estimations made about language in previous versions, proposing that, given the immense structural variety found cross-linguistically, the language faculty must rely upon a small set of rudimentary operations in order to permit a reasonable level of computational efficiency.

Rudimentary syntactic operations and principles underlying them are proposed by Chomsky to govern the production and perception both of phonology and syntax, whereby the latter will be the primary concern of this paper. 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 universal. However, the proposition that common fundamental principles govern derivation is widely accepted, not least by virtue of considerable evidence supporting this hypothesis. Universal principles are assumed within the generative literature to be complemented by language-specific parameters, hence the Principles and Parameters framework, posited by Chomsky (1986). These parameters may be likened to binary ‘toggle switches’ which may be either enabled or disabled, thereby causing grammars to enforce particular morphosyntactic requirements, which in turn endow languages with unique surface-level properties. The combination of the above mentioned (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 their language: the understanding of what qualifies as a grammatical utterance and what does not. The current section outlines fundamental principles of syntactic derivation in greater depth.
More advanced theoretical notions will be presented as they become relevant to the arguments proposed in this paper. 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, paying particular notice to its bearing on linearization. In doing so, I follow an extensive body of syntactic research conducted within the various theoretical revisions of generative grammar (Government and Binding, later Principles and Parameters, more recently the Minimalist Program). Baker (1996) points out that the vast majority of generative research has focused its efforts on English and other Indo-European languages, therefore hampering attempts (1) to investigate the wider applicability of generative grammar, hence; (2) to deepen the understanding of derivation more broadly. Baker (1996) is not alone (Ouhalla, 198?, 198?, 1991) in supporting the validity of generative grammar in his research on polysynthetic languages, and argues that parametric generalizations can be made which may account for the distinctive properties of polysynthetic morphosyntax. Indeed, good evidence exists to support this hypothesis (Ouhalla, 1991, Baker 1988, 1996). This paper assesses three languages: Nuuchahnulth, Chukchi, and Mohawk, to investigate whether linearization may be understood in these languages by applying commonly accepted generative principles with some suggested parameters that are argued (notably by Baker, 1988, 1996) to induce polysynthesis. Of specific interest will be the ways in which syntactic scope informs linearization in affixal predicates. Comparisons will be drawn between the languages mentioned above and, to a limited extent, to languages more commonly researched within the generative literature.

We may at this stage offer a brief summary of syntactic derivation as understood within the generative literature. Initially, all utterances are assumed to begin with the retrieval of lexical items from the lexicon. Once lexical items have been retrieved, they are concatenated (connected) by means of a syntactic operation referred to within the literature as Merge (originally Chomsky, 1970), which takes an element α and combining it with an element β, thereby forming a set, {α, β}. Applied iteratively, the merging process produces a hierarchy of syntactic constituents (or phrases), ultimately forming what we think of as a sentence. Elements are subsequently re-ordered to ensure linear well-formedness. Before going forward, we may summarize some of the above concepts by offering some condensed descriptions:

(a) **Principles**  
Constraints governing basic operations of linguistic (for our purposes, *syntactic*) production, such as how Merge and Move operate.

(b) **Parameters**  
Language-specific morphosyntactic requirements which determine, among other things, why Move reorders lexical items in a given way.

(c) **Scope**  
The structural hierarchy of syntactic constituents in a clause.

### 2.1 Principles of Derivation

Originally proposed by Chomsky (1970), X-bar theory is a theoretical paradigm aimed at the mapping of 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. Figure (1) shows the
model mentioned above. 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 lexical item, such as a verb for a VP, a noun for an NP, and so on—the lexical category of which determines the type of phrase projected by it. In (1), the head X projects an intermediate projection, the X' (pronounced ex-bar), then proceeding to a maximal projection, the XP. Full maximal projections define the outer perimeter of syntactic constituents (or phrases).

(1)  $X$-bar schema

(2)  

By the adoption of binary-branching trees over previously common ternary-branching models, and by introducing bar nodes, the X-bar schema facilitates a more accurate mapping of hierarchic affiliation than was previously possible. Figure (2) shows an example sentence featuring the verb saw, its two arguments, and the maximal projection of the verb, the VP. The specifier position is occupied here by the subject Mary, the direct object Larry occupying the complement position which we saw in (1). The V' itself does not represent a lexical item, but simply illustrates the phrasal domain of the head, saw.

2.1.1 C-command

The aforementioned ‘more accurate mapping of hierarchic affiliation’ that results from binary-branching trees can be understood in terms of a precise depiction of hierarchical ‘dominance’ relations that is shown by binary syntactic structure—an advantage absent in ternary-or-more-branching tree diagrams. This syntactic dominator-dominee relationship is codified in the concept of c-command, short for constituent command.

(3)  C-command

A constituent X c-commands its sister Y and any constituent Z which is contained within Y
There are two types of c-command: symmetric and asymmetric. Symmetric c-command is a relationship mutual government between sister nodes, such as *[saw]* and *Larry* in (2) above. A relationship of asymmetric c-command would be present if the complement *Larry* were a more complex DP\(^1\), consisting of further elements, e.g. *Larry’s dog* (cf. (4)). In this case, all elements in the DP would be asymmetrically c-commanded by *saw*, since they are daughter nodes to—i.e., located below the sisterhood level of—the DP maximal projection. A relationship of symmetric c-command exists between the V’ *saw Larry* and the specifier *Mary* in (2), as they are sister nodes. Asymmetric c-command is a prerequisite for reflexives such as *himself* in *Tony enjoyed himself* to relate back to an antecedent.

\[
\text{DP}
\]

\[
\text{DP} \quad \text{D'}
\]

\[
\text{Larry} \quad \text{D} \quad \text{NP}
\]

\[-'s \quad \text{dog}\]

An ancillary but non-trivial concept that interfaces with c-command is Kayne's (1994) *Linear Correspondence Axiom*, which stipulates that “If X asymmetrically c-commands Y, then the terminals in X precede the terminals of Y”. In other words, maximal projections higher in the hierarchy asymmetrically c-command those below them. The word “precede” is here to be understood as being *base-generated* (cf. section 2.1.5 for definition) in a linearly antecedent position to the phrases they select.

2.1.2 Case Theory and Theta Theory

The study of thematic roles involves the identification of the ‘participants’ in utterance and determining the semantic functions (roles) they play relative to other participants in a clause. As such, these participants are all *arguments*. They are taken by the head of the maximal projection in which they sit—the type most commonly discussed being DPs as arguments to verbs (in VPs). In the latter case, V is understood to assign thematic roles (or *theta-roles*) to its arguments. 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 semantics, syntax and morphology are deeply intertwined is so prerequisite that no productive discussion of theoretical syntax (let alone of polysynthesis) could be conducted without its presupposition. As a transitive verb, the VP head *scolded* in *Joanna scolded Eric* assigns the theta-roles of AGENT and THEME to *Joanna* and *Eric*, respectively\(^2\). In research on case theory (Vergnaud, 1974),

\(^1\) I assume in this paper the validity of two hypotheses:

(i) The DP Hypothesis (????, ????:??), 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 (????, ????:??), positing that all arguments of a verb originate within the VP maximal projection.

\(^2\) The selectional properties of a predicate, i.e., the number and kind of arguments it takes, are known as *theta-grids*. 

(adapted from Radford, 2004:91)
1980, Chomsky 1981), it is suggested that all arguments, apart from being assigned theta-roles, also receive abstract case. This is embodied in the Visibility Condition offered by Chomsky (1981):

(5) \textit{Visibility Condition} (Chomsky, 1981:ch. 6)
A phrase is visible (eligible) for theta-assignment only if it is assigned abstract case.

The Visibility Condition conveys the idea that theta-assignment and case assignment, if not functionally identical, co-occur to a considerable degree. Within the generative literature, it is generally assumed that the syntax represents only one instance of each theta-role per clause, and that each argument bears only one theta-role:

(6) \textit{The Theta Criterion} (Chomsky, 1981:36)
For every theta-role, there must be one and only one argument; for every argument there must be one and only one theta-role.

By this condition, the presence of two thematic AGENTS in one clause, for example, is impossible. Likewise, an argument can never be both the AGENT and the THEME of a clause. A later revision of the Theta Criterion (Chomsky, 1986:184) further adds the addendum that each assignable theta-role (i.e., every theta-role required by a verb) must be assigned to some argument. The combined implications of the Visibility Condition and the Theta-Criterion are that (i) arguments must have abstract case, and; (ii) arguments must have theta-marking. Case here does not necessarily imply the type of overt morphological case marking as described in traditional grammars, but instead suggests the existence of case as a deeper structural function which may or may not be realized phonologically.

Case-assigners are commonly verbs, but prepositions, adjectives, and adverbs can 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 (7), the German preposition \textit{mit} ‘with’ assigns dative case to the DP \textit{große Ohren}. The determiner, the adjective \textit{groß} ‘big’ and the noun \textit{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 not controversial within the literature. It should be noted that, while the Visibility Condition does necessitate abstract case for arguments to be theta-marked, it crucially does not perforce entail that case-bearing elements must be theta-marked (though they can be). Although \textit{mit} ‘with’ evidently assigns case to its complement, it is not immediately clear why dative is selected. Indeed, it is hard to see how \textit{die großen Ohren} ‘the big ears’ could be the BENEFICIARY (the theta-role commonly associated with dative case)

3 See Chomsky's \textit{Case Filter} (1981): *NP if NP has phonetic content and has no Case. (A possible informal paraphrasing of this is: NPs have case).

4 Note that while we can represent two ‘conceptual’ AGENTS in the form of two DPs, e.g. \textit{Jack and Daxter} in \textit{Jack and Daxter hit the road}, these are in fact syntactically coordinated (cf. Fillmore, 1968:10), meaning that they occupy one and the same syntactic constituent, hence ‘sharing’ the theta-role of AGENT. Similarly, \textit{It is possible} for a coreferent to carry two (or more) theta-roles in an \textit{utterance}, but never in a clause. We can say \textit{I slapped the man that slapped me yesterday}, which over the course of the utterance would assign AGENT and THEME roles to both coreferents—\textit{I/me} and \textit{the man/O}. However, there are two clauses, and theta-assignment (usually) applies clause-externally.

5 English, for example, only inflects pronouns for accusative and genitive case, not proper nouns. If the Case Filter \textit{did} imply overt case marking, English proper nouns could not receive phonetic content.
of anything. This argues in favor of the notion that case does not, by itself, imply theta-marking.  

(7) der Mann mit den großen Ohren
DET.Ms.NOM man.NOM with the.p.DAT big.p.DAT ear.p.DAT

‘The man with the big ears.’

By the above analysis, theta-roles and case seem to have similar characteristics, but operate independently. Just as German prepositions, English transitive prepositions like to may assign oblique case to pronoun complements: He have the ball to me, but *He gave the ball to I. Further support for abstract case is provided by the fact that all languages somehow convey argument structure, whether or not any sort of inflection for case exists (Mandarin, for example, has no object pronouns).

2.1.3 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—the pillars on which this paper stands—converge. First, rudimentary syntactic operations will be described. Syntactic Merge was suggested in the Minimalist Program (Chomsky, 1993, 1995) as the principal syntactic operation concatenating lexical items after the retrieval of the latter from the lexicon. Merge is understood to concatenate items binarily, adding two new items for every merging 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) Binarity Principle, which stipulates that a binary-branching structure would be superior to n-ary branching in terms of computational efficiency.

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 (8). A bottom-down application of Merge would entail an initial merger of Jack with bought (as opposed to a with candle). This would yield a maximal projection headed by bought, resulting in a VP maximal projection: Jack bought.

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6 If the reverse were true, i.e., that case does imply theta-marking, then a reformulation of the properties of theta-marking would be necessitated. It could perhaps be speculated that transitive prepositions, just as verbs, may have theta-grids, assigning theta-roles of a more abstract nature. This could perhaps have some bearing on why German two-way prepositions mark complements for either dative or accusative depending (partly) on whether their objects are static or in motion (Talmyan Motion and Path comes to mind). Intriguing as it may be, this discussion will be left for others to explore.

7 If we assume that natural selection, when faced with competing systems, favors those which expend a minimal degree of resources, it seems plausible that syntactic derivation (being a natural system) follow this trend, too. 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's (2005) in their Simple Syntax Hypothesis. However, such a lack of structure likely poses difficulties to the interpretation of 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.

8 The Structure Preserving Constraint (cf. Edmonds, 1976 and Chomsky, 1986b) imposes the constraint that heads may only move to other head positions, and maximal projections may only move to maximal positions such as
Since *buy* is a transitive verb, *Jack bought* is invalid as a syntactic constituent. Instead, we must assume that the determiner *a* and *candle* would be merged in the first iteration, creating the DP *a candle*.

The Earliness Principle, proposed by Pesetsky (1995), imposes the constraint that all syntactic operations apply as early in the derivation as possible. In the sentence in (8), operations like case assignment would thereby apply at the merger of *a candle* with *bought*, since this iteration introduces transitivity. As case and theta-assigner, *bought* assigns abstract accusative case and the theta-role of THEME to *a candle*. The resulting V’ is then merged with the subject DP to render the full sentence in (8).

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9 Even if we were to pursue this further, we would be faced with a structure whereby the VP would be c-commanded by its own complement. On the basis of virtually all the theoretical concepts described above, the only logically possible outcome of left-to-right (or start-to-finish) merger is a syntax using n-ary branching, therefore lacking argument structure. The Linear Correspondence Axiom, argued for by ??? (????), provides further arguments in favor of bottom-up merger in proposing that “If X asymmetrically c-commands Y, then the terminals in X precede the terminals of Y”. In other words, c-commanding elements are located above c-commanded elements.
2.1.4 Movement

Finally in a position to adequately describe the process of syntactic movement, we shall explore below its central role in the derivation and in which ways it applies differently in polysynthetic syntax from that of more isolating languages. A sister to Merge, Move is understood to be the syntactic operation which reorders elements to satisfy word order constraints. This process occurs without any conscious effort on the part of the speaker. The aforementioned *I-language* (or Internal language), is developed early in children’s language development, and the brain appears to generate phonology and syntax 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, able to identify systemic consistencies in morphosyntax and phonology, subsequently applying them to their own output. Although obviously ungrammatical based on superficial word order, (10a) preserves constituents in their base-generated linearization, i.e., the order generated before Move satisfies English word order requirements by rearranging elements. In the case of (11a), the tense verb *did* (heading TP) is located outside (above) the VP *Mary hit who*, hence c-commanding it. The parametric requirement for English wh-words to feature at the beginning of sentences [*REF/FÖRKLARING*] forces the object *who* to move to the beginning in a process called *copy and deletion*, rendering *Who did Mary hit?*

\[(11)\]
\[a. \quad *Did \ Mary \ hit \ who?\]
\[b. \quad Who \ did \ Mary \ hit?\]

In other words, *who* is first copied (or moved) from its base-generated position in the VP to the specifier terminal of CP by way of the requirement for Modern English wh-words to feature as clause-initial elements (Radford, 2004).\(^{10}\) The null head of C is understood to attract the interrogative pronoun *who*, since it modifies the Force\(^{11}\) of the sentence from declarative to interrogative. The analysis below is somewhat simplified; a more thorough understanding will be developed after the introduction of some additional theoretical concepts.

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\(^{10}\) 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.

\(^{11}\) Illocutionary force (abbreviated Force) is the grammatical feature determining distinctions such as whether an utterance is declarative, interrogative, or imperative. Good evidence (Radford, 2004:124-128) supports the existence of Force as an projecting its own maximal projection.
(12)\textsuperscript{12} 

(13a) resembles (11a) in that its superficial order is ungrammatical given the need for (Modern) English verbs to be preceded by an argument. Introduced by Baker (1988), the Uniformity of Theta-Assignment Hypothesis (UTAH) suggests that the theta-roles of arguments correspond directly to their syntactic origin (i.e., base-generated syntactic position). Just as the bank robber in (13c) has the theta-role of THEME, the UTAH proposes that the same holds for (13b), requiring that the bank robber originates as the logical complement of was arrested. Passive verbs function similarly to unaccusative verbs—where the ‘subject’ is understood to be merged as its syntactic complement, not its specifier (cf. Radford, 2004:254-264 for further elaboration). To clarify that the latter argument is not the AGENT of the clause, the technical term superficial subject is sometimes used in this context (cf. Radford, 2004:260). It follows from the above that (13b,c) differ (i) not at all in a broad semantic sense, and; (ii) syntactically only in the employment of a passive or active verb, respectively.

(13)  
   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.

Our previous hypothesis about the separation of case and theta-features stands: the UTAH does not mandate that they be coextensive. On the contrary, a unification of the UTAH with the concepts of theta-theory outlined above corroborates the notion that they need not correspond, although such a correspondence is not unusual. If any additional evidence were needed, consider that object pronouns are frivolously used for AGENTs in English, Danish, and Norwegian. We may summarize the above by making three hypotheses on the topic:

(14)  
   (i) syntactic origin = theta-role, but  
   (ii) syntactic origin \(\neq\) case, and  
   (iii) theta-role \(\neq\) case

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\textsuperscript{12} The deleted direct-object DP in (11) has a \(t\) for trace, denoting its syntactic origin. To show that they are one and the same element, both the moved and the deleted DP are marked with an \(i\) for index.
2.1.5 Head Movement

Thus far, we have looked at movement of maximal projections, more specifically the arguments of verbs. This section X-bar Theory implies two structural levels that are represented by lexical items—heads and phrases—and while both can be shown to undergo movement, certain constraints are proposed on how they might move and the consequences of their movement. Consistent in the examples provided above is that MPs moved exclusively to specifier and complement terminals, and this is no coincidence. By the Constituent Structure Constraint (cf. Radford, 2004:204), phrases and heads are understood to occupy only positions of their own type. If heads are restricted to occupying head positions and MPs to MP positions, then it follows that their movement also be restricted to terminals of the same type.\(^{13}\) Equally, constraints on the length of head movement are proposed to exist. One of them is Travis’ (1984) Head Movement Constraint, which holds that heads may only move to the immediately superjacent head by which they are c-commanded. For all lexical elements, movement is held to only proceed to c-commanding categories, i.e., upward in the syntax.

(15) **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)

While previous sections have treated superficially the process of movement and its reasons in terms of languages' parametric word order requirements, deeper inquiry into the subject begs the question of whether there are identifiable grammatical traits that could enforce reordering in the syntax. Lexical heads are argued (Radford, 2004) to have grammatical features which can attract the movement of elements.

An example is the type of tense verb inversion that can be seen in English yes/no questions, known as T-to-C movement. We are going to hypothesize that in questions like (16a), the null head of C has a strong T feature \([+T]\), attracting the movement of the T head, *will*. We will further assume that this movement is subject to the Attract Closest Principle (Chomsky, 1995:297), which imposes the constraint that heads attract the **closest constituent** of the relevant type that it c-commands. In other words, if C should have a strong verbal feature \([+V]\), it attracts the closest V head that it c-commands. This exact condition holds in Elizabethan English, where yes/no questions as shown in (16c) result from a strong \([+V]\) feature at C, attracting V via T (Radford, 2004:162-166).

While lexical items can be moved by way of strong features, they may also be moved by a principle referred to as the Extended Projection Principle, abbreviated EPP (Chomsky, 1982), which causes a phrase to project a specifier branch, despite no constituent being available to fill its position. This necessitates the movement of a suitable maximal projection—a process known as A-movement (for **argument movement**). In English, the category T has an EPP requirement (Radford, 2004:197-202), causing the movement of the subject base-generated in the VP\(^{14}\) to move to the empty specifier of T (cf. 16a,b). The Attract Closest Principle is understood to

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\(^{13}\) Cf. Edmonds (1976) and Chomsky (1986b) for a description of the Structure Preserving Constraint, which imposes precisely this constraint.

\(^{14}\) The VP-Internal Subject Hypothesis (????, ?????:??) proposes that all arguments of a verb are base-generated within the VP maximal projection.
apply also for maximal projections. A result of this is that, if we were to reformulate the question in (16a) to *You will marry me?*—emphasizing the surprise on the part of the inquirer that, of all people, the *inquiree* is willing to marry him—the subject *you* moves to the specifier position of C by virtue of being a topicalized interrogative element. According to our theoretical assumptions, this movement must proceed via T. The Attract Closest Principle feeds into the Head Movement Constraint, and by combining these with the CSC and the SPC, we get the implication that, regardless what happens to cause an element to move, it must (i) move upward, and; (ii) move to the immediately superjacent terminal corresponding to its type (i.e., minimal or maximal projection). In some cases, this creates the type of cyclic movement chain that can be seen in (16d). The technical term for this is *successive-cyclic movement*. By the Earliness Principle, mandating grammatical operations as early as possible in the derivation, we assume that the sequence of head movement in (16b) proceeds as implied by the numbering below.

We may understand this intuitively by the condition that no force of attraction is exerted on you until the VP *you marry me* is merged with the T head *will*, forming the T-bar *will you marry me*. Only here is the EPP requirement of T instated, forcing its closest c-commanded DP, the subject *you*, to move from the specifier of V to the specifier of T. Likewise, only at the merger of the null C head with the TP *you will marry me* does C’s strong T feature [+T] effect the further movement of *will* to C. In each case, we see the operation of *copy*, which moves elements to their new destination, and the *deletion* that usually removes redundant phonological information before utterances are phonologically licensed.

(16) a. Will you marry me?
   b. \[CP [c will] [TP [dp you] [t will] [vp [dp you] [v marry] [dp me]]] (1)
   \[ (2) \]
   c. Speakest thou in sober meanings? (Orlando, *As you Like It*, V.ii)
   d. \[CP [c speakest+Tns+Q] [TP [dp thou] [t speak+Tns] [vp [dp thou] [v speak] [pp...]] (1)
   \[ (3) \]
   \[ (2) \]

(adapted from Radford, 2004)

(16c,d) illustrates V-to-T movement, a similar process whereby T attracts the main verb. Radford (2004:ch. 5.4) proposes that in Elizabethan English, a null T head has a strong [+V] feature, hence requiring the movement of V to T. This process is not obvious in declaratives, but can be seen in negated sentences like *I care not for her* (Thurio, The Two Gentleman of Verona, I.iv), where the main verb moves past negation (NegP) into T.

Radford (2004:ch. 5.4) notes:

> Using Chomsky’s strength metaphor, we can say that the *Tns* affix carried by a finite T was strong in Elizabethan English, but is weak in present-day English. Because the affix was strong in finite clauses in Elizabethan English, it could attract a verb to move from V to T; but because the affix is weak in present-day English, T can only be filled by an auxiliary which is directly merged in T, not by a verb moving from V to T.

Tense auxiliaries include will (16a,b) and the DO-support used by Modern English to solve the issue of T’s weak *Tns* feature, something that can be deduced from the fact that *do* ‘takes’ the

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15 The Constituent Structure Constraint and Structure Preserving Constraint, respectively.

16 This analysis is slightly simplified for reasons of space, a full analysis would include movement of V via NEG, where V affixes to the right of the null NEG head, subsequently proceeding to T.
finiteness which would otherwise be marked on the main verb in declaratives. Movement of T into V by virtue of C's strong V feature is implied by the fact that yes/no questions in Elizabethan and Modern English alike start with verbs. Both are understood to have null (invisible) Tns affixes, and in (16c,d) speak is shown as base-generated without tense marking. It only receives tense by attachment to the invisible Tns affix of T.

2.1.6 Affixation

We saw above how affixation may occur by virtue of strong features inducing head movement. It is still not entirely clear by this description why strong features arise, and their existence may seem strangely arbitrary. Why are elements not simply left in their base-generated positions? The issue of affixation warrants a discussion of how syntax interacts with phonology. While affixation can occur by head movement as caused by strong features, some categories are understood to have weak features (Radford, 2004). Weak features have the disadvantage of lacking the ‘strength’ necessary to induce movement. Radford (2004) argues that in Modern English, T has a weak [+V] feature, which prevents it from attracting a verb. However, since T is a bound (i.e., affixal) element that has a verbal feature, it must be realized on a verbal host, or else ungrammaticality occurs. We cannot say The bartender [Inf. mix] drinks—the verb must be marked for tense. If we think of the derivation as a computer component, we might say that the derivation would otherwise ‘crash’ because of a fatal error in the ‘code,’ preventing in the production of a sentence. If a category cannot attract the appropriate host, it must instead lower an affix to a relevant c-commandee, thereby inflecting it.

(17)  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)

Since Affix Hopping only works when a category is immediately subjacent to the bound category, there are expected to arise complications when interfering categories exist. Baker (1988) proposes the Stray Affix Filter (SAF), a phonological failsafe which prevents crashes in the derivation by ensuring bound affixes find a host. If no eligible host is available, one will be spawned. This is proposed as an explanation for the occurrence of DO-support in English negated sentences. The process is shown in (18), where the bound null tense affix of T tries to lower to V. In the upper example, the process is successful, since the categories are immediately adjacent. In the lower example, the Negation Phrase (NegP) is hierarchically intermediary to T and V, hence precluding the inflection of V by T. The SAF solves this issue by producing the verbal expletive did, thereby foiling a derivational crash by giving Tns a host.
3.0 Polysynthesis

The current section concerns itself with the mechanical characteristics of polysynthetic morphosyntax, honing in on the matter of affixal predicates. The intricacies of case marking and nominal inflection will not be explored in-depth here. Affixal predicates offer an intriguing window into the mechanics of syntax, since as I will argue below, they enable us to make a fair estimation of scope and its effects on movement in the syntax. Thus, an analysis 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, 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 free word order, head-marking, incorporation, and agglutinativity, though none of these traits alone imply polysynthesis. When combined however, they tend to yield at least the capability of producing one-word sentences, the property perhaps most universally associated with polysynthesis. The extent to which they do so is subject to variation.

One-word sentences, also known as affixal predicates, are essentially strings of affixes centered around a verb root, commonly expressing functional morphemes such as valency, TAM, agreement, and negation. Baker (1996) proposes the Polysynthesis Parameter (cf. 19), a condition that requires polysynthetic languages to express arguments on the verb, i.e., within the affixal predicate. If we assume the validity of (19), then a language is polysynthetic if and only if affixal predicates express all core arguments. If the relevant verb were a transitive verb such as the English hit, then a language subject to (19) would force the AGENT and THEME of hit to be expressed by morphemes on the affixal predicate (e.g., she-him-hit or 3sA-3sO-hit).

(19) 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 case exists on a spectrum that is fluid and hence ought to theoretically allow an unlimited 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: Affixal predicates with functional categories, invariably subject agreement, and often noun (or complement) incorporation –

Baker's notions of polysynthesis will be treated as tendential as opposed to an absolute criterium.

All the same, Baker's narrower definition is presumably useful as a standard for the extreme end of polysynthesis.

On the issue of affixal predicates, 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. In summary of the principles of theta theory described in §2.1.4 above, we concluded (a) that predicates assign theta-roles, (b) that arguments visible (eligible) for theta-assignment must have abstract case, and; (c) theta-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 Theta Criterion. While the Theta Criterion provides the conditions for theta-assignment at the clause level, Baker's (1996) Polysynthesis Parameter seems to apply the same conditions within affixal predicates.

### 3.1 Incorporation

To the matter of how arguments can be expressed in an affixal predicate, we return to the phenomenon of noun incorporation. 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 affixal predicate. To show how (19) applies, Baker proposes the Morphological Visibility Condition (MVC):

\[
\text{Morphological Visibility Condition (MVC) (Baker, 1996:17)}
\]

A phrase \( X \) is visible for theta-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

For simplicity, we might opt for a unification of the Polysynthesis Parameter with the MVC in the paraphrase offered in (21). On the topic of noun incorporation (henceforth NI), Baker (1996) argues that languages which have “productive” NI are likely to be \([+\text{MVC}]\) and thereby polysynthetic by his definition. “Productive” here means being grammatical, spontaneous, and applicable to most or all verbs—not limited to a few verb classes. He identifies a number of languages from separate families which correspond to the these criteria and share other morphosyntactic properties. These language languages include: Mohawk, Tuscarora, Wichita, Kiowa, Southern Tiwa, Huauhtla 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.
(21) **Dummy Polysynthesis Parameter (DPP)**
All arguments must be represented in affixal predicates by agreement morphology or noun incorporation (NI).

The primary languages of investigation in this paper will be Mohawk (Iroquoian), Chukchi (Chuktoko-Kamchatkan), and Nuuchahnulth (Wakashan). These three languages differ in their requirements for arguments to be represented inside the predicate, whereby Mohawk and Chukchi are the orthodox of the lot, requiring both subject and object agreement/NI. It should be clarified at this stage that, when referring to NI, the incorporation of *object nouns* is the intended interpretation. In syntactic terms, it is *complements* to verbs that are eligible for this type of incorporation (Baker, 1996, Wojdak, 2005). From structures like those seen below, we can observe the predicted tendency to express arguments within the affixal predicate. In Chukchi and Mohawk, both subject and object agreement is obligatory, while Nuuchahnulth requires only subject agreement. While Nuuchahnulth does not have object agreement, it seems to prefer incorporation wherever possible. The primary limitation to Nuuchahnulth NI is the existence of two types of verb classes; *affixal* and *independent*. Verbs of the affixal type require a host prefix, and will attract more or less any type of constituent to satisfy this phonological need. *Independent* verbs, however, disallow any type of prefix, hence ruling out object incorporation. Further, Nuuchahnulth appears to be limited to the incorporation of *indefinite* nouns, as shown in (22b,c). When no element is available as a host, Nuuchahnulth resorts to the expletive *ʔu-* (cf. 22c) to satisfy its phonological need for a host (Wojdak, 2005).\(^\text{17}\) In other words, the determiner -ʔii could not take the place of *ʔu-* , stranding the noun, nor could the noun be incorporated, stranding the determiner.

(22) **Nuuchahnulth**

a. Čamas- ʔinrl-miit-siiš.
   sweets-serve-PST-1S.IND
   ‘I served sweets.’

b. Ńi-čiilg-miit-siiš
   sew-PRF-PST-1S.IND
   ‘I sewed my dress.’

c. ʔu- ʔiic-1iit-siiš
   ñučʔin-ʔak-qs.
   Ø-consume-PST-3IND
cat bird-DET
   ‘A cat ate the bird.’

(adapted from Wojdak, 2005)

(23) **Chukchi**

a. njingej meŋŋ-et-ʔi.
   boy.3SABS big-VB-3Ss
   ‘The boy grew up.’

\(^{17}\) The Stray Affix Filter (Baker, 1988) states that bound elements must receive an appropriate host in order to be phonologically realized.
As mentioned previously, Chukchi and Mohawk seem to follow our simplified version of the Polysynthesis Parameter excellently in the sense that, regardless of whether arguments are expressed by agreement or by NI, their representation in the affixal predicate seems obligatory. In (23b), noun arguments are satellites to the verb, but are expressed by agreement morphology on the predicate. In (23c), the object woman is incorporated and thus lacks any morphology it would have as a standalone noun. The subject is represented here by the thematic suffix glossed as TH, a special type of agreement morpheme that inflects for the phi-features (person, gender, number) of the subject in Chukchi intransitives. It is unclear to me exactly when these morphemes apply and not. It should be clear, then, that the process of object incorporation

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18 The ne is a particle that accompanies nouns in Mohawk, but is apparently semantically empty.
changes the valency of a verb from transitive to intransitive. The theta-grid of the verb is thus reduced from a A/O configuration to simply S.

(24b,c) shows the same process in Mohawk, where the incorporation of an object turns a transitive verb into an intransitive, and agreement morphology on the noun is absent. (24d) follows this prediction: With no syntactic object, no object agreement should be expected. Alternatively, an argument may be incorporated without reducing valency, thus resulting in the type of reduplication seen in (24e). Just as in (24d) however, incorporation combined with reduplication rules out agreement morphology on the verb (cf. (24f)). Interestingly, there is a parallel in English to the Mohawk verb above. The verb to babysit features a type of lexicalized NI, and can be used either intransitively or transitively (I am babysitting, or I am babysitting Frank). The intransitive use still implies a semantic object, and the transitive implies the same object ‘twice’.

3.2 Clause Structure

The term “non-configurational” denotes languages which allow a freer word order compared to say, English, where semantic interpretation is contingent on a rigid standard word order. Affixal predicates (henceforth APs) 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. Languages with case marking frequently allow freer word order for the same reasons. It is reasonable to assume that the organization of semantic information in affixal predicates has far-reaching effects on clause structure. In particular, non-configurationality raises concerns about (a) the status of overt NP arguments, and; (b) clause boundaries. As we have seen above, APs may incorporate object nouns, but never subjects. When they do incorporate nominals, object on the same predicate is ruled out.

We can expect languages which are not polysynthetic, but not fully in the narrower sense of Baker (1996) to be restricted when it comes to producing one-word sentences, especially when it comes to transitives. If the object of a transitive clause fails to be incorporated, and cannot be retrieved by cross-referencing agreement morphology (i.e., understood from context), then an affixal predicate cannot license a sentential utterance.

The utterance would have a sort of ‘thematic leak’ which could only be closed by way of expanding the domain of the predicate beyond the actual AP, using overt nominals. Conditions for theta-assignment now must apply within a broader clausal domain as opposed to an intra-predicate. This would constitute a violation of the Polysynthesis Parameter, which is part of Baker's (1996) narrower definition of polysynthesis. Affixal predicates must, according to Baker, definitionally represent core arguments. Therefore, if core arguments ‘leak’ out of the AP, one would have to conclude that the relevant language is [-PP] and therefore not polysynthetic.

Nuuhchahnnulth, for example, would be instantly disqualified, despite seemingly opting for object incorporation wherever possible. There are morphosyntactic complications that can prevent incorporation, as was shown in (22b,c): APs cannot incorporate definite nouns. If the Polysynthesis Parameter is indeed a parameter and not a universal principle, then some

19 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)
flexibility should be feasible. If we argue that the Polysynthesis Parameter is violable, then there would be an elegant explanation to why Nuuchahnulth seems to opt for object incorporation despite possibly not being polysynthetic. I will refrain from drawing hypotheses about this matter for the time being, but the possibility should be considered.

3.3 Overt Nominals

Being that affixal predicates 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 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 (26), where subjects are represented by agreement, and all O arguments are incorporated. Mohawk equally takes liberties in this area, as can be seen in (27), where overt nominals are equally absent. Nuuchahnulth is more restricted, since it only has subject agreement.

(25) **Nuuchahnulth**

a. **Context 1:** The speaker has been out on the beach with Kyle, who saw a sea anemone for the first time.

\[ \text{N\'aatsii-\$ily-mit-\$ii\$} \quad \text{kin\$umc} \quad \text{(Kyle)} \]

\[
\text{see-PRF-PST-3.IND} \quad \text{sea.anemone (Kyle)}
\]

‘Kyle saw a sea anemone.’

b. **Context 2:** Ken and Kay were just out shopping. The speaker sees a new sweater on the couch, and asks if Ken bought it.

\[ \text{Maakuk-mit-\$} \quad \text{\$cup\$-up\$uml-\$ii\$} \]

\[
\text{buy-PRF-PST-3.Q} \quad \text{sweater-DET}
\]

‘Did he buy the sweater?’

(adapted from Wojdak, 2005)

(26) **Chukchi**

**Context:** unknown

\[ \text{Neme m\$uw-\$qat-\$e-t} \quad \text{l\$yen} \quad \text{otcoj} \quad \text{\$e-my+tu-t\$le-linet} \]

\[
\text{again} \quad \text{caravan-set.off-TH-3P} \quad \text{really far} \quad \text{PRF-caravan-go-3P}
\]

\[ \text{qeluq=} \text{\$m} \quad \text{\$a-pker-\$e-\$n\$o-lenat} \quad \text{jara-k}. \]

\[
\text{because=} \text{EMPH} \quad \text{PRF-arrive-E-INCH-3P} \quad \text{house-LOC}
\]

‘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)
Baker (1996) argues that overt nominals are in fact adjuncts to predicates, since they are not subject to particularly strict ordering requirements. Much like English temporal adjuncts can be freely moved around based on pragmatic concerns, Baker shows that arguments in these languages are free in similar ways. He shows that overt nominals can be discontinuous in Mohawk and Chukchi despite forming one constituent, or at least being coreferential. Thus, two NPs can refer to the same argument within one clause, something that is predicted not to happen for core nominal arguments. Likewise, many languages allow splitting of temporal adverbial phrases, which are understood to form one constituent, or being coreferential:

\[(28)\] 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.

While NP arguments of polysynthetic languages are licensed by their presence in the AP (by agreement or NI), temporal adverbs can be thought of as being ‘licensed’ by tense and subsequently inserted as modifiers specifying the details of temporal events. Baker (1996) takes the position that nominals have the same role in polysynthetic languages, therefore implying that they are, syntactically, adjuncts.

### 4.0 Linearization

We have treated in some depth the relationship of arguments to predicates in polysynthetic languages, arriving at the conclusion that verbs must generally have arguments represented within them. However, it is not automatically clear by this condition why functional categories like tense, aspect, mood, or negation must be expressed on the verb—a feature that has been consistently seen above, and equally exists in many other languages. By the theoretical

---

**Condition C**

A given NP must be interpreted as non-coreferential with any distinct non-pronoun that it c-commands.

---


21 In line with Baker's (1988) Uniformity of Theta-Assignment Hypothesis (UTAH), thematic function is predicted to correspond to syntactic origin. This suggests that nominals which have an adverbial function must also have the syntactic origin of adjuncts. An example would be English INSTRUMENTAL by-phrases vis-à-vis Inuktitut instrumental-case nominals: Same thematic function, same syntactic role.
assumptions I have outlined above, it is clear that all levels of constituency except terminal nodes have *complements*. Transitive verbs variously take nominal arguments, complementizer clauses, or adjuncts as their complements. Likewise, higher constituents take VPs as their complements. In the discussion above, we have concerned ourselves with the relation between verbs and the representation of their arguments in affixal predicates. At closer review however, the Polysynthesis Parameter makes no explicit mention of verbs. We might therefore consider expanding our understanding of the Polysynthesis Parameter to include functional categories.

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

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

If (30) and Baker's (1988) Uniformity of Theta-Assignment Hypothesis are accepted, then it seems that any head that takes a syntactic complement should also assign some form of theta-role to it, although one might suppose that theta-assignment is more abstract in some cases. Certainly this would have to be true if we assume that the UTAH concerns functional categories, since it is otherwise unclear what type of thematic function T might ascribe to a VP. Whether or not the UTAH is understood to concern functional categories, T typically takes a VP complement, and T in turn can be a complement to agreement (Agr), negation (Neg), or other categories.

By the Polysynthesis Parameter, arguments to *any* head must presumably appear in the word which contains their head, suggesting that a verb c-commanded by T must appear in the word in which T appears. The same should be predicted to apply ‘all the way up’, though presumably only for *core* arguments, i.e., complements and perhaps specifiers—or else fully polysynthetic languages would only produce one-word sentences.

We saw above that head movement results in attachment of a moved head to the right of the immediately superjacent head. Successive-cyclic head movement hence yields strings of affixes in which the heads which were base-generated in lower positions are aligned successively right-to-left. Based on this and other theoretical considerations outlined above, a fairly straightforward approach to examples such as those in (30) can be adopted: Categories linearized to the far right must have been base-generated in higher positions. The process of deducing scope in this context is a matter of distinguishing lexical categories from functional categories on the verb. Before proceeding with analyses, I clarify below some of the abbreviations used for functional categories. Further, I have omitted the CP category in my analyses unless stated otherwise—partly for decluttering purposes, and partly since CP is understood within Minimalist literature to encompass entire clauses, thereby being the hierarchically highest element.

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

4.1 Nuuchahnulth

In the Nuuchahnulth sentence in (30), it is clear that lexical heads are aligned to the left, while functional categories are located to the right in the fashion described below the example. Nuuchahnulth is conveniently systematic in this way, usually allowing for a fairly simple analysis of scopal hierarchy.

(30) \begin{align*}
\text{ʔu-ńak'uuḥ[+L]-mit-siiš} & \quad \text{ʔin \ tuuxʷ-}a[+R]-\text{mit-suuk}. \\
\text{>Lorem ipsum} & \quad \text{sursum} \\
\end{align*}
\text{>Lorem ipsum}  \\
\text{Lorem ipsum}

\text{First predicate: \quad I \rightarrow T \rightarrow V}  \\
\text{Second predicate: \quad I \rightarrow T \rightarrow Asp \rightarrow V}

(adapted from Wojdak, 2005)

Looking at the examples in (31), we can thus far identify a hierarchy where mood is at the top, closely followed by T, Asp, and V with an incorporated object. This order holds for both (31a) and (31b), whereby the latter has incorporated a complement clause as opposed to a nominal. The possibility of incorporating a dependent clause should be not unexpected, since these are complements to the transitive verb. Interestingly, then, it seems that the remarks made earlier about theta-assignment possibly having abstract properties is not unlikely: The complement clause is incorporated into the predicate, suggesting that it is, by the Polysynthesis Parameter, a \textit{core argument} to the verb, which would therefore be predicted to bear theta-marking.

(31)  
\begin{align*}
\text{a. Čamas- \textit{int}-mit-siiš.} & \quad \text{sweets-serve-PST-1s.IND} \\
\text{I served sweets.} & \quad \text{Lorem ipsum} \\
\end{align*}

(adapted from Wojdak, 2005)

\begin{align*}
\text{b. Hypothesis for (32a):} & \\
\text{Lorem ipsum} & \quad \text{Lorem ipsum} \\
\end{align*}
c. \(Tuxʷ-a[R]-ňakʷuuh-miʔiš\) čakup t'aatñaʔis.

\[\text{jump-IT-observe-PST-3.IND} \quad \text{man} \quad \text{children}\]

‘A man observed the children jumping.’

(Adapted from Wojdak, 2005)

d. Hypothesis 1 of 2 for (32c):

![Diagram of sentence structure]

e. Hypothesis 2 of 2 for (32c):

![Diagram of sentence structure]

Our understanding of the derivation as a bottom-up process requiring movement (i) to be successive; (ii) to proceed only to the closest c-commanding category (i.e., upward), and; (iii) to attach moved heads to the left of c-commanding heads, results in a derivation of the fashion shown in (31b,d,e): The first merger happens in the subordinate clause, combining children with the verb jump, forming the intransitive VP jump children.\(^{22}\) The verb is then moved to the iterative head of Asp, 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. Alternatively, there is the possibility that the subordinate clause is similar to infinitival clauses in English, only it is headed by Asp and not T.\(^ {23}\) This is the hypothesis I argue for, since it

\(^{22}\) I follow Wojdak (2005) in her analysis of the VP structure as left-branching and head-initial, although for my purposes, the orientation of the specifier position is not of great importance, since the Head Movement Constraint mandates movement of heads to c-commanding heads: The movement of the verb jump to the iterative aspect head -\(a[R]\)- would bypass its specifier regardless of orientation, hence rendering \(VA[\epsilon\delta S]\) word order for (32c). Wojdak notes that there are issues of animacy and communicative salience that may affect this structure, but I will refrain from exploring this further.

\(^{23}\) cf. Radford, 2004 for a detailed description of ‘defective’ English infinitival clauses, argued by Radford to be headed by T.
would explain the lack of tense mood morphology on the verb *jump*. Additional support is found in (32a), where the full CP (inflected for tense, mood/subject agreement) is not incorporated. We might stipulate that tense and mood morphology on the affixal predicate in the CP imposes restrictions on incorporation similar to those which hold for definite nouns, seen in (22c) and repeated below as (32b).

Another concern is why the main clause verb would not simply incorporate the entire CP, rendering something along the lines of (32c). The latter type of process occurs in Chukchi, hence suggesting that this restriction is specific to Nuuchahnulth. A possible explanation for the ungrammaticality of (32c) is the Convergence Principle (Chomsky, 1995:262-265), which offers that heads which attract a particular kind of constituent will enact movement of the smallest possible constituent which will generate a well-formed (grammatical) utterance. Presumably, language-specific phonological considerations define well-formedness.

\[(32)\]

\[
\begin{align*}
a. & \quad ʔu-ňak’uuh[+L]-mit-siis & \quad [ʔin\quad tuuxʷ-a[+R]-mit-suuk]. \\
& \quad \varnothing\text{-observe-PST-1s.IND} \quad \text{COMP} \quad \text{jump-IT-PST-2s.DEP} \\
& \quad \text{‘I observed that you were jumping.’}

b. & \quad ʔu-‘iic-mit-siis & \quad pišpiš maamati-ʔiis. \\
& \quad \varnothing\text{-consume-PST-3.IN} \quad \text{cat} \quad \text{bird-DET} \\
& \quad \text{‘A cat ate the bird.’}

c. & \quad *T’aatnáʔis-tuxʷ-a[+R]-ňak’uuh-mit-siis & \quad čakup \\
& \quad \text{jump-IT-children-observe-PST-3.IND} \quad \text{man} \\
& \quad \text{‘A man observed the children jumping.}
\]

(adapted from Wojdak, 2005)

Based on the above, my hypothesis for scopal hierarchy in Nuuchahnulth is as seen in (33).

\[(33)\quad \textit{Hypothesis for scope of Nuuchahnulth}\]

\[
\text{I} \rightarrow \text{T} \rightarrow \text{Asp} \rightarrow \text{V}
\]

### 4.2 Chukchi

Before providing analyses of Chukchi, a small disclaimer is due. Chukchi alignment is complex, and agreement is variously expressed using (a) ‘thematic suffixes’ denoting subject or object agreement, (b) standard agreement morphemes which coreference only subjects, and; (c) agreement morphemes which coreference A and O arguments (Dunn, 1999). Different configurations of transitivity with TAM influence which the type or configuration of agreement system will be used. I have disregarded these intricacies here for simplicity, using the terms *subject*, *object*, and *A/O agreement* regardless of the class of agreement affixes used, presuming in my analyses that they project AgrS, AgrO, and Agr phrases, respectively. Further, I have modified the glossing in the examples taken from Dunn (1999), partly for consistency with the
other languages described herein, but mainly since his glossing of thematic suffixes is limited to ‘TH,’ leaving out details of which arguments they agree with.\(^{24}\) In (34), the Chukchi predicate \(ra-\gamma t-\eta \eta o-\gamma ?e\) ‘(he) went home’ has a subject agreement morpheme to its far right which by the translation can only be interpreted as being coreferential with the subject, followed by the \textit{inchoative} aspect morpheme (denoting a change of state), and finally the verb with an incorporated object. The first and second predicates are consistent with the patterns we saw in above analyses of Nuuchahnulth: Functional heads are linearized to the right of lexical heads. See (35) for my hypothesized derivation of the first predicate. The third predicate introduces a structure that is superficially quite different from those we have seen thus far. The modal I-head \(q\)- is linearized to the left of the verb. Interestingly, the mood particle agrees with the subject of the predicate, rendering a sort of agreement pattern we that we saw in Nuuchahnulth. This holds true only for cases where mood is present, however.

carries subject agreement. We must assume that the intentional prefix \(q\)- has not been moved at all. Since the verb is right-adjacent to it, and since functional categories are understood to occupy the hierarchical levels above the VP, I hypothesize instead that a complex head formed by successive-cyclic movement, starting with the verb and terminating at the object agreement (AgrO) suffix \(-n\), is located below IP. This implies the scope:

\[
I \rightarrow \text{AgrO} \rightarrow \text{AgrS} \rightarrow V
\]

and the derivation offered in (36) for the third predicate of (35).

\begin{align*}
(34) & \quad Qənwet \quad ra-\gamma t-\eta \eta o-\gamma ?e \quad \text{antuulpəre-te} \quad \text{iw-nin} \\
& \quad \text{finally} \quad \text{house-go.to-EINCH-TH} \quad \text{br.in.law-ERG} \quad \text{say-3SA/3SO} \\
& \quad \text{erγat-ə-k} \quad əγən \quad \text{nel-wəl} \quad q-\gamma -\text{ret-γ-ə-n.} \\
& \quad \text{dawn-E-SEQ} \quad 2s-\text{POSS.3ABS} \quad \text{herd-3SA} \quad 2sS-\text{INT-E-bring-2S-E-3S}
\end{align*}

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

(adapted from Dunn, 1999)

\(^{24}\) Dunn (1999) provides inflection tables for thematic suffixes and verb inflection, and I base my modifications to his glossing on these.
I have thus far drawn the hypotheses for the first (intransitive) and the third (transitive) predicate in (34) as shown in (37). The first predicate ra-γŋt-ŋŋo-γʔe ‘he got ready to go home’ does not have mood but does have aspect, which appears inside AgrS. Conversely, the third predicate q-ə-ret-γ-ə-n ‘you (will) bring your herd tomorrow’ has no aspect but has mood, AgrS, and AgrO, where mood appears appearing outside AgrS. We might therefore hypothesize that, were mood, aspect, and full agreement to be simultaneously present, scope would be distributed as shown in (37c).

(37)  

<table>
<thead>
<tr>
<th></th>
<th>First predicate:</th>
<th>AgrS → Asp → V → O</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Third predicate:</td>
<td>I → AgrO → AgrS → V</td>
</tr>
<tr>
<td>c.</td>
<td>Hypothesis overall scope:</td>
<td>I → AgrO → AgrS → Asp → V</td>
</tr>
</tbody>
</table>

The sentences in (38) shows a different structure, where the predicate is supposedly marked for aspect twice: For (38a), a combination of the perfective prefix ya- and the inchoative -ŋŋo-; in (38b) 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). It often cooccurs with aspect. The possibility that they are modals is
unlikely 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 (1999). They additionally apparently never coincide with tense, which occupies the same slot in the predicate. Further, Dunn (1999) otherwise makes no mention of a past tense, and consistently translates the habitual into English past tense. I therefore hypothesize that the predicate-initial morphemes described by Dunn (1999) as perfective and habitual aspect in fact represent tense, and therefore head T.

For an analysis of the derivation, if we apply previously assumed theoretical concepts to (38a), the consequence would be a successive-cyclic movement progression that starting with the verb pker ‘arrive’ and ending at the third person AgrO 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). It will also modify nominals, expressing distinctions such as rather, almost. I will hypothesize that the approximative is a type of modal, heading I. There is support for the existence of tense, mood, and aspect as separate categories in Chukchi, as presented in (38b).

    hardly PRF-APPR-E-arrive-E-INCH-3p around-turn-PLACE-LOC
    ‘They had hardly reached the turn-around point.’

    b. Cawcəwa-tko-t əŋqen
    reindeer.herder-COLL-3p.ABS that.3p.ABS

    n-əra-n-kolqocaw-ŋ-ə-tko-genat=ʔm.
    HAB-E-DESID-CAU-be.in.kolxoz-DESID-E-IT-3pO=EMPH
    They wanted to put the reindeer folk into kolxozes...

(adapted from Dunn, 1999)

With its impressive complexity, the predicate in (38b) shows both the “habitual” prefix n-, the desiderative circumfix əra ʔ, and the iterative aspect -tko-. Now, the occurrence of a circumfix presents challenges for the theory I have outlined above. The initial intuition would be that there would have to be two modal projections, but just as we suspected that the existence of two aspectual projections is unlikely, we might be suspicious of the existence of two modal categories. This said, I do not know how to analyze the of these circumfixes, especially because they appear on opposite ends of the verb head and would therefore be hierarchically distant in my analysis. Likewise, I do not know what to do with the causative, which should be expected to be linearized right-adjacent to the verb, since it is commonly understood to be the category immediately superjacent to V. It occasionally occurs circumfixally around the verb, but is in all cases represented in the preverbal position (Dunn, 1999). (39) confounds further, showing an example which is virtually morphologically ‘palindromic,’ featuring future and causative morphemes at opposite ends of the predicate. Further, the subject agreement located now on the far left implies that AgrS is located outside AgrO—opposite to what was proposed in previous analyses. As stated in §1.1 however, I see no reason to exclude the possibility that syntactic scope may vary within a language depending on pragmatic nuances.
While the current section may hopefully have provided some pointers, the only conclusion is that Chukchi morphology is impenetrable to the degree that precise estimations are precluded within the scope (pun intended) of this paper. Nonetheless, I provide in (40) a hypothesis for the hierarchical structure of Chukchi as it could hold more generally.

(40) **Hypothesis for scope of Chukchi**

\[ T \rightarrow I \rightarrow AgrO \rightarrow AgrS \rightarrow Asp \rightarrow V \]

### 4.3 Mohawk

As seen in the analysis of Chukchi above, having complex predicates on hand is helpful, since it (ideally) facilitates establishing which functional categories are present, and in what order they occur if present all at once. It does become clear, however, that the labeling of functional categories as expressing e.g., tense, aspect, and mood, can be problematic. The matter of whether the *punctual* morpheme in the Mohawk examples below should be understood as an aspectual morpheme or something else is not always straightforward to determine, especially when it comes to TAM. Tense and aspect, for example, both seem to convey slightly different nuances of temporal details of the verb event, and it does not seem counterintuitive that they could overlap. Valency commonly concerns the theta-grid of verbs, and occasionally may overlap with nuances of TAM, as we shall see below.

Mohawk is a language where one might need to manage expectations on the labeling of elements, although it differs from Chukchi in the sense that linearization is consistent. Elements do not variously occur in expected or utterly unexpected places. There seem to be many hierarchical levels present above the VP level, and some them are almost always expressed by a morpheme, such as aspect and mood.

All the examples in (41) feature factual mood, punctual aspect, and agreement. These occur in a fixed order, whereby mood is predicate-initial, followed by agreement (41a,c,d), the verb, and the aspectual affix. In (41b), a *duplicative* morpheme is present, morpheme, presumably emphasizing the act of kissing. It is unclear to me to which category this should belong. Clearer is the *benefactive* affix in (41c), which seems to be valency a affix resident in the vP, similar to the causative seen in the same position in (42b). In the case of the reversive *-ko* in (41d), 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 why this function should be a head of the vP, since it would rather seem to be a type of topicalizer than a valency function. For the predicate in (41b), we might hypothesize that the verb is moved to Asp, with the categories representing agreement (Agr), the duplicative (D(3)), and mood (I) residing in the levels outside aspect. The following scope would then hold for (41b): \[ I \rightarrow D(3) \rightarrow Agr \rightarrow Asp \rightarrow V \]

A similar analysis could be made for (41c,d), although the duplicative is missing, and instead we have the *benefactive* and *reversive* valency functions suffixed to the verb. This would entail
successive-cyclic movement of $V$ through $vP$ and into $\text{Asp}$. $\text{Asp}$, in turn, is again located inside $\text{Agr}$ and $I$. Combining this with the previous hypothesis, we get the following scope from the examples in (41): $I \to D^{(1)} \to \text{Agr} \to \text{Asp} \to v \to V$

(41)  a. *John akwëku wa-shakô-kâ-‘*
   $\text{John all FACT-MsS/3o-see-PUNC}$
   ‘John saw everyone.’

   b. *Akwëku wa-’ti-shakoti-noru kwânyu-‘ ne raotì-skare.*
   all $\text{FACT-Dup-Mps/3p-o-kiss-PUNC}$ NE $\text{Mr.Poss-friend}$
   ‘All of them kissed their girlfriends.’

   c. *Wa-hake-natar-akwetar-A-‘.*
   $\text{FACT-MsS/1so-bread-cut-Ben-Punc}$
   ‘He cut the bread for me.’

   d. *Wa-’e-ratsû-ko-‘ kikâ $\text{Uwàri ako-[a]tyâ’tawi}$
   $\text{FACT-FsS-tear-Rev-Punc}$ this $\text{Mary FsP-dress}$
   ‘She tore this dress of Mary’s.’

(42)  a. *Thikâ Sak raô-[a]’share’ t-a-hâk-u-‘.*
   that $\text{Sak MsP-knife}$ $\text{Cis-Fact-1soMsS/give-Punc}$
   ‘He handed me that knife of Sak’s.’

   b. *Uwâri t-a-yâ-[a]hsa-ht-e‘ ne á’share’.*
   $\text{Mary Cis-Fact-FsS-fall-Caus-Punc}$ NE $\text{Knife}$
   ‘Mary dropped the knife.’
   (lit: ‘Mary made the knife fall.’)

   c. *Kwâh yâkâ’ khé s-a-hâ-hket-e’ kikâ rake-nuhâ’a*
   right $\text{Prt there Iter-Fact-MsS-turn.back-Punc}$ this my-uncle
   $s-a-hâ-[i]t$ $\text{tsy-a-hseruny-â-hna-‘}$.}

The examples in (42) introduce morphemes before the factual -a- morpheme. In (42,a,b) the cislocative t- is prefixed to the factual morpheme, expressing movement toward the speaker. (42c) sees the iterative s- occupying the same position. Additionally, (42b,c) have the causative -ht- and purposive -hna- in the slot I hypothesized to be the $vP$ in my analysis of (41). This is where traditional approaches to labeling might be less helpful, particularly in (42c), where one predicate has an iterative and a punctual, and a purposive morpheme. These functions are closely related semantically, all having to with stative/durative and telic/atelic distinctions. They may be expected to interact in subtle ways, and as stated above, it is not unexpected that elements whose semantic functions overlap may be used simultaneously. The purposive -hna- in (42c) presumably expresses a telic/atelic distinction (cf. Saeed 1997), i.e., referring to the action of ‘fish-preparing’ as an event which will eventually end. The punctual -‘ presumably refers to that very completion. The iterative s-, in turn, can be understood as specifying that the going part of ‘to go back and prepare the fish’ was a process, although it is still unclear, since this and the punctual morpheme seem conflicting.
ITER-FACT-MsA-fish-Ø-prepare-Ø-PURP-PUNC
‘Immediately my uncle turned back to go and prepare the fish.’
(adapted from Baker, 1996)

Significantly, (43) 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 (42a,b). Further, (43a) has a simultaneous aspect morpheme outside of the translocative. (43b) 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.

(43) a.  
\[ \text{Kaná' }\text{tsa-a-ku }\text{sh-y-a-ha-fa} \text{tketót- }\text{éso } \]
\[ \text{pot-Ø-in }\text{SIM-TRANS-FACT-MsS-look-PUNC }\text{a.lot } \]
\[ \text{wa- }\text{ha-ts'híri-} \text{ ne onhúhsa' }\]
\[ \text{FACT-MsS-find-PUNC }\text{NE egg } \]
‘When he looked in the pot, he found many eggs.’

b.  
\[ \text{Kaná' }\text{y-a'- }\text{te-sa-rikwayót- }\text{a's-e }\]
\[ \text{which }\text{TRANS-FACT-DUP-2sS-decide-PUNC } \]
\[ \text{a- }\text{hs- }\text{hnini-} \text{ ne áthere' }?\]
\[ \text{OPT-2sS-buy-PUNC }\text{NE basket } \]
‘Which basket did you decide to buy?’
(adapted from Baker, 1996)

In conclusion, Mohawk seems to have a consistent word order for morphemes, and seems to have many functional categories. These categories seem to be quite freely configurable, although they seem to occur in fixed (slots) in the syntax. If one could find a sentence where all these slots were filled (I have tried), one could presumably draw an informed conclusion. However, it seems that Mohawk has a strong semantic ‘interest’ in subtle temporal, aspectual, and modal distinctions. Again, only an estimation of scope more generally can be offered here (cf. 44), and when considering the two categories that seem to exist outside IP, it seems that they convey functions similar to Talmiyan Manner and Path. We can see in (43a) that the simultaneous morpheme sh- precedes the translocative -y-. Baker (1996) offers additional examples with a similar distribution, suggesting that these may be separate categories. For lack of better options, I label these ‘mystery categories’ as M(?) for Manner and M(?) for Path, in my hypothesis below. The slot occupied by the duplicative retains its previous label, D(?)

(44)  
\[ \text{Hypothesis for scope of Mohawk }\]
\[ \text{M(?) }\rightarrow \text{P(?) }\rightarrow \text{I }\rightarrow \text{D(?) }\rightarrow \text{Agr }\rightarrow \text{Asp }\rightarrow \text{v }\rightarrow \text{V } \]
5 Discussion

6 Conclusion

By the analyses conducted in this paper, it seems clear that the application of commonly accepted principles of generative grammar allows one to draw hypotheses about scope based on linearization of affixes that can be supported fairly consistently. However, it is clear that, especially in the case of Chukchi and Mohawk, the morphological intricacies of polysynthetic morphosyntax are sometimes impenetrable to the degree that only broad generalizations seem plausible.
References