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David Inman

Multi-predicate Constructions in Nuuchahnulth

David Inman

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Reading Committee:

Emily M. Bender, Chair

Sharon Hargus

Adam Werle

Program Authorized to Offer Degree:
Linguistics

University of Washington

Abstract

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David Inman

Chair of the Supervisory Committee:
Chair Emily M. Bender
Department of Linguistics

This dissertation documents and models two types of multi-predicate constructions in Nuuchahnulth: serial verb constructions, and a construction involving a suffix called the predicate linker. I define a serial verb construction (SVC) as any clause with two verbs present and no overt coordinating element. I document the circumstances under which this occurs, give its grammatical constraints, and classify SVCs in Nuuchahnulth into four syntactically distinct categories. I also examine the linker suffix and provide a grammatical description for it. Unlike SVCs, the linker coordinates two elements which serve as predicates in the syntax, a category which includes more than just verbs. I use the properties of the linker and SVCs to shed light on words that are category-ambiguous. Finally, this is all implemented inside of a DELPH-IN style HPSG computational grammar. The analyses are then tested against a set of speaker-vetted sentences illustrating the phenomena.

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Chapter 1

INTRODUCTION

1.1 The research question

In this dissertation, I approach the following research question: What are the morphosyntactic properties of Nuuchahnulth clauses that contain more than one predicate? To answer this, I focused on clauses without containing coordinating word forms with meanings like 'and' or 'or.' I examine two such constructions: serial verb constructions (Chapter 4) and a morpheme called the linker (Chapter 5).

These forms of covert or non-canonical coordination and their relationship to the clause are sometimes taken for granted in other syntactic literature on the language, and have not yet been a focus of study on their own. Most recent researchers sketch out the basics of the Nuuchahnulth clause structure, as I will in Chapter 3, but do not include coordination strategies in these sketches.[1] There are however other researchers who have addressed one or both of these coordination strategies: Rose (1981) provides an abbreviated discussion on both strategies, Jaccobsen (1993) mentions both in his overview of the Nuuchahnulth clause, Nakayama (2001) has a discussion on serialization, and Davidson (2002) also discusses serialization, although by a different name.[2] The work I describe here goes beyond what is present in these previous accounts.

With respect to serialization, Rose (1981, p. 153–154) discusses "noncued coordinate clauses". However, in her brief account she mixes examples of two clauses with examples of only one clause, and does not give syntactic properties of this construction. Jaccobsen (1993, p. 248–252) addresses what he calls "verb serialization" within his larger discussion on the Nuuchahnulth clause. He defines this as multiple verbs that share second-position subject information.[3] However, his analysis is limited due to its brevity

[1]See Chapter 3 in Wojdak (2005), Chapter 2 in Woo (2007a), and Chapter 2 in Waldie (2012).

[2]Davidson objects to the term "serialization" for this part of the grammar, but he is describing the same phenomenon as the other researchers.

[3]This is functionally the same definition used by Nakayama and Davidson, and the one I will use in §4.1.

(three and a half pages), and there are some cases where I think his categorization is off: he analyzes some adverbs as verbs (*ʔiiḥ* in its adverbial use 'very',[4] *ʔaanaqḥ* 'really', *qii* 'for a long time') and categorizing as serialization some verbs that are plausibly subject-raising (the negator *wik*, *ḥasiik* 'finish'). Nakayama (2001, p. 102–109) gives the longest and most complete treatment of the phenomenon, which he calls "serialization", although he approaches this task from a primarily semantic and functional perspective. My approach prioritizes the syntactic properties of serialization strategies (which Nakayama does not address in depth), and gives a formal account of their properties. Nonetheless, there is a surprising degree of overlap in our serialization categories.[5] Finally, Davidson (2002, p. 149–152) discusses the same phenomenon, which he calls "bare absolute constructions" and analyzes as a type of adverbial clause. I will argue that these constructions are a form of coordination, and detail the differences between syntactic categories within this group. The work I present in Chapter 4 represents a much more detailed accounting of the syntactic properties of serial verb constructions in Nuuchahnulth than has been given in the literature so far.

The linker morpheme has received considerably less attention than serialization in the literature. Sapir and Swadesh (1939, p. 241) list it as an incremental suffix with the simple gloss 'meanwhile' and the description "sometimes used as a formative suffix". Rose (1981, p. 151) gives one example of this morpheme in her discussion on coordination, which she also glosses as 'meanwhile.' Jaccobsen (1993, p. 245) briefly mentions the linker, and defines it as 'while.' As I will discuss in Chapter 5, the syntactic properties of the linker are more complex than the English gloss 'while' or 'meanwhile' would indicate, and clauses containing a linker morpheme share some syntactic properties with serial verb constructions. To my knowledge, these three mentions of the linker are the only published original linguistic research on the morpheme.[6] My description of this morpheme is the first extended look at its morphosyntactic properties and the most complete in the literature to date.

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[4] *ʔiiḥ* can also be used as an adjective, where it means 'big.'

[5] See §4.2 and especially footnote 3 of Chapter 4.

[6] The linker is extremely common in fluent Nuuchahnulth, and does occur in examples in other work. However, it is rarely examined as having its own syntactic properties. For instance, Nakayama (2001) in his discussion on serialization gives an example where one verb has the linker morpheme attached (ex 257 on p.102). This changes the structure of the coordination, and this apposition between bare serialization and linker constructions has been noted by others (Werle, p.c.). On the analysis I present here, the addition of a linker morpheme creates an entirely different syntactic structure from serialization.

My documentation and analysis of these two multi-predicate constructions fills a gap in the existing literature on the language. It illuminates properties of the Nuuchahnulth clause, particularly what elements within the language can be coordinated and how. A detailed analysis of the linker morpheme also sheds light on syntactic categories within the language and their properties (§5.2). With my research question defined and situated within existing Nuuchahnulth linguistic studies, I will now give some background situating the language itself.

1.2 Background on Nuuchahnulth

Nuuchahnulth (ISO 639-3 nuk, formerly called Nootka[7]) is a Wakashan language of the South Wakashan branch. It is spoken along the west coast of Vancouver Island, from the Kyuquot-Checleseht nation in the north to the Huu-ay-aht nation in the south. The language is a dialect continuum with a significant range of lexical and, to a lesser extent, grammatical variation among dialects. My Ucluelet consultants (in the south) expressed some difficulty with Kyuquot-Checleseht speech, and vice versa my Kyuquot-Checleseht consultant found southern speech strange and difficult at times. Despite this, there is a large amount of overlap between the dialects and speakers of one dialect can accommodate themselves to the speech of other dialects.

I follow Werle's dialect definitions (Werle, 2013, 2015–2019), a schema which breaks the language into four dialect regions: Kyuquot-Checleseht (abbreviated **Q**), Northern (**T**), Central (**C**), and Barkley Sound (**B**). I will mark all data in this dissertation with the speaker, their name, and which dialect region they are from.

As a result of economic changes and more importantly the policy of residential schools in Canada, all native speakers of Nuuchahnulth are older, with the youngest speaker I know of in her later sixties. Most of the speakers I worked with were put in residential schools in their childhood, although two speakers I worked with were not.

Linguistic work on Nuuchahnulth began with Sapir (1911), leading to the publication of the "Nootka

[7]The name Nootka was applied to Nootka Sound and the people living there by Captain James Cook, likely upon being told as he approached in his ship to 'circle round' (*nuutxaa*) to the other side of the harbor (Campbell, 1997, p. 396). The word Nuuchahnulth (*nuučaaʼnuł* is a more recent endonym created by members of the Nuuchahnulth tribes and means 'along the mountains.'

Texts" in Sapir and Swadesh (1939) and a follow-up volume "Native Accounts of Nootka Ethnography" in Sapir and Swadesh (1955). Further notes and recordings from the same sessions were published much later in Sapir et al. (2000, 2004, 2007, 2009). I will occasionally make use of the first two publications when illustrating grammatical phenomena, and for brevity's sake sometimes refer to the entire collection as the "Nootka Texts"—a shorthand for all texts published from this set of recordings. It should be kept in mind that the Nuuchahnulth published in these volumes is approximately 100 years older than the Nuuchahnulth of my consultants, and represents the language at an earlier stage of its development. In addition, some of the speakers represented in the these texts were monolingual in Nuuchahnulth, while all of my consultants were bilingual, and most of them spend most of their time using English.

1.3 Structure of the dissertation

I will begin by describing my methodology (Chapter 2), which will cover both my fieldwork component as well as my grammar implementation work. I will then describe the basics of the language's clause structure (Chapter 3), and then the two types of multi-predicate constructions: serial verbs (Chapter 4) and the predicate linker (Chapter 5). Each of these three chapters is divided into two components (possibly comprising multiple sections): the first focusing on data and theory-neutral descriptions of the phenomena, and the second describing how I have modeled and implemented this within a computationally readable grammar in the HPSG formalism. The serial verb chapter also includes a discussion on phenomena included and excluded by the definition, and the linker chapter includes a section applying facts about the linker to words whose syntactic category or argument structure is unclear. For readers most interested in the descriptive facts and not the details of my HPSG analysis, they can focus on the descriptive sections, which will be sufficient for this purpose. For readers who are interested in syntactic modeling, the implementation sections should be accessible to both linguists working within HPSG as well as syntacticians working in other frameworks, although the details of my analyses will be framework-specific.

I then give an overview of the results of my implemented grammar on targeted test suites (Chapter 6), and finally conclude with a discussion of my findings about Nuuchahnulth, the HPSG analyses I have developed, and directions this for future investigation opened up by this work (Chapter 7).

There are two appendices included. The first defines the orthographic conventions and pronunciation of orthographic symbols (Appendix A). The second describes the glossing conventions I have adopted, perhaps most significantly among them those conventions used to describe some of Nuuchahnulth's vowel-length-altering morphological rules, the meaning of special symbols like ! and °, as well as a list of grams (Appendix B). If some grams or notational conventions are confusing to the reader, they can consult this appendix.

Although the two multi-predicate constructions (serial verbs and the predicate linker) that I analyze share some similar properties, the chapters are largely separate from each other. It is possible for the interested reader to just focus on one chapter or the other, although I will be assuming basic facts about the clause structure of Nuuchahnulth, outlined in Chapter 3.

Chapter 2

METHODOLOGY

This work has proceeded along two tracks. The first has been gathering primary data through fieldwork and using existing corpora in the language to uncover grammatical facts. The second is the implementation of the analysis of these grammatical facts through a computational syntactic framework. I will address my methods for each part of this separately.

2.1 Gathering data in Nuuchahnulth

Before I began my project on serial verbs and the linker, I first learned enough Nuuchahnulth to become at least conversant in the language. I did this by reading the published literature (especially Sapir and Swadesh 1939), attending language learning classes in Port Alberni (many of them with my colleague, Amie DeJong), and direct study with Adam Werle, some of which was funded through summer Foreign Language and Area Studies (FLAS) fellowship. The language lessons I participated in were taught by Adam Werle and often included elders and native speakers who would assist, correct, and aid in teaching. It was through this venue that I first met fluent Nuuchahnulth elders.

In the summer of 2016, Adam and I traveled to Hot Springs Cove and collected texts from some Hesquiaht elders. On request, that data is not presented in this dissertation, but some of that work has informed my analysis, which I have confirmed with other speakers.

2.2 Data sources

I began learning and working with Nuuchahnulth at the start of 2015. Before I collected my own data, I looked at data from a variety of sources to generate appropriate questions. My sources were previous syntactic work on the language, especially Jaccobsen (1993), Nakayama (2001), Wojdak (2003), Waldie (2004), and Woo (2007a). I also relied on corpora published by linguists, especially the texts collected

by Edward Sapir and Alex Thomas and edited by Morris Swadesh (Sapir, 1924; Sapir and Swadesh, 1939, 1955; Sapir et al., 2000, 2004, 2007, 2009). The first collection of these texts was published in 1939 and entitled "Nootka Texts", the second collection in 1955 was entitled "Native Accounts of Nootka Ethnography", and the planned third and final volume was intended to be "Nootka Legends and Stories". Sapir passed on after the first volume and Swadesh passed on after the second, and the remaining work was published posthumously in several volumes beginning in 2000. This was after the exonym *Nootka* had been replaced by the endonym *Nuuchahnulth*, which caused changes to the titles of these publications. However, these volumes were also published with a subtitle indicating they are some numbered part of the "Sapir-Thomas Nootka Texts." The name "Nootka Texts" is thus ambiguous with respect to the first volume of this work or the work as a whole. In an attempt to differentiate, I will refer to the entire collection as either the "Sapir-Thomas Nootka Texts" or the "Sapir-Thomas texts", and reserve plain "Nootka Texts" for the first published volume. Matthew Davidson has digitized the first two volumes (Sapir and Swadesh, 1939, 1955) and has provided me access to it. Without this work, searching through the texts for grammatical constructions would have been much harder.

In addition to these resources, I looked at community-produced texts such as "Son of Thunderbird" and texts I received from linguists Adam Werle and Henry Kammler. The largest of these was an in-progress Bible translation Adam Werle and Sophie Billy were working on and several recordings Henry Kammler made with the late Barbara Touchie. I looked through these sources for examples of the phenomena I was looking for, annotated and cataloged them, and used some of these examples as prompts for speakers.

2.3 Elicitation methods

I spent January, February, and part of March of 2018 in Port Alberni working with native speakers and gathering data specifically for this dissertation. In that period of time I worked with Julia Lucas (Nuuchahnulth name *tupaat*, who is Hesquiaht by marriage but Ahousaht by birth, and speaks the central dialect), Bob Mundy (Uclueleht tribe, Barkley Sound dialect), Marjorie Touchie (Uclueleht tribe, Barkley Sound dialect), Fidelia Haiyupis (Ehattesaht tribe, northern dialect), and Sophie Billy (Checleseht tribe, Kyuquot-Checleseht dialect). I also present data I gathered earlier from Simon Lucas (Nuuchahnulth

name *yuułnaak*, Hesquiaht tribe, northern dialect), the late husband of Julia Lucas. I later spent much of March and April of 2019 in Uclueleht, working with the same speakers, and some of this work was funded by and the First Nations Education Foundation, who received copies of transcriptions and translations of the work they funded.

I have made an effort to make my work, especially my recordings and transcriptions, available to the communities I have worked with. Some of my work with Fidelia Haiyupis and Sophie Billy was funded by the Ehattesaht tribe, which has received copies of my notes and recordings. The Uclueleht Nation has received the notes and recordings I made with Bob Mundy and Marjorie Touchie. I have also made recordings and transcriptions available online to language learners. Some of this information is restricted to people who have the right password to access the folder. I take precautions not to collect data that is sensitive to audience restrictions, and so for most of these materials, password-restricted access is not done out of a concern with individuals' rights to view information, but with the fact that many of these materials are works in progress and I do not want possibly-inaccurate transcriptions to be disseminated widely among people who are lower-level language learners.

When working with speakers, I tended to work two to four hours at a time and tried to structure sections in three parts: grammatical questions and elicitations, vocabulary questions and clarification questions on existing texts, and text elicitation. The purpose of this was to avoid wearing speakers out with too many grammatical questions in a row, and to collect other important data. While there has been good primary linguistic documentation in Nuuchahnulth, particularly in Sapir and Swadesh (1939) and Rose (1981), there are many differences across the language's wide spread of dialects that remain undocumented and unknown. Although one of my speakers did not like giving lengthy texts, I was able to collect connected, fluent texts from all other speakers, which is a lasting artifact and can be used to answer questions beyond the scope of my dissertation. In total, I have about seven hours of recordings from my fieldwork, about three hours of which are texts that are continuous or mostly continuous Nuuchahnulth.

2.4 *Methods of elicitation*

I used eight methods of elicitation, the aim of which was to obtain the most natural Nuuchahnulth examples or grammatical judgments relevant to the phenomenon under investigation. Some methods worked better than others, although none of them worked all of the time. Anecdotally, I found that staying in Nuuchahnulth for longer periods of time helped more than anything else, although this was quite difficult. Only one of my consultants was literate in the language, and while she would correct my pronunciation sometimes by writing out a word, she preferred to work in an oral environment and have me read my notes back to her. These elicitation sessions then occurred in either a completely or nearly-completely oral context. All Nuuchahnulth speakers I worked with were bilingual in English.

2.4.1 *Describing images*

The aim of this methodology is to avoid the metalanguage (English) through the visual medium. The speaker is presented with a series of images and asked to describe what is going on using only Nuuchahnulth. One set I used was a series of photos I took of dogs at a reserve. The dogs are standing at a pier. They begin barking at the water. A boat approaches the pier. The dogs go up to meet the man in the boat, who pets them. The purpose of this was to elicit a few serial verb constructions, the equivalent of "The dogs are at the wharf" (locations are verbs in Nuuchahnulth), and "The man pilots the boat to the dock" (which would require two verbs). In addition to photo series, I also used hand-drawn pictures on index cards, and existing picture-story books.

I found this method occasionally fruitful but limiting. Sometimes (especially with my hand-drawn cards), speakers would spend a lot of time questioning what the picture was meant to represent. Even with photos, they wanted to know what to focus on: Who is the man in the photo, and who is he related to? While broad grammatical structures could be gathered this way, other methods were more fruitful for eliciting targeted phenomena.

2.4.2 *Answering questions*

Another way of getting natural speech is by asking questions to elicit the phenomenon. In this method, I would tell a short story and ask a question about what happened. I hoped to elicit a response that used the grammatical phenomenon I was investigating.

For instance, one of my setups was the following (spoken in Nuuchahnulth): "I saw two creatures come out of the forest. One was a dog, one was a wolf. The dog approached me. The other went back into the forest. He ran. It was the dog that approached me. What did the wolf do?"

The expected answer is "The wolf ran into the forest," which requires coordinating the two verbs 'run' and 'into the forest.' I had very low success rates with this kind of elicitation and quickly abandoned it. Speakers would select the most semantically salient verb, in this case 'into the forest,' and drop the other verb in the construction. For instance, one response I got to this prompt was (1).

(1) hitaaqƛ̓iʔaƛ̓ qʷayaċiik.

hitaaqƛ̓iƛ̓=!aƛ̓ qʷayaċiik

in.forest.MO=NOW wolf

'The wolf went into the forest.' (**T**, Fidelia Haiyupis)

I had similar issues with other question-answering. Speakers preferred to answer as succinctly as possible, which was not useful for the phenomena I was investigating. There may be a more fruitful way of using this kind of elicitation method, but I was unable to find it.

2.4.3 *Recording texts*

My fieldwork also involved recording fluent texts from Nuuchahnulth speakers. This work is a valuable endeavor in itself, but it also allows speakers to give examples of these phenomena in a fluent context. Both linker and serial verb constructions occur naturally in running texts, and in the relevant chapters I will give counts of grammatical phenomena in texts I collected as well as some historical texts.

2.4.4 *Rephrasing stories*

The typical person is interested in language as a means of communication and not a set of abstract grammatical rules. Rephrasing traditional stories or short narratives is one way of trying to get natural versions of grammatical phenomena, especially if the original requires them. I tried three forms of retelling: (1) asking a speaker to summarize in a few sentences a text I had previously gotten from them (in Nuuchahnulth); (2) asking a speaker to summarize my own story (in Nuuchahnulth and English); (3) asking a speaker to retell a traditional story they know.

I did not have good results with (3), but I did better with (1) and (2). Not every consultant I worked with had the patience to resummarize their own text, but those that did could be persuaded to give a few-sentence quick summary. For retelling my own stories, I told stories both in Nuuchahnulth and English. With Nuuchahnulth stories, speakers quickly got frustrated ("But you already said it"), so I got furthest by giving succinct stories in English and asked for a retelling in Nuuchahnulth. This unfortunately turned this exercise into something closer to a translation task, although the aim here was summarization and not direct translation. For example, "I like to walk in the forest in the mornings. There are lots of blue jays in the forest. They must like me, because they follow me around the forest. How do I describe my mornings?" The first part of the story has the opportunity for three coordinated expressions in a sentence: location, action, and time. The final part also has the possibility for two coordinated expressions: a location and an action.

2.4.5 *Forced choice*

Forced choice gives the speaker a few examples to choose from when trying to select the best way to describe something. This strategy was a mixed bag. Very frequently speakers would reject both, or offer a third way of saying it and refuse to choose between those presented. However, giving speakers a limited set of choices sometimes led them to describe what made one sentence bad, or why all sentences were bad. For example, speakers would say, "That way of putting it could mean something else." When presented with options, speakers were much more likely to volunteer reasons why a sentence was sounded bad.

For example, I presented speakers with a situation where I am being witnessed doing something by another party. I've left home to go after whales, and my wife sees me hunting while she is standing on the shore.

(2) ? ṅaacsaataḥ ɬuucmaakqas ʔuʔuʔiiḥ ʔiiḥtuup.

ṅaacsa=!at=(m)aˑḥ	ɬuucma=ʔak=qaˑs	ʔu-R.ʔiiḥ	ʔiiḥtuup
see.CV=PASS=REAL.1SG	woman=POSS=DEFN.1SG	X-go.after	whale

? 'My wife saw me going after a whale.'

(3) ? ṅaacsaataḥ ɬuucmaakqas ʔuʔuʔiiḥʔat ʔiiḥtuup.

ṅaacsa=!at=(m)aˑḥ	ɬuucma=ʔak=qaˑs	ʔu-R.ʔiiḥ=!at	ʔiiḥtuup
see.CV=PASS=REAL.1SG	woman=POSS=DEFN.1SG	X-go.after=PASS	whale

? 'My wife saw me going after a whale.'

In this case, my consultant Bob Mundy strongly rejected (3). This gave me evidence about the limits of "clitic spreading" (see discussion at the end of §3.1.3). Enclitics that sometimes copy across an utterance (like passive =*!at*) cannot spread into an embedded clause.

I also attempted to put together a list of sentences testing for ordering preferences. I presented the below to Checleseht speaker Sophie Billy.

(4) mamuukẇiɫsin hiɬ maatmaas.

mamuuk-ẇiɫs=(y)in	hiɬ	maatmaas
work-going.to=WEAK.1PL	be.at	house.PL

? 'We will work at Mahtmahs.'

(5) hiɬẇiɫsin maatmaas mamuuk.

hiɬ-ẇiɫs=(y)in	maatmaas	mamuuk
be.at-going.to=WEAK.1PL	work	house.PL

? 'We will work at Mahtmahs.'

Sophie Billy preferred (5). I believe both utterances are grammatical, but there is an overall preference to express locations first. I will go into more depth about this preference in Chapter 4.

2.4.6 Translation

I also used translation from English, which I consider a less preferable form of elicitation due to the possibility that the speaker will adopt English-like syntactic structures instead of Nuuchahnulth-like structures. However, some speakers were most comfortable with this kind of elicitation task, and it is easier to do. With one speaker, we worked slowly over a couple of sessions through an abridged translation of The Little Prince.

There were other, shorter versions of this kind of elicitation. For instance, "We are going to go camping. I want the children to help their mother. I want them to pack. I want them to carry the luggage. What should I tell them?" The purpose of this was to get a command form, which is always marked with overt second-position inflection, with a serialized verb construction where the verbs must necessarily share the command mood. The construction would minimally have two sequential verbs and perhaps the benefactive verb to express "for your mother."

2.4.7 Grammatical judgments

It is a cultural Nuuchahnulth value not to overtly correct people, and especially not to do so in public. While this is perhaps a good cultural practice for creating a healthy community, it is bad for linguists trying to learn what is and is not grammatical in a language.

Straight grammatical judgments—is this utterance a part of the language or not?—are necessary in linguistic descriptions. These are also necessarily linguist-constructed. I would put together these sentence myself, and ask about them. In my first few attempts, speakers would typically respond with "I suppose you could say it that way," or "I understand you." Even asking "Would you say that?" or "Am I saying it correctly?" speakers were typically hesitant to offer a correction unless the sentence was completely unintelligible.

The way I attempted to get around this was by asking speakers if what I said sounded like their dialect, like something they might say, and (most significantly) if they could repeat it. If a speaker consistently

would rephrase the utterance when repeating it, I took it to mean that my version was likely ungrammatical. If I gave an example sentence out of the blue, I tried to provide context. I often had the best success with getting clear judgments by rephrasing speaker utterances. I would add, remove, or move an element, and sometimes change the setup. Speakers were much more willing to give a firm yes or no in this context.

2.4.8 Constructing a sentence

There were many instances where I would ask speakers, "Can you think of a case where you would use this word?" I constructed this method on the fly, as speakers would reject examples I thought were grammatical, or I could not come up with a context that would elicit the construction I was looking for. In most of these cases, I was trying to get an example of a word with a linker morpheme attached (Chapter 5).

2.5 Data collation

I collated the examples of the grammatical phenomena I was interested in to create a database of examples. These examples came from a set of stories I had previously interlinearized, from a subset of stories in Sapir and Swadesh (1939), from my elicitation sessions with consultants, and from my transcriptions of texts I collected. I entered these examples into a spreadsheet that was tagged with the phenomenon that the example illustrated, and used this to find patterns in the grammatical data. To port this data to a test suite that the implemented grammar could run on, I simply ran a script that would generate a format readable by the implemented grammar.

2.6 Implementation through the DELPH-IN framework

My grammatical analysis has been through the DELPH-IN[1] framework, which is a computationally-implemented formalism of Head-driven Phrase Structure Grammar (HPSG, Pollard and Sag 1994) using Minimal Recursion Semantics (MRS, Copestake et al. 2005). My implementation is built on a base that uses the Grammar Matrix (Bender et al., 2002; Flickinger and Bender, 2003; Bender et al., 2010).

---

[1] `http://www.delph-in.net`

My first step was to answer the questionnaire on the Grammar Matrix webpage, which generates a baseline grammar in the DELPH-IN Joint Reference Formalism, known as 'TDL' for type description language (Copestake, 2002a). TDL is a series of declarative statements that describe grammatical types, and the Grammar Matrix is a database of common grammatical types across the world's languages. As an example type, in Fig. 2.1 I replicate a part of the TDL from the Grammar Matrix that describes the basic head-complement type.

Figure 2.1: TDL for *basic-head-comp-phrase*

```
basic-head-comp-phrase := head-valence-phrase & head-compositional &
              binary-headed-phrase &
  [ SYNSEM phr-synsem-min &
           [ LOCAL.CAT [ VAL [ SUBJ #subj,
                               SPEC #spec,
                               SPR #spr ],
                         POSTHEAD #ph,
                         HC-LIGHT #light ],
             LIGHT #light ],
    HEAD-DTR.SYNSEM [ LOCAL.CAT [ VAL [ SUBJ #subj,
                                        SPEC #spec,
                                        SPR #spr ],
                                  HC-LIGHT #light,
                                  POSTHEAD #ph ]],
    NON-HEAD-DTR.SYNSEM canonical-synsem ].
```

This type definition first states that the *basic-head-comp-phrase* type inherits all the constraints of *head-valence-phrase*, *head-compositional*, and *binary-headed-phrase*. I will gloss over what is present in these inherited types. It also adds to the constraints of the types it inherits from, stating that, minus the COMPS list (where complements are stored), the mother node inherits the VAL(ence) values of its head-daughter, and some other elements of its daughter's CAT(egory) values. The non-head-daughter is specified only to be some kind of syntactic-semantic item. A further type definition, *basic-head-1st-comp-phrase*, inherits from *basic-head-comp-phrase* and specifies what happens to the head-daughter's complements (Fig. 2.2).

Figure 2.2: TDL for *basic-head-1st-comp-phrase*

```
basic-head-1st-comp-phrase := basic-head-comp-phrase &
  [ SYNSEM.LOCAL.CAT.VAL.COMPS #comps,
    HEAD-DTR.SYNSEM.LOCAL.CAT.VAL.COMPS < #synsem . #comps >,
    NON-HEAD-DTR.SYNSEM #synsem ].
```

This code states that the non-head-daughter is identified with whatever the first thing is on the head-daughter's COMP(lement)S list, and the mother node's complements list is reduced by one. In the case where the head-daughter only has a complements list with one item on it, the value `#comps` above will be a null element, and the mother node will have an empty COMPS list. This means that the parent node is no longer looking for any complements. This process is called cancellation, and is how HPSG keeps track of the saturation of a verb's argument structure.

All of the above type specifications are from the Grammar Matrix, and part of the provided analyses when the system generates an output grammar based on a user's answer to questions. So far, *basic-head-1st-comp-phrase* says nothing about whether the head or non-head appears first. In my generated grammar, I have a *head-comp-phrase* that inherits from both the *basic-head-1st-comp-phrase* above, as well as the *head-initial* constraint, which simply says that the head is the leftmost element in the structure. Together with a few other constraints, this defines the basic head-complement type in my Nuuchahnulth grammar.

Once this output from the Grammar Matrix was generated, I could then develop my own, more complex syntactic analyses. For instance, I added a type which allows for a dropped subject (Fig. 2.3).

Figure 2.3: TDL for *nuk-head-opt-subj-phrase*

```
nuk-head-opt-subj-phrase := decl-head-opt-subj-phrase &
[ HEAD-DTR.SYNSEM [ LOCAL.CAT [ HEAD [ FORM finite,
                                       AUX + ],
                                 VAL.SUBJ < synsem-min > ],
                    NON-LOCAL.SLASH <! !> ] ].
```

This rule inherits from the *decl-head-opt-subj-phrase* rule in the Grammar Matrix. It further specifies that the node having its subject dropped (the head daughter) needs to be a finite auxiliary (which in

my grammar is how I specify second-position enclitics, §3.1.3), and that it has no gapped elements (an empty SLASH list). This rule definition is not generated by the Grammar Matrix.

I have limited the scope of my work in two major ways. Firstly, I am not modeling the morphophonology. There are two reasons for this. Morphophonology is theoretically separate from morphosyntax, and as a result of that assumption the DELPH-IN formalism is focused on the morphosyntax. Because this is a project modeling multi-predicate constructions, the morphophonology is also not the most relevant component of the grammar. What this means is that a sentence like *ʔuumaćukʼʷaƛaḥ quʔušin* 'I am talking about Raven' is represented in my grammar in its already-segmented form, "ʔu-L.maćuk =!aƛ=(m)aˑḥ quʔušin."

Secondly, I am not separating dialect features into different grammatical models. My data comes from many different dialects of Nuuchahnulth, which each have different morphemes and slightly different grammatical rules. In my grammar's lexicon, I have simply entered all dialect variations. This means that on generation, the grammar is happy to mismatch morphology from different dialects, which is an overgeneration. A larger project would catalog this information by dialect in a larger metagrammar which could then produce separate grammars targeting each dialect. While worthwhile, this project was set aside so I could focus on the multi-predicate constructions.

Development was done against multiple test suites of example sentences, which included both grammatical and ungrammatical examples. The three test suites I used are: (1) a basic test suite for basic grammatical sentences; (2) a test suite of serial verbs; (3) a test suite of linker constructions. For the first test suite, basic components of the grammar, I used simple example sentences from stories, sessions with consultants, and sentences I came up with but whose grammaticality or ungrammaticality I was very confident about. In the end, a lot of this test suite was sentences that I created. For the second and third test suites, the phenomena under investigation in this document, I used only grammatical examples from my elicitation and corpora work, and ungrammatical examples from my elicitation sessions. These came from my collated data (§2.5). All test suites were loaded into a `[incr tsdb()]` database (Oepen, 2001). This test suite of sentences could be run against each version of the implemented grammar and checked for changes to the parse coverage. Beyond parsing/not-parsing, each example sentence was tested for semantic faithfulness. Semantic validation had to be done manually, but regression tests

allowed for parsing results to be compared with previous iterations of the grammar rather than independently reverified every time the grammar changed. I report on the results of these tests in Chapter 6.

I have focused on the parsing component of the grammar. The biggest challenges in this task involved restricting dialect variation, as mentioned above, as well as restricting certain second-position elements which may recurse (an issue explored in more depth in Bender 2010). These issues do not affect the descriptive validity of the analyses presented.

The result of the implemented grammar is a series of files that describe lexical and grammatical rules, a lexicon, and a set of "trigger rules" for generation. The format for most of these files is TDL, a series of grammatical descriptions equivalent to HPSG attribute-value matrices. The regression tests in `[incr tsdb()]` (Oepen, 2001) are also outputted to readable databases which show the resulting coverage of the grammar run over test cases. All of these materials are available at `https://bitbucket.org/davinman/nuuchahnulth-grammar/`.

Chapter 3

THE BASIC CLAUSE

Before addressing the main theme of this dissertation, the multi-predicate constructions present in Nuuchahnulth, I will first give an overview of the language's basic clause structure and define some important terminology for lexical and syntactic distinctions present in the language. As with the following chapters, I will first give the data (§3.1), followed by my HPSG analysis (§3.2). I will begin with the predicate/participant distinction (§3.1.1, §3.1.2), an important syntactic split which roughly maps to how verbs and nouns are used in English, but subsumes many lexical categories in Nuuchahnulth. I will then give my understanding of the second-position clausal enclitics (§3.1.3), followed by another set of second-position elements traditionally understood to be suffixes (§3.1.4). Finally I will give an overview of the aspectual system (§3.1.5). In the HPSG analysis, I will give my implementation for these in the same order: the predicate/participant distinction (§3.2.1), the clausal second-position elements (§3.2.2), suffixing second position (§3.2.3), and aspect (3.2.4).

3.1 Data

3.1.1 Syntactic Predicates

Like many languages of the Pacific Northwest, Nuuchahnulth is predicate-initial and has a great deal of flexibility with respect to what parts of speech can be used predicatively (Sapir, 1911; Swadesh, 1938; Jacobsen, 1979). Because the term "predicate" and its associated derivations ("predicative" and so on) are often ambiguous between syntactic and semantic concepts, I have found that linguists often talk past each other when trying to describe the syntax of South Wakashan languages. Throughout this work I will use special vocabulary in an attempt to reduce this confusion.

I will reserve the word *predicate* to refer to the syntactic component that provides the main semantic relation of a clause and connects elements like subject and object to one another. In English, a syntactic

predicate must be verbal, as in (6,7). The verb *barks* serves as the predicate of (6), and has *the dog* as its subject. In (7), *is* serves as the predicate, connecting its subject *the grass* to its complement *green*. I will refer to the syntactic units that predicates connect as *participants*—this term encompasses both subject and complements. The sole participant of (6) is 'the dog', and the participants of (7) are 'the grass' and 'green'.

(6) $[\text{The dog}]_{\text{participant}}$ $[\text{barks}]_{\text{predicate}}$

(7) $[\text{The grass}]_{\text{participant}}$ $[\text{is}]_{\text{predicate}}$ $[\text{green}]_{\text{participant}}$

In contrast to *predicate* and *participant*, which are syntactic concepts, I will use *relation* and *argument* to refer to their correlates in compositional semantics. The *relation* is the atomic semantic unit that relates arguments to each other, typically represented with capital letters. For example, in (6), the English word *barks* has the relation BARK. Every semantically contentful morpheme has a relation, including syntactic participants (DOG, GRASS, GREEN).

Relations have some number of semantic *arguments*. For this definition of an *argument* I include every component of the relation. For example, BARK can be modeled with two arguments: the event of barking itself, and the barker. This could be represented in a Davidsonian manner (Davidson, 1967) as BARK(e, x). I distinguish relation itself BARK at least formally from the number and type of its arguments.[1] When I find it important to highlight the separation between the semantic relation and the number of its arguments, I may also refer to the relation as a *predicate symbol*.[2] This semantic scheme is a simplification of the fuller semantic framework that I will use later, Minimal Recursion Semantics (Copestake et al., 2005).

I have assumed two types of arguments so far: events (abbreviated e) and entities (abbreviated $x, y, z, \ldots$). Events have properties like tense, aspect, mood, and evidentiality. Semantically, I will assume that adverbs modify events. Entities (which I will also call referential indices, or referents) have properties like person, number, and gender. I will assume that adjectives modify entities. Another type of argument will

[1]Conceptually, it is plausible that the argument number and relation are intertwined. I am here only making a distinction formally.

[2]From terminology used by the DELPH-IN consortium. `http://moin.delph-in.net/ErgSemantics/Basics`

appear later when I turn to the specifics in the analytical framework I use, Minimal Recursion Semantics (Copestake et al., 2005): a *handle*, which I will abbreviate with h. Handles keep track of scopal properties: If two elements in the semantics have identical scope (with relation to quantifiers, for instance) they will share the same handle. I will omit this component of the semantics here, and simply talk about events and entities.

I have already said that the English predicate *barks* may be represented as a semantic relation with two arguments BARK(e, x). The syntactic participant *green* can be modeled in the same way: GREEN(e, x). The syntactic properties of *barks* and *green*—predicate vs participant—are separate from their semantic properties.

Though Nuuchahnulth has syntactic categories like verb, noun, and adjective (Jacobsen, 1979; Wojdak, 2001; Davidson, 2002; Inman and Werle, 2016b) any of these may function as syntactic predicate or participant depending on where they fall in the sentence. The terms "verb phrase," "noun phrase," and "adjective phrase" are valid insofar as they refer to a phrase headed by a verb, noun, or adjective, but they are not illuminating for determining syntactic roles, as any of these categories may be predicates.

In (8), the verb *ṅaacsiičiƛ* 'see' is serving as the clausal predicate, while *hałmiiḥa quuʔas* 'drowning person' is serving as a participant. In (9), the adjective *qʷaćał* 'beautiful' is the predicate of the sentence, while the noun *ḥaakʷaaƛ* 'young girl' is a participant. In (10) the noun *pisatuwił* 'gym' is the predicate and there are no participants. In this case, postposed *ʔaanaḥi* 'only' is a predicate-modifying adverb and not fulfilling any argument role of the relation GYM.

(8) ṅaacsiičiƛʔiš hałmiiḥa quuʔas.

ṅaacsa-iˑčiƛ=ʔiˑš hałmiiḥa quuʔas

see.CV-IN=STRG.3SG drowning person

'He sees a drowning person.' (**T**, Fidelia Haiyupis)

(9) qʷaćałʔiš ḥaakʷaaƛʔi.

qʷaćał=ʔiˑš ḥaakʷaaƛ=ʔiˑ

beautiful=STRG.3 young.girl=ART

'The young girl is beautiful.' (**C**, *tupaat* Julia Lucas)

(10) pisatuwiłma ʔaanaḥi.

pisatuwił=maˑ ʔaanaḥi

gym=REAL.3 only

'It's only a gym.' (**B**, Marjorie Touchie)

Descriptively, it is sufficient to say that nouns, verbs, and adjectives may all be clausal predicates in Nuuchahnulth, in the same way that English requires clausal predicates to be verbs. I believe that this data, along with evidence from participant clauses (§3.1.2), is sufficient to claim that common nouns semantically introduce events in Nuuchahnulth (Inman, 2018). I will give my method for modeling this in §3.2.1.

3.1.2 Syntactic Participants

Just as verbs, nouns, and adjectives may all be predicates, they may also all be participants. Example (9) showed a straightforwardly nominal participant, the noun and article *ḥaakʷaaƛʔi* 'the young girl.' However, verbs (11) and adjectives (12) may also serve as participants.

(11) ʔuḥʔiiš ʕiḥak kamatqukʔi.

ʔuḥ=ʔiˑš ʕiḥak kamatq-uk=ʔiˑ

be=STRG.3 cry.DR run-DR=ART

'The running one is crying.' (**C**, *tupaat* Julia Lucas)

(12) wik̓iičʔaał ƛ̓iixc̓us ƛaƛuuʔi.

wik=!i·č=ʔaał ƛ̓iixc̓us ƛaƛuu=ʔi·

NEG=CMMD.2PL=HABIT laugh.at.DR other.PL=ART

'Don't laugh at others.' (**C**, *tupaat* Julia Lucas)

As detailed in Jacobsen (1979) and Wojdak (2001), when an adjective or verb is used as a participant, as in (11, 12), the article *=ʔi·* is required to make the sentence grammatical. When the participant is headed by a common noun, as in (8), the article is optional. Proper nouns differentiate themselves from common nouns in that they may never take the article (Inman, 2018). They are also never in predicate position.

My analysis of these facts is that the article *=ʔi·* is in fact a relativizer like "what" or "who" in English that creates a participant from a notional predicate (Davidson (2002, p. 136), Inman (2018)).[3] Noun phrases may be relativized without the article, but other predicate phrases must be headed by the relativizing second-position article *=ʔi·*. That is, the semantics of the verb *kamatquk* 'run' and the noun *pisatuwił* 'gym' look like:

(13) $\textsc{run}(e, x)$

$\textsc{gym}(e, x)$

The event variable e allows for tense, aspect, mood, and evidentiality values (TAME). This e is also necessary for adverbial modification, which both verbs and nouns can undergo. However, when either type of word is used as a participant in the syntax, it is the entity variable x that is needed by the semantics. *=ʔi·* provides the relativizing function to accomplish this for all predicate types. Only common nouns may undergo this process without the overt relativizer *=ʔi·* attached. The analytical mechanisms for this will be addressed more fully in §3.2.1. Here, it is enough to say that verbs, adjectives, and common nouns are all semantically eventive. The predicate/participant distinction in the syntax reflects the accessibility of the event or entity variable: syntactic predicates may have their event accessed and modified, while syntactic participants may not, and instead expose an entity.

[3]This analysis is also derived from correspondence with Davidson and Werle, who noticed that *=ʔi·* is not only morphologically in the same position as mood portmanteaus but has also supplanted the third person definite mood in some dialects.

There is a strong tendency in Nuuchahnulth for each clause to have one overtly-expressed participant (Rose, 1981, p. 38) but if there are two participants expressed, they can come in any order. There is a preference in most dialects for VSO ordering (Jaccobsen (1993, p. 267), Werle, *p.c.*), and a preference for VOS in the Ehattesaht dialect (Werle, *p.c.*). This preference is not absolute, and to make the sentence unambiguous, speakers can use *ʔuukʷił* to mark any non-highest argument, i.e. objects and indirect objects (Woo, 2007a,b).

3.1.2.1 Participant Fronting

It is possible for speakers to move a participant in front of the predicate for focus, as in (14). This left-dislocated participant is notably outside the calculation for second-position inflection (§3.1.3).

(14) ƛ̓aaq ʔuʔaatamin, waaʔaƛweʔin quʔušin.

ƛ̓aaq ʔu-ʔaˑta=(m)in waa=!aƛ=weˑʔin quʔušin

oil x-lack=REAL.1PL say=NOW=HRSY.3 raven

‘ “We need *oil*,” said Raven.’ (**B**, Marjorie Touchie)

Wh-words and phrases also front, obligatorily, as in (15). In this case, the second-position enclitics attach to the wh-word, so this fronting is “inside” the second-position calculation.

(15) quṁaačłnik hił ċuumaʕaas.

quṁaa-čiˑł=nik hił ċuumaʕaas

how.many-day=PST.QUES.2SG be.at Port.Alberni

‘How many days were you in Port Alberni?’ (**Q**, Sophie Billy)

It is not only wh-words that front in this manner. Quantifiers tend to front as well. In the case where the fronted quantifier is part of a larger syntactic unit (for instance, as an participant of the non-highest-argument marker *-L.(č)ił*), the entire phrase is fronted along with the quantifier (17, cf. 16). In cases where a (non-nominal) phrase is fronted like this, it cannot appear outside the clausal clitics (18).

(16) haʔukquuʔaała ʔuušił haʔum.

haʔuk=quu=ʔaała ʔuuš-L.(č)ił haʔum

eat.DR=PSSB.3=HABIT some-DO.TO food

'He would only eat some things.' (**B**, Bob Mundy)

(17) ʔuušiłʔaała haʔuk.

ʔuuš-L.(č)ił=ʔaała haʔuk

some-DO.TO=HABIT eat.DR

'He ate some things.' (**B**, Marjorie Touchie)

(18) *ʔuušił haʔukquuʔaała.

ʔuuš-L.(č)ił haʔuk=quu=ʔaała

some-DO.TO eat.DR=PSSB.3=HABIT

Intended: 'He would only eat some things.' (**B**, Bob Mundy, Marjorie Touchie)

If a quantifier fronts without the enclitic complex, its interpretation is always as as a bare nominal, meaning 'something' or 'someone', and not quantifying anything in the sentence (19).

(19) ʔuuš ṅaacsamitsƛa hiłqḥ ṅačiqs.

ʔuuš ṅaacsa=(m)it=s=ƛaʼ hił-(q)ḥ ṅačiqs

some see.CV=PST=STRG.1SG=also be.at-LINK Tofino

'I also saw some at Tofino.' (**C**, *tupaat* Julia Lucas)

My analysis of these facts is to describe two types of fronting: (i) focus-fronting of participant nominals, which falls outside the calculation for second-position enclitics and adds focus information to a word; and (ii) non-focus quantifier fronting, which falls inside the second-position calculation, does not add focus, and fronts the entire phrase with the quantifier (here, the phrase headed by object-marking *-L.(č)ił*). Non-focus fronting does not mean that the word is necessarily not focused, only that its left-extracted position is not giving it focus. This is significant as, according to many analyses, wh-words

must be focused (Lambrecht (1996), Chapter 5). Table 3.1 gives the parts of speech that clearly undergo each type of fronting.

Table 3.1: Fronting properties of different words

	nouns	quantifiers	wh-words
Focus fronting	✓	✓	✗
Non-focus fronting	✗	✓	✓

3.1.3 Second-position clitics

The majority of clausal inflection in Nuuchahnulth is in a complex of second-position enclitics which attach to the first word of the clause, modulo left extraction (§3.1.2). Table 3.2 shows the ordering of the clitic complex, and is adapted from Werle (2015). A fuller list of these enclitics is given in Appendix B.3.

Table 3.2: Order of second-position enclitics

morph	=ʔaaqƛ̓	=!ap	=!aƛ̓	=!at	=uk =ʔak	=(m)it	=ʔiˑš =maˑ =ḥaˑ =∅ ...	=ƛ̓aˑ	=ʔaała	=ʔał
meaning	FUT	CAUS	NOW	PASS	POSS	PST	subject-mood portmanteaus	also	HABIT	PL

The subject-mood portmanteaus are the one required element of this complex, and "mood" refers to a heterogeneous complex of semantic information, including evidentiality (Jaccobsen, 1986; Waldie, 2012). The mood enclitic is the only obligatory part of this paradigm (Waldie, 2012, p. 33-35). The =∅ morpheme, which indicates the third-person "neutral" mood,[4] merits some special attention. While there is no phonological element associated with this inflection, all of the other enclitics appear in their typical order around where it would be. A predicate with no enclitic, or with one or more of the non-subject-mood enclitics (such as past, or habitual and plural) is always interpreted as being in the neutral

[4]Neutral means that there is no evidentiality information provided, or that the evidentiality claim of the previous clause carries over.

mood with a third person subject. I do not put a =∅ in my morpheme-segmented lines, except below in (23) to show that it is notionally present. The syntactic information about neutral mood and 3rd person subject has to come from somewhere and this can be modeled as a phonologically empty morpheme providing it. I address this more in the implementation section (§3.2.3).

The examples I have given so far have all shown this clitic complex attaching directly to the clausal predicate. However, it may also attach to preceding adverbial modifiers (20), conjunctions (21), and adpositions (22).[5] Likewise, the relativizing enclitic article (§3.1.2) may also attach to a preceding modifying adjective (23) and not directly to the head noun, as seen in (9).

(20) ẏuuqʷaaʔaqƛs ṅaačuk.

ẏuuqʷaa=!aqƛ=s ṅaačuk

also=FUT=1SG look.for.DR

'I will also look for it.' (**C**, *tupaat* Julia Lucas)

(21) ʔaḥʔaaʔaƛna huʔacačiƛ ʔaḥkuu.

ʔaḥʔaaʔaƛ=na· huʔa-ca-čiƛ ʔaḥkuu

and.then=STRG.1PL back-go-MO D1

'And then we came back here.' (**C**, *tupaat* Julia Lucas)

(22) ʔuukʷiɬẇiɬasaḥ haaʕin čims.

ʔu-L.(č)iɬ-ẇiɬas=(m)a·ḥ haaʕin čims

X-DO.TO-going.to=REAL.1SG invite.DR bear

'I'm going to invite bear' (**B**, Marjorie Touchie)

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[5]The claim that *ʔuukʷiɬ* in (22) is an adposition is somewhat controversial, and probably more dependent on framework than linguistic facts. Woo (2007a) analyzes this word as little-*v*, a category which does not exist in HPSG analyses. What this unit does is mark participants that fulfill a certain role with respect to the verb, similar to case-marking. An analysis that treats this particle as an adposition can generate the same set of sentences as a little-*v* analysis, and is necessary within the HPSG framework. In this model, non-agentive arguments may be realized by a Participant Phrase or an Adposition Phrase headed by *-L.(č)iɬ*. This means that in (22), the word *ʔuukʷiɬ* is an adposition phrase modifying the following (non-contiguous with *ʔuukʷiɬ*) noun *čims*. This adposition/little-*v* has the same complement non-adjacency properties of serial verbs (see §4.2).

(23) ṁuyaa ḥaa ƛaʔuuʔi maḥt̓ii.

ṁu-(y)a·(=∅) ḥaa ƛaʔuu=ʔi· maḥt̓i·

burn-CV(=NEUT.3) D3 other=ART house

'The other house was burning.' (**C**, *tupaat* Julia Lucas)

Every clause in Nuuchahnulth contains an enclitic, even if it is only the notional =∅ third person neutral enclitic. With the exception of participant fronting (§3.1.2.1), the enclitic always appears on the first word of the matrix clause, which is either the predicate or a preceding adverb or coordinator. I use this data to claim that the clitic complex is the syntactic head of the clause in Nuuchahnulth, and the clitic complex selects for a predicate complement. The second-position enclitic complex is then an auxiliary that inherits its valence (number of complements) from its predicate complement, and this predicate complement also provides the main semantic relation of the clause. Because of its second-position properties, the analysis of Nuuchahnulth clitics requires some special attention in HPSG (§3.2.2), but descriptively I can simply call the enclitic complex the head of the Nuuchahnulth clause.

One final fact about the clause worth mentioning is clitic spreading (Davidson, 2002, p. 254–255). The presence of a clitic *in situ* within the second-position complex is required. However, some of these clitics may appear multiply within a clause: first in the second-position enclitic complex, and then later on the predicate(s) of the sentence. This occurs in cases where there is a preposed adposition (24),[6] a preposed adverb (25, 28), a preposed quantifier (26),[7] or a clefting construction (27). In all these cases, there is a syntactic reason for the second-position enclitic complex to fall on something other than the main predicate of the clause, and some of the clitics then appear multiply: first within the second-position complex (obligatorily) and then later on the main predicate (optionally). To my knowledge, the only clitics that "spread" like this are *=!aƛ* 'now' (24, 25), *=!at* PASSIVE (26, 27), and *=!ap* CAUSATIVE (28). I will come back to how multiple instances of the valence-altering clitics *=!at* and *=!ap* function within serialization structures in §4.2.2.

[6]For the argument that *ʔuyi* is an adposition, see §5.2.2.

[7]In this instance the quantifier has a linker attached. The semantics of the linker will be addressed in §5.

(24) ʔuyi**ʔeƛ**na hawii**ʔeƛ** kaƛḥšiʔeƛquu.

ʔuyi=**ʔaƛ**=naˑ hawiiƛ=**!aƛ** kaƛḥ-šiƛ-LS=!aƛ=quu

at.a.time=**NOW**=NEUT.1PL finish=**NOW** be.light-MO-GRAD=NOW=PSSB.3

'We stop when it starts getting light.' (**C**, *tupaat* Julia Lucas)

(25) ẏuuqʷaa**ʔaƛ**weʔin ƛ̓iḥmaṁit ʔunaa**k̓aƛ** yaaqʷapakʔitq k̓ʷičiƛ.

ẏuuqʷaa=**!aƛ**=weˑʔin ƛ̓iḥmaṁit ʔu-naˑk=!aƛ yaqʷ-L.apak=ʔiˑtq k̓ʷi-čiƛ

also=**NOW**=HRSY.3 woodpecker X-have=**NOW** who-beyond=DEFN.3 stick-MO

'And also Woodpecker had his man who was best of all in marksmanship.' (**B**, Sapir and Swadesh (1939, p. 50))

(26) ʔuušḥ**ʔat**quus ṅaačuk̓ʷ**at**, ʔiiqḥuk̓um ʔanis weʔič.

ʔuuš-(q)ḥ=**!at**=quus ṅaačuk=**!at** ʔiiqḥuk=!um ʔani=s weʔič

some-LINK=**PASS**=PSSB.1SG look=**PASS** tell.DR=CMMD.GO COMP=1SG sleep.DR

'If anyone is looking for me, tell them I'm sleeping.' (**B**, Marjorie Touchie)

(27) ʔuḥ**ʔat**sʔał ʔumʔiiqsakqs ṁaẇaa**ʔat** ƛ̓iisuwił.

ʔuḥ=**!at**=s=ʔaˑł ʔumʔiiqsu=ʔak=qs ṁaẇaa=**!at** ƛ̓iisuwił

be=**PASS**=STRG.1SG=HABIT mother=POSS=DEFN.1SG bring.PF=**PASS** school

'It's my mother who brings me to school.' (**T**, Fidelia Haiyupis)

(28) ʔiqsił**ap**ƛ̓aa hinʔ**atap** ḥiiṅaakʔi.[8]

ʔiqsiła=**!ap**=ƛ̓aa hinʔ**atap** ḥiiṅa=ʔak=ʔiˑ

still=**CAUS**=also in.water.**CAUS** quartz=POSS=ART

'Again they put the quartzes under water.' (**B**, Sapir and Swadesh (1955, p. 60))

It is significant that in all the above examples, this syntactic doubling does not indicate any semantic doubling. In all of the examples, the unit that the second-position enclitic attaches to is not notionally

[8]Corrected to ḥiiṅaakʔi from hiinaakʔi.

compatible with the semantics of "now," or the application of a causative or passive.[9] That is, the examples here all show a strictly syntactic, not semantic, phenomenon.[10] This syntactic "doubling" is restricted to the clause in which the semantics of the morpheme apply. This can be seen in (29, 30) below, where the *=!aƛ* 'now' morpheme cannot be introduced in the subordinate clause, where it would alter the semantics in a bizarre or unintelligible way.

(29) ƛapatšiʔaƛs ʔucačiƛ c̓aʔakʔi.

ƛapat-šiƛ=!aƛ=s ʔu-ca-čiƛ c̓aʔak=ʔi·

think-MO=NOW=STRG.1SG X-go-MO river=ART

'I decided to go to the river.' (**T**, Fidelia Haiyupis)

(30) *ƛapatšiʔaƛs ʔucači**ʔaƛ** c̓aʔakʔi.

*ƛapat-šiƛ=!aƛ=s ʔu-ca-čiƛ=**!aƛ** c̓aʔak=ʔi·

think-MO=NOW=STRG.1SG X-go-MO=**NOW** river=ART

Intended: 'I decided to go to the river.' (**T**, Fidelia Haiyupis)

3.1.4 Second-position suffixes

Another set of second-position elements are suffix verbs (Kammler and Vajkonny, 1996–2014), which I will (somewhat anticipating my analysis) call second-position suffixes. Nuuchahnulth has a series of suffixing elements that attach to the leftmost item of their object. Although it is outside the scope of this dissertation, there is good independent reason to believe that these elements are suffix-like in the traditional sense, rather than clitic-like (Werle, 2007). Briefly, they are more tightly phonologically integrated into their root than the clausal clitics, they can attach to bound roots (the clausal clitics may not), and they occasionally produce unpredictable semantics. I will here simply assume their status as lexical suffixes with unusual syntactic properties, rather than phrasal clitics.

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[9]The possible exception to this is (24), if *ʔuyi* is understood as a full verb. As mentioned above, I believe it is an adposition.

[10]This is not the case under serialization, where causative and passive morphology may affect only one of the verbs (§4.2.2).

These elements have been the locus of a fair amount of recent linguistic research in Nuuchahnulth, significantly Waldie (2004), Wojdak (2005), and Woo (2007a). Each researcher has tended to present these elements using a different descriptive name—suffix verbs (Kammler and Vajkonny, 1996–2014), denominal verb suffixes (Waldie, 2004), affixal predicates (Wojdak, 2005), and second-position suffixes (Werle, 2007). My understanding is closest to Werle's, and I adopt his term "second-position suffix" as a description for the suffix class, although I will also use Kammler and Vajkonny's "suffix verb." It is my opinion that the reason for these differing terms and analyses has less to do with theoretical differences in researchers' approaches and more to do with the complexity of the phenomenon itself. I doubt any one approach to this component of Nuuchahnulth grammar has exhaustively covered the phenomenon, and neither will my small addition here.

Wojdak (2005, 2007) gives the most detailed account of the properties of these elements, analyzing them from within the Minimalist Program. She breaks them into two broad categories: affixal main predicates (in my terminology, verbs which take participant complements) and affixal auxiliary predicates (verbs which take a predicative complement). I think this split is correct (although I will add some more basic categories), but disagree with her overall account in at least one important way that is not attributable to our difference in framework. Wojdak claims that these suffixes are insensitive to the category they attach to, but are ordered through linearity effects (p.52–54) and that this is at root a syntactic and not morphological process. This claim captures a lot of good generalizations but I think it misses some complicating factors.

For instance, Wojdak claims (p.52–53) that the main predicate suffixes may attach to their nominal complement or a modifier of that complement (nouns, adjectives, quantifiers, wh- and relative pronouns). This is true, however these suffixes also routinely attach to adverbs (see 37 below), in which case the adverb is clearly modifying the suffix verb itself. She also claims that the auxiliary predicates do not take the root *ʔu-* (p.150), but this is not universally true of this class of suffixes, which enjoy a lot of lexical diversity (§3.1.4.2).[11]

[11]Her account of syntactic incorporation also has difficulty with idiosyncratic meanings, which one occasionally encounters with these suffixes. This is perhaps an unfair critique, however, as idioms are difficult for most syntactic theories, and these idiosyncrasies could be understood as idiomatic.

Wojdak attempts a full account for the incorporation properties of all these suffixes, and in particular gives an excellent account of their scopal properties. I have the luxury of only addressing this incredibly complex part of Nuuchahnulth grammar in passing to my main point. I will give the attachment properties of the main predicate suffixes (§3.1.4.1) and auxiliary predicate suffixes (§3.1.4.2) as I understand them and have modeled them, without staking a claim to the exhaustiveness of this analysis. Despite some differences in my analysis, I would point the interested reader to Wojdak (2005) for the most complete account to-date of these suffixes.

I break the second-position suffixes broadly into three categories: (i) main predicate suffixes (§3.1.4.1), which are transitive (and ditransitive) verbs that take participant (semantically referential) complements; (ii) auxiliary predicate suffixes (§3.1.4.2), which modify predicates (semantic events) whose subject they control; and (iii) location suffixes (§3.1.4.3), which Wojdak (2005) treats as a subtype of the main predicate suffixes, but I believe have some special properties. Finally, I note some suffixes which do not appear to fall under any of the above categories (§3.1.4.4) and may represent further diversity among this class. I am only intending here to give an overview of these categories with sufficient detail to help illuminate my later analyses of multi-predicate constructions.

3.1.4.1 Main predicate suffixes

The main predicate suffixes semantically relate referents (not events) to one another. They can be either transitive or ditransitive. That is, their basic semantic type is:

(31) RELATION$(e, x, y, (z))$

This includes relations such as HAVE, TAKE, FIND, GATHER/HUNT, CONSUME, and so on (expressed with *-naʼk*, *-L.!iƛ*, *-L.waƛ*, *-R.!iiḥ*, and *-!iis* respectively). The only ditransitive in this group that I know of is the suffix *-ayiʼ*, which expresses the relation GIVE.

I will use the suffix verb *-naʼk* 'have' to illustrate the syntactic attachment properties of these suffixes. Each sentence in (32–34) shows a longer direct object of 'have': song, two songs, two long songs. The suffix verb always attaches to the first element in the object.

(32) nuuknaaks.

nuuk-na·k=s

song-have=STRG.1SG

'I have a song/songs.' (**T**, *yuułnaak* Simon Lucas)

(33) ʔaƛanaks nuuk.

ʔaƛa-na·k=s	nuuk
two-have=STRG.1SG	song

'I have two songs.' (**T**, *yuułnaak* Simon Lucas)

(34) ʔaƛanaks ẏaaq nuuk.

ʔaƛa-na·k=s	ẏaaq	nuuk.
two-have=STRG.1SG	long	song

'I have two long songs.' (**T**, *yuułnaak* Simon Lucas)

Instead of attaching to a semantically contentful word, the suffix verb can attach to the empty root *ʔu-*, which I gloss as X. This morpheme does not add any semantics to the phrase, and *ʔu-* attachment is always the citation form of suffix verbs. In this construction, the object can either appear after the suffix verb (35) or be dropped (36). Syntactically, the second-position effect persists, if the *ʔu-* root is seen as part of the object, but carrying no semantic content.

(35) ʔunaaks ċiiqẏak.

ʔu-na·k=s	ċiiq-ẏak
X-have=STRG.1SG	chant-for

'I have a chant.' (**T**, *yuułnaak* Simon Lucas)

(36) ʔiiqḥiis ʔunaak.

ʔiiqḥii=s ʔu-naˑk

still=STRG.1SG X-have

'I still have it.' (**T**, Fidelia Haiyupis)

It is also possible for these elements to attach to an adverb. In this case, the adverb is always modifying the verb's event, as in (37).

(37) qiinaakitaḥ ʕiniiƛ.

qii-naˑk=(m)it=(m)aˑḥ ʕiniiƛ

long.time-have=PST=REAL.1SG dog

'I have had a dog for a long time.' (**B**, Bob Mundy)

This second position only has domain over the VP, and is separate from the clausal second position (§3.1.3). As seen already in (36), the clausal second position occurs separately from the second position of the suffix verb. I give two more examples of this clear separation in with a negator (38) and a conjunction (39).

(38) wiḱii ʔaanamaćuk ṗišaq ʔuyaqḥmis.

wik=!iˑ ʔana-L.maćuk.DR ṗišaq ʔuyaqḥ-mis

NEG=CMMD.2SG only-talk.about bad news-NMLZ

'Don't only talk about bad news.' (**C**, *tupaat* Julia Lucas)

(39) ʔaḥʔaaʔaƛs ʔuukʷiił yaqwiiʔakqs ƛiisyuu pikčas.

ʔaḥʔaaʔaƛ=s ʔu-L.(č)iił yaq-(t)wii=ʔak=qs ƛiis-yuu pikčas

and=STRG.1SG X-make what-do.first=POSS=DEFN.1SG mark-RS picture

'And then I made my first picture.' (**T**, Fidelia Haiyupis)

These suffixes typically cannot attach to verbs, as seen in (40,41). This makes sense if their semantics expect an entity and not event. With nouns and adjectives, syntactic incorporation incorporates a semantic entity (either that of the noun itself or of the adjective's modifyee). With verbs, there is no clear entity to compose with.

(40) *ciqnaak̓aƛʔiš huuʕiiʔatḥ

ciq-naˑk=!aƛ=ʔiˑš	huuʕiiʔatḥ
speak-have=NOW=STRG.3	Huuayaht

Intended: 'The Huuayahts have someone speaking.' (**C**, *tupaat* Julia Lucas)

(41) *ƛiḥnaak̓aƛʔiš hinasiƛ maatmaas haaʕinẇit̓as c̓išaaʔatḥ

ƛiḥ-naˑk=!aƛ=ʔiˑš	hinasiƛ	maatmaas	haaʕin-ẇit̓as	c̓išaaʔatḥ
row-have=NOW=STRG.3	arrive.at.beach.MO	house.PL	invite-going.to	Tseshaht

Intended: 'They had a rower arrive at the village to invite them to Tseshaht.' (**C**, *tupaat* Julia Lucas)

The reason I attempted the forms *ciqnaak* and *ƛiḥnaak* above is they both appear in the Sapir-Thomas Nootka Texts (Sapir and Swadesh, 1939, 1955). My consultant Julia Lucas decided that *ciqnaak* must be the equivalent of the modern word *ciqḥsii* 'speaker' and corrected *ƛiḥnaak* to *ƛiḥaas*. Below are examples of the words as used in the Sapir-Thomas texts. ∅

(42) ciqnaak̓aƛ ʔaḥʔaa ẏuuqʷaa huuʕiiʔatḥ.

ciq-naˑk=!aƛ	ʔaḥʔaa	ẏuuqʷaa	huuʕiiʔatḥ
speak-have=NOW	DTOP	also	Huuayaht

Intended: 'The Huuayahts have someone speaking.' (**B**, Tom Sayaač̓apis Sapir and Swadesh (1955, p. 169))

(43) ʔaḥʔaaʔaƛ ƛiḥnaaḱaƛ hinatimyisnaḱaƛ hitaqƛiłʔatḥʔi maatmaas

ʔaḥʔaaʔaƛ	ƛiḥ-naˑk=!aƛ	hinatimyis-naˑk=!aƛ	hita-!aqƛ-°ił-ʔatḥ=ʔiˑ
and.then	row-have=NOW	invite-have=NOW	EMPTY-inside-at.beach.DR-live.at=ART

maatmaas

village

'Then they had someone go in a canoe to invite the tribes of the inside region.' (**B**, Tom Sayaačapis Sapir and Swadesh (1955, p. 297–298))

I believe that the *-naˑk* form here has different lexical properties from the *-naˑk* form discussed above that is in use in the modern language. The *-naˑk* seen in (42,43) has the meaning of *subject have someone do X on subject's behalf*. It appears to be productive, as it also occurs on *hinatimyis* 'invite' in (43), and a few other forms as well in the Sapir-Thomas texts. This is a very interesting form of suffix verb, but between the semantic difference and the fact that it is unrecognizable to contemporary speakers I've worked with, I believe that this is a case of two separate lexical meanings of a suffix. I think that the rest of my (and Wojdak's) analysis for main predicate verbs, where verbal roots are generally not seen, still holds.

Despite the general rule in the modern language that main predicate suffixes do not attach to verbal roots, some in fact do, but this yields unpredictable semantics. For instance, the suffix *-L.!iƛ* 'take' can idiosyncratically attach to the verb root *ṅikʷ-* 'claw' to yield *ṅiiḱʷiƛ* 'take by clawing.' This does not describe two actions: a clawing event, and then a taking event, but one event of seizing in talons or claws. This instrumentative reading is unpredictable and does not occur productively. Another example is the suffix *-(y)uʔał* 'see', which I have most commonly encountered attaching to the verb root *ṅač-* 'look' to

form *ṅačuʔał* 'see (esp. a person).'[12] This lexical doubling 'see-see' is again unpredictable. I treat all these cases of verb attachment as unanalyzable, single lexical items.

This class of suffixes also attaches to bound root forms, when available. This can be seen in words like *quuʔac-iic* 'belonging to a Native person,' where the bound root form *quuʔac-* 'person' is used instead of the free form *quuʔas*. This also occurs with *łuč-naak* 'have a wife,' where the bound root form *łuč* 'woman' is used instead of the free form *łuucsma*. If a word does not have a special bound form, the free form is used.

The first class of second-position suffixes, then, are transitive and ditransitive verbs that take entities or referential (not eventive) arguments. They attach to the first element of their complement, either the noun itself or a modifying adjective, or they may attach to the semantically empty root *ʔu-* and take complements in the normal manner. They may also attach to an adverb, in which case the adverb modifies the semantics of the suffix verb itself. They do not generally attach to verbs, but when they do it is lexically specific and the result is semantically unpredictable.

3.1.4.2 Auxiliary predicate suffixes

The second class is auxiliary predicate suffixes. These tend to have modal or modal-like semantics (see Waldie 2012, p. 29–30,71–77), and relate an event an entity. That is, the basic semantics are given below.

(45) RELATION(e, x, $e2$)

They are also all subject control verbs (Wojdak, 2005, p. 160): the subject of the auxiliary predicate must match the subject of the predicate's complement. This means that the $x1$ of the relation above is always

[12]Though less common, is possible for *-uʔał* to attach in the "normal" way of a suffix verb as well, as in (44).

(44) ʔiiḥuʔałitaḥ quuʔas ʔukłaa Adam.

ʔiiḥ-(y)uʔał=(m)it=(m)aˑḥ	quuʔas	ʔu-(k)łaˑ	Adam
big-see=PST=REAL.1SG	person	x-call	Adam

'I saw a big person named Adam.' (**B**, Marjorie Touchie)

identified with the (possibly passivized) subject of the verb introducing *e2*.

Syntactically, these suffixes behave in some similar ways to the transitive verb suffixes and exhibit second-position syntax with respect to their object. As I used *-naˑk* to exemplify the main predicate suffixes, I will use *-maḥsa* 'want to do' to exemplify the auxiliary predicate suffixes. The most straightforward way to use these suffixes is to attach them to a verbal predicate, as in (46). This class of suffixes are subject control verbs, and so the subject of the wanting event in (46) is the same as the subject of the grabbing event.

(46) hišuk̓aƛ̓ čaakupiiḥ sukʷiƛ̓maḥsa ḥaa ṗaacsaćumʔi

hišuk=!aƛ̓ čaakupiiḥ su-kʷiƛ̓-maḥsa ḥaa ṗaacsaćum=ʔiˑ

all=NOW man.PL hold-MO-want.to.do D3 football[14]=ART

'All the men want to get that *ṗaacsaćum*.' (**C**, *tupaat* Julia Lucas)

Like with the main predicate suffixes, this class of suffix can also attach to an adverb. It modifies the whole expression, as in (47).

(47) ʔaanimaḥsas waa ʔin čamiḥtaʔaƛ̓ni ʔiiḥʔiiḥa ...

ʔaani-maḥsa=s waa ʔin čamiḥta=!aƛ̓=niˑ ʔiiḥʔiiḥa ...

really-want.to.do=REAL.1SG say COMP proper=NOW=NEUT.1PL do.something.important ...

'I really want to say that we are doing something important ...' (**T**, *yuułnaak* Simon Lucas)

It is much less common, but these suffixes can attach to a non-verbal predicate. I found one example of *-maḥsa* attaching to a noun in the Sapir-Thomas texts (48). In this case, the non-verbal element *ḥaẇił* 'chief' is being treated predicatively and eventively: 'be a chief (i.e. wealthy)' and not 'a chief.' I take this as corroborating evidence of the inherent eventiveness of common nouns (§3.1.1).

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[14]A *ṗaacsaćum* is not quite a football. It is a ball that is used in a certain kind of *tupaati* competition. The object is for competitors to seize the ball and lift it above their head.

(48) ʔuunuuƛitaḥ ʔaḥkuu ḥaẇiłmiḥsa waaʔaƛ̓.

ʔuunuuƛ=(m)it=(m)a·ḥ ʔaḥkuu ḥaẇił-miḥsa waa=!aƛ̓

because=PST=REAL.1SG D1 chief-want.to.do say=NOW

' "It was because of this that I wanted to be wealthy (= a chief)," he said.' (**B**, Tom saayaačapis, Sapir and Swadesh (1955, p. 25))

Unlike the main predicate suffixes, these suffixes attach to the empty root *ʔu-* only idiosyncratically, and when they do they may have a default interpretation. The suffix *-maḥsa* happens to be one that does attach to *ʔu-*. In the absence of an object, *ʔumaḥsa* has the interpretation of wanting someone sexually.

(49) ʔiiqḥuk̓aƛ̓ hišuk maʔas ʔin ʔumaḥsiičiƛ̓.

ʔiiqḥuk=!aƛ̓ hišuk maʔas ʔin ʔu-maḥsa-i·čiƛ̓

tell.DR=NOW all village COMP X-want.to.do-IN

'He told the whole village that he wanted her (as his wife).' (**C**, *tupaat* Julia Lucas)

Other suffixes I put in this category, however, cannot take the *ʔu-* root, despite otherwise behaving in a similar manner to *-maḥsa*. This includes *-ẇit̓as* 'going to do', *-L.sinḥi* 'try to do', and *-qa·tḥ* 'claim, pretend.' I treat the *ʔu-* attachment of these event-taking suffixes as lexically specified.

Auxiliary predicate suffix verbs semantically modify a complement that is an event. Typically this means they syntactically attach to a verb (46), but they can modify the event properties of other predicates (48). These suffixes exhibit the same second-position properties of the main predicate suffix verbs, and may attach to a modifying adverb (47). They only idiosyncratically attach to the root form *ʔu-*.

3.1.4.3 Location suffixes

I believe there is a separate category of second-position suffixes, which is location suffixes that relate a figure to a ground. This includes *-ćuʼ* 'inside a container' and *-!as* 'outside.' These suffixes freely attach to both nouns and verbs, and for both they modify the location, either the location of the noun (e.g., *ʔink* 'a fire' and *ʔink̓ʷas* 'a fire outside') or the location of the verb (e.g., *pisat-* 'play' and *pisat̓as* 'play outside').

It is possible that these may be simple event modification, since nouns are eventive (§3.1.1), and collapsible with auxiliary predicate suffixes. However, there are further differences. Locative suffixes also tend to attach the the empty root *hita-* or *hina-*, instead of *ʔu-*, as in *hitaas* 'outside'. But they also sometimes attach to *ʔu-* as well, as in *ʔućuu* 'inside (something).' I do not have an analysis for this, and leave description of the locative suffixes for future work. I have not analyzed these suffixes in my implemented grammar.

3.1.4.4 Other categories

With the possible exception of the location suffixes, all these categories so far are eventive. The main predicate suffixes relate two referential arguments, but are themselves events that can be modified by an adverb, and behave as a predicate in the syntax (§3.1.4.1). The auxiliary predicate suffixes relate a referent and an event, but are events in their own semantic representation and are syntactic predicates (§3.1.4.2).

There appear to be a few suffixes that are treated as participants in the syntax, or at least ambiguously predicate or participant, as is the case for common nouns. This category, if it exists, may only consist of *-ẏak/čak̓* 'for, used for' and *-ʕaƛ* 'the sound of.' These endings can be placed on verbal suffixes, such as *pisat-* 'play' to form a noun, *pisatẏak* 'manner of play', or complex roots to form a more complex noun, as in *pikčas-ću* 'pictures-inside' to form *pikčasćuẏak* 'television.' However they can also be used with the empty root *ʔu-*, as in the following sentence, taken from a recording of the late Barbara Touchie by Henry Kammler:

(50) ʔaanačiłsamaḥ ḥamaṭap hiłukʷitii maamaḥṭi ʔuẏak mamuʔasṁinḥʔi, shacks ʔukłaamit.

ʔana-L.(č)ił-LS.sa=(m)aˑḥ	ḥamaṭap	hił=uk=(m)it=ii	LR-maḥṭiˑ	ʔu-ẏak
only-DO.TO-AUG1=REAL.1SG	know	be.at=POSS=PST=WEAK.3	PL-house	X-used.for

mamu-!as-ṁinḥ=ʔiˑ	shacks	ʔu-(k)łaˑ=(m)it
work-outside.DR-PL=ART	shacks	X-call=PST

'The only thing I remember is they would go to the houses used for working outside, called shacks.' (**B**, Barbara Touchie)

There is also the ending *-ckʷiˑ* 'evidence, remains of,' which can attach to bare roots to form nouns (Jaccobsen, 1986, p. 20–22), such as *yacckʷii* 'footprint' from *yac-* 'walk', but which can also attach to fully inflected predicates and create a predicative meaning (Waldie, 2012, p. 73–75), such as *haẃiiqƛckʷiʔiš* 'they must have been hungry' from *haẃiiqƛ* 'be hungry.' It is possible that *-ckʷiˑ* is ambiguously a participant-forming suffix or an auxiliary predicate suffix, or that it belongs to another class altogether. As with the locatives, and as with *-ẏak/čak* 'for' and *-ʕaƛ* 'the sound of,' I do not have an implemented analysis for this category, nor know how many suffixes belong to it.

3.1.4.5 Note on adpositions

I will make an argument later on that some of the main predicate suffixes are best modeled as adpositions (§5.2.3). Most importantly, this will include the object-marking *-L.(č)iɬ*, which Woo (2007a) analyzes as little-*v* within the Minimalist Program. The reason I use the term 'adposition' rather than little-*v* is largely theory-internal: There is no such category as little-*v* within HPSG, and I need to account for the grammatical phenomenon somehow. We are describing the same data, and I don't think this difference in framework makes any difference in empirical claims. Anticipating the need for prepositional suffixes, I will simply note that the way I treat *-L.(č)iɬ* will not differ greatly from how I treat ordinary main predicate suffixes except that the type of the phrase will be defined as an *adposition* rather than *verb*.

3.1.5 Verbal aspect

Finally, I will sketch the aspectual system of Nuuchahnulth and my understanding of it. Sapir and Swadesh (1939, p. 240–241) analyze the aspect system as containing twelve forms. Below, I repeat their examples based on the verbal root *mitxʷ-* 'turn' from Sapir and Swadesh, transliterated into the modern orthography.

1. Durative *mitxʷaa* — 'turning about, circling'
2. Inceptive *mitxʷiičiƛ* — 'to start turning about'
3. Graduated Inceptive *miitxʷičiƛ* — 'starting to turn about'

4. Pre-inceptive *miitxʷičiƛšiƛ* — 'to start starting to turn about'
5. Inceptive iterative[15] *miitxʷičiił* — 'to start turning about at intervals'
6. Repetitive *miitxmiitxʷa* — 'turning round and round'
7. Repetitive inceptive *miitxmiitxšiƛ* — 'to start turning round and round'
8. Momentaneous *mitxšiƛ* — 'to make a circuit, turn'
9. Graduative *miitxšiƛ* — 'making a circuit, turn'
10. Pre-graduative *miitxšiƛšiƛ* — 'to start making a circuit, turn'
11. Iterative *mitxmitxš* — 'to make a circuit, turn at intervals'
12. Iterative inceptive *mitxmitxššiƛ* — 'to start in on a spaced series of circles, turns'

Several of these aspects are composites. The only unitary aspects in this list are: durative, inceptive, repetitive, momentaneous, and iterative. The graduative (a long-short template, or LS) may be applied to inceptive and momentaneous forms, and the momentaneous may apply to any of the forms that do not terminate with a momentaneous or inceptive aspect.

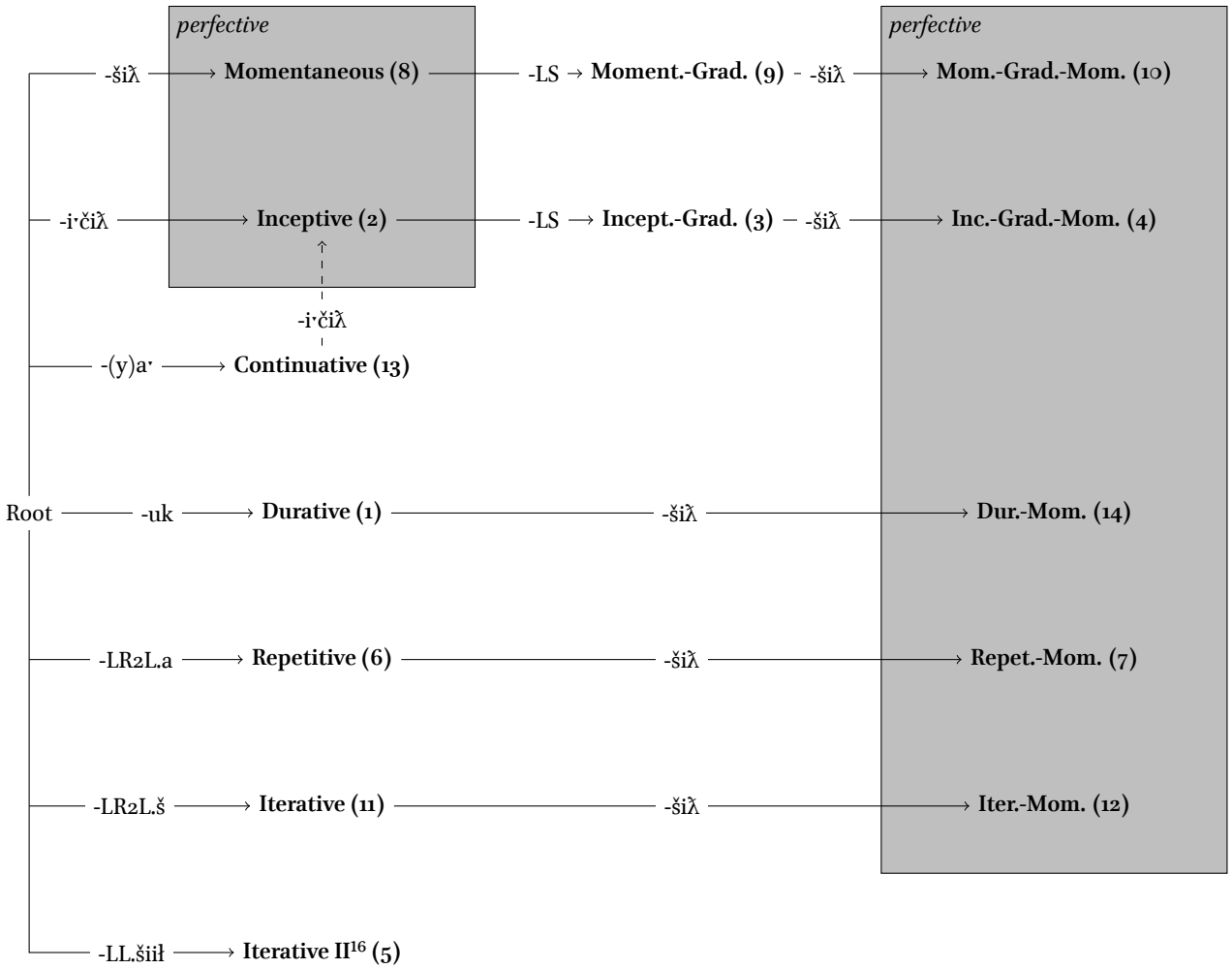
In her dissertation, Rose (1981, p. 263–269) splits Sapir and Swadesh's durative category into two: a durative aspect (marked with -ak or -uk) and a continuative aspect (marked with a -(y)aˑ). This distinction was continued in both Nakayama (2001) (p.26–27) and Davidson (2002, p .232–237). Davidson describes the durative as expressing 'intransitive imperfective state' or 'imperfective process,' and follows Rose in analyzing the continuative as a dynamic situation, in the sense that energy input is necessary to continue the action. At least in Davidson's version, the continuative can go on to take the inceptive (p. 246) and although he does not give it in his aspect chart, the durative can go on to take the perfective (p. 155).

Taking this system as a baseline and the 'traditional' view, the number of total possible aspects increases to 14, and a flow chart of aspect forms looks like Fig. 3.1. The nodes in the figure are fully inflected aspectual forms (save for the leftmost startfing node, which is an aspectless verbal root), and the lines show the basic allomorph that is added to the stem to create a new aspect form. Not every root takes

[15]This form is rare in the modern language and complex. I will not give it much attention, but it is discussed in detail as the "Iterative II" in Davidson (2002, p. 242–244), where he claims that it is not inceptive but merely a formal alternate to the typical iterative.

every form, but if one basic aspect form is possible (e.g., the repetitive) then the forms after it are possible (e.g., the repetitive momentaneous). I have regularized the naming conventions somewhat from Sapir and Swadesh, and in the graph give next to each aspect form a number affiliating it with their list repeated above. Number 13 is for the continuative aspect and 14 is for the durative-momentaneous. A box is drawn around perfective forms.

Figure 3.1: Traditional verbal aspect flowchart, based on Sapir and Swadesh (1939)



[16]The account of the Iterative II in Davidson (2002, p. 242–244) has the morpheme derived from the momentaneous form, not the root. The process is: change the final *ƛ* to a *ł*, and lengthen the first two vowels and the last vowel. He also notes (p.243) that some forms add the ending *-!aał* instead and apply the template. I believe that this *-!aał* is almost certainly derived from

In this schema, which is the one I have implemented in my grammar (§3.2.4), the continuative and inceptive are unusual aspect types. The inceptive can either go on the bare root or the continuative (but not other aspects), and the continuative is the only basic imperfective aspect form that can neither take the momentaneous *-šiƛ* nor the graduative.

Adam Werle has convinced me (*p.c.*) that this view is inaccurate, and that the "inceptive" is in fact the same as the momentaneous. The *-iˑčiƛ* form is simply the form that the momentaneous takes under certain morphophonological conditions, namely: (1) after the continuative; (2) on monosyllabic roots that have a coda. In the limited tests I did with consultants, this appears to be correct. There are a small number of verb roots that can take both an inceptive and a momentaneous-graduative, but not a bare momentaneous aspect. In the cases I tested, speakers were convinced that the momentaneous-graduative and inceptive forms had exactly the same meaning. One example is the root *muł-* which refers to the tide coming up. The continuative *mułaa* means 'tide coming up' while speakers tend to translate *muułšiƛ* as 'tide is coming in,' insisting this is distinct from *mułaa*. The word *muułšiƛ* looks like a momentaneous-graduative (with a lengthened first vowel), but speakers said there was not a word **mułšiƛ*, which would be the bare perfective.[17] I asked if there existed a word *mułiičiƛ* and both speakers I asked (Fidelia Haiyupis, northern dialect, and Bob Mundy, Barkley sound dialect) said yes, and insisted it had the exact same meaning as *muułšiƛ*. This follows from Werle's understanding of the *-iˑčiƛ* form as the momentaneous applying after a continuative (*mułaa* + *-iˑčiƛ* = *mułiičiƛ*).

There is also the fact that there are certain monosyllabic, closed syllable roots which always take the *-iˑčiƛ* and never *-šiƛ*. These forms are idiosyncratic and have to be learned. For instance, the perfective form of the negator *wik* is *wikiičiƛ* and never **wikšiƛ*. Likewise the adjective *ƛ̓ac* 'fat' becomes *ƛ̓aciičiƛ*

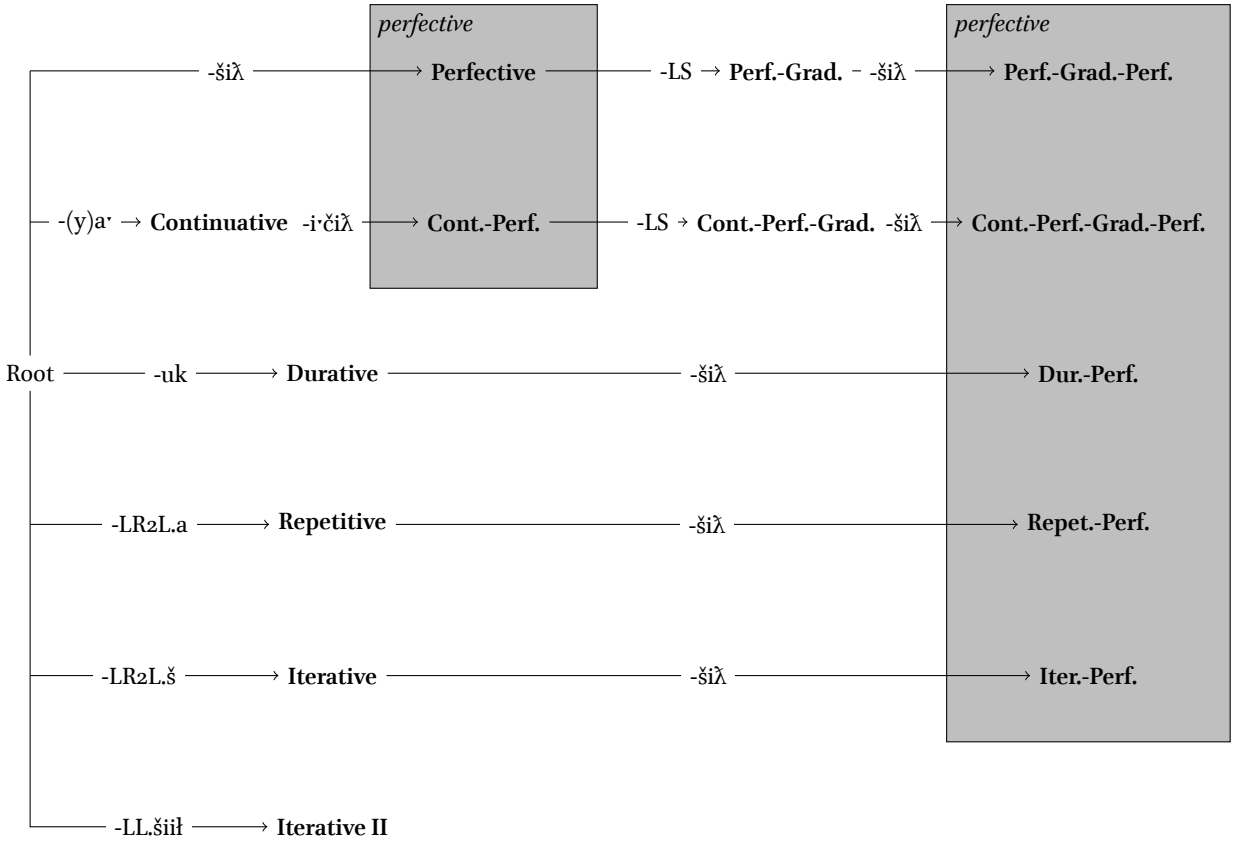
=!aƛ 'now.' This complex derivation process is probably correct (as the incorporation of frequent enclitic *=!aƛ* into the process shows), but to show Iterative II morphology in a linear fashion, this derivation can be represented as a template (LL) + the segmental morphology of a lengthened and mutated momentaneous form (*-šiił*, *-čiił*, etc., and the irregular *-!aał*).

[17]There exists a fairly large number of verb forms that have what looks like a graduative template (LS) but do not seem to have any graduative meaning, and the template cannot be removed. As far as I know this only happens with momentaneous (or perfective, as I will call it below) forms and durative forms. *muułšiƛ* 'tide coming in' belongs to this group of perfective forms that include a LS template. It is joined by *yaacšiƛ* 'walk' from the root *yac-* 'walk', and *tuupšiƛ* 'become dark' from *tupk-* 'black.' The durative forms with an LS template include the *yaacuk* 'walking' also from the root *yac-* 'walk,' *šiiƛuk* 'move house' from *šiƛ* 'move,' and *ƛiiḥak* 'paddling' from *ƛiḥ* 'paddle.' In my implementation, I simply treat these as irregular verb forms, but more work needs to be done to understand why this lengthening template applies to these particular roots.

'become fat' and not **ƛ̓acšiƛ*, and *ʔuḥ* 'be' becomes *ʔuḥiičiƛ* 'become', not **ʔuḥšiƛ*.[18] According to this analysis then, the "inceptive" is not a unique aspect form but a morphophonologically conditioned alternate of the so-called momentaneous. This collapse makes the aspect system of Nuuchahnulth look a little more typical of languages around the world. There is a perfective aspect, marked with a large number of allophones but chiefly *-šiƛ* and *-iːčiƛ*, and then a variety of imperfective aspects (repetitive, iterative, durative, continuative, and graduative). Certain verb stems that are perfective may take the graduative (once) to become imperfective, and imperfective verb stems may take the perfective *-šiƛ*. This simplified view is summarized in (3.2) below.

[18]It is tempting to assume *ʔuḥ* 'be' is the result of the empty root *ʔu-* plus some following element yielding the *-ḥ*. This may historically be the case but there's no evidence for any *-ḥ* suffix in the contemporary language. The linker suffix *-(q)ḥ* (see Chapter 5) is the closest element phonologically and semantically. However, if this were the etymology of the word, we would expect unattested **ʔuqḥ*, not *ʔuḥ*. If *ʔuḥ* is derived from the empty root *ʔu-* plus some suffix, its origins are obscured. In any case, in the modern language the word is monomorphemic.

Figure 3.2: Revised verbal aspect flowchart



Despite this revised analysis, most of my work was done under the traditional understanding of the aspect system (Fig. 3.1), and I will continue to use the inceptive marking IN in this document. When I turn to the implementation, I will describe the implementation of an aspect system that includes the inceptive (§3.2.4).

3.2 HPSG Analysis and Implementation

I will now go over how I have modeled the described syntactic facts about clauses in my implemented grammar within the Head-driven phrase structure grammar (HPSG) formalism (Pollard and Sag, 1994). I tested this implementation through use of the DELPH-IN joint reference formalism (Copestake, 2002b) and the Grammar Matrix typological database (Bender et al., 2002). Though the framework I use is particular, much of this analysis should be intelligible to people working in other frameworks. For those

more familiar with other syntactic formalisms, I will attempt to give some basic guidance to decoding the formalism.

In HPSG, each node in a tree is a large attribute-value matrix defining the properties of the node (this includes leaf nodes or words). Attributes are things like HEAD and a value may be something like *noun*. This is written as [HEAD *noun*]. Values can be a simple atomic symbol or they can be another attribute-value matrix. For instance, *noun*, which is a possible value for HEAD, is itself a matrix with further information inside it, such as [FORM *finite*]. HPSG is dedicated to fidelity to the surface string order, and there is no movement. Syntactic relations are described through valence lists present at each node in the tree. The two most common of these lists are SUBJ (subject) and COMPS (complements). As the tree is constructed, information is added to (or more precisely, unified with) SUBJ and COMPS values, which is how valence information is preserved. Long-distance dependencies which in other theories are modeled through movement are here modeled by moving a valence item from the SUBJ or COMPS list into a SLASH list, which propagates up the tree until the extracted element is found.

In addition to the matrices defined for each lexical entry, phrase structure rules (PSRs) have to be defined for each possible ordering. So there may be a *head-complement-rule* which defines how a head node combines with a non-head node to its right. This is analogous to *merge* in Minimalism, although in HPSG the rules about which merges are allowed are specified within each PSR and using the same attribute-value structure formalism as in lexical specification. A PSR may specify that one of its daughters has to have a certain property: for instance, when discharging a long-distance dependency, the head daughter should have something on its SLASH list, and the non-head daughter needs to have properties consistent with what the head daughter says about the item on its SLASH. This unification is indicated through reentrencies (drawn as boxes with the same label) which specify that two items in the attribute-value matrix are in fact the same.

In another case, a PSR might say that its head daughter needs to be [HEAD.AUX +]. In this case, that rule cannot operate on a node that is defined as [HEAD.AUX –]. However, HPSG allows for values to be underspecified. A node may not know if it is an auxiliary or not, in which case it is simply [HEAD.AUX

bool].[19] A node of this type can unify with PSRs that require [AUX +] and [AUX –]. However, once it goes through that kind of rule, its AUX value is set. This is how the framework allows words and even phrases to be used in different ways in different syntactic positions. Complex forms of type hierarchies are important to unification in HPSG. While the type *bool* only has two subtypes, + and –, the types available to *aspect* may be far more complex, which then allows for more complex types of underspecification and unification.

My grammar is built on top of analyses present in the Grammar Matrix (Bender et al., 2002), and where possible I reuse distinctions and analyses present there. In particular, I use some of the features defined in the Grammar Matrix (like PRD, AUX), and inherit from generic phrase structure types like *decl-head-subj-phrase* and *basic-unary-phrase*. I will not expect familiarity with all these pre-defined types, and will attempt to give in my diagrams here all the relevant components of rules and type definitions, including those that are defined in the Grammar Matrix. However, most descriptions given here are subsets of full descriptions present in my implemented grammar, which can be found at `http://bitbucket.org/davinman/nuuchahnulth-grammar/`. I will not go over every analysis here, but only those I believe are the most significant for later discussion: the predicate and participant distinction (3.2.1), the second-position clausal elements (3.2.2), the second-position suffixes (3.2.3), and verbal aspect (3.2.4).

3.2.1 Predicates and participants

As argued in §3.1.1, nouns, adjectives, and verbs all introduce semantic events, and yet when used as participants, the grammar needs to distinguish nouns from adjectives and verbs (§3.1.2). I use the feature PRD (predicative) located in the HEAD feature to model the predicate/participant distinction in Nuuchahnulth. I have a supertype, *predicate-lex*, which states that its HEAD.PRD value is +. All the lexical types that are predicative—verbs, and adjectives, and common nouns—inherit from this supertype. So every lexical entry for a verb, adjective, or common noun inherits the property [HEAD.PRD +], and can be treated as a predicate where the grammar demands it.

[19] *bool* is short for Boolean, and is defined as the underspecification of + and –.

Participants are simply specified as [HEAD.PRD −]. A word can be specified as [HEAD.PRD −] by its lexical inheritance (e.g., proper nouns are defined as non-predicative), or through the application of a rule. As detailed in §3.1.2, all dependent clauses headed by the enclitic *=ʔiˑ* are participants. I will address the analysis for this in §3.2.2. However, common nouns also need to be treated as participants as well as predicates. I achieve this through a lexical rule (that is, something that must apply prior to syntactic rules) that alters the syntactic properties of the noun. Recall that as predicates, common nouns have an event variable and a subject. Part of my type description for a common noun is given in (51).

(51)
$$\begin{bmatrix} \textit{common-noun-lex} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD.PRD} & + \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{3} \\ \text{XARG} & \boxed{2} \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \left\langle \boxed{1} \begin{bmatrix} \text{LOCAL.CONT.INDEX} & \boxed{2} \begin{bmatrix} \text{PERSON} & \textit{3rd} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{RELS} & \left\langle \begin{bmatrix} \text{PRED} & \textit{pred} \\ \text{ARG0} & \begin{bmatrix} \boxed{3}\ \textit{event} \end{bmatrix} \\ \text{ARG1} & \begin{bmatrix} \boxed{2}\ \textit{ref-ind} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

This rule can most easily be read bottom-to-top. It states that common nouns are semantically a relation between two arguments: an event, and a referential index (or entity).[20] The referent argument is identified with the INDEX attribute of the only thing in the noun's syntactic ARG(ument)-ST(ructure). ARG-ST is used in HPSG as a translation layer between the semantics (the RELS list) and the syntax (in the SYNSEM layer above). All items on a word's ARG-ST correspond to items in its valence lists (most

[20]Note the underspecified PRED value. Not to be confused with my use of "syntactic predicate," the PRED(ication) value in the DELPH-IN HPSG implementation is the name of the relation. So the Nuuchahnulth word *ʕiniiƛ* 'dog' has the meaning ʕINIIƛ, or for intelligibility for an English-language readership, DOG.

notably, SUBJ(ect) and COMP(lement)S) or on the long-distance dependency SLASH list. The lone item in the noun's ARG-ST is identified with its subject, and it has no complements. The semantic argument that is available in the syntax, at the path SYNSEM.LOCAL.CONT.HOOK.INDEX, is that of the event variable in the relation, and so the noun is treated as eventive in the compositional semantics. A pointer to the referent is kept on the XARG, a part of the reentrency set for manipulating values in the semantic representation, CONT(ent). Finally, the HEAD.PRD attribute is set to +, indicating that common nouns, and all subtrees headed by a common noun, are predicative. This is a syntactic reflex indicating that the INDEX is pointing to an event.

The above *common-noun-lex* type functions as desired when nouns are acting as predicates. But to treat nouns as participants, they must go through a lexical rule first. The major parts of the lexical rule are in (52).

(52)
$$\begin{bmatrix} \textit{noun-relativizer-lex-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.HEAD} & \begin{bmatrix} \textit{noun} & \\ \text{PRD} & - \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \\ \text{CONT.HOOK.INDEX} & \boxed{1} \end{bmatrix} \\ \text{DTR} & \begin{bmatrix} \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.HEAD} & \begin{bmatrix} \textit{noun} & \\ \text{PRD} & + \end{bmatrix} \\ \text{CONT.HOOK.XARG} & \boxed{1} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

This rule takes a daughter whose HEAD value is *noun*. It creates a new lexical item that has no subject or complements, and is not predicative, making it a participant. It moves the noun's XARG value into its INDEX, so that in the compositional semantics, it combines denoting an entity or referential index and not an event. The article will do something similar to this, but as it is part of the second-position inflection complex, I will address it with other second-position elements below.

3.2.2 *Second-position inflection*

As detailed in §3.1.3, Nuuchahnulth clauses are headed by their second-position inflection. I describe the second-position elements as auxiliary verbs that select for a complement that is [HEAD.PRED +]. I called this complex of a second-position element and its predicate a *predicate phrase* (abbreviated PredP), although within the formalism I have adopted, this will always be a VP.[21]

The second-position elements take a predicative complement which is required to appear to their left, and they inherit all their predicate's syntactic participants. Once the second-position element picks up this complement, it is (by design) irrelevant to the syntax what part of speech that complement was. The basic type definition for a second-position clitic is given in (53).

(53)
$$\begin{bmatrix} \textit{2p-lex-item} & \\ \text{SYNSEM.LOCAL.CAT} & \begin{bmatrix} \text{HEAD.MOD} & \langle\ \rangle \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{1}\begin{bmatrix}\text{LOCAL.CAT.HEAD.PRD} & -\end{bmatrix}\right\rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{OPT} & - \\ \text{LOCAL.CAT} & \begin{bmatrix} \text{HEAD.PRD} & + \\ \text{POSTHEAD} & - \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle \oplus \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

This lexical type states that second-position clitics are non-modifying words which have both a subject and a complements list. The clitic's first complement is a non-optional predicate that occurs to its left,[22] which has a subject and some number of complements (possibly zero). Its first complement's subject is identified as its own subject, and its first complement's complements list is appended to its own complements list. So if this lexical item finds a predicate with an empty complements list (whether that

[21]"Predicate" is not a possible value for the feature HEAD, and so I use the value *verb* for second-position elements. So all phrasal units headed by a second-position enclitic complex will be verbs.

[22]This is done through the value of POSTHEAD—a feature in the Grammar Matrix (Bender et al., 2002), but which is there used to constrain the ordering of modifiers with respect to their head. Here I use it to constrain the ordering of complements.

predicate is noun, verb, or adjective), it becomes a transitive item (an item with one complement): Its subject is its complement's subject, and its only complement is the intransitive predicate it picked up. If this lexical item finds a predicate with a single item on its complements list, it becomes ditransitive (that is, has two complements). Once again, it will have a subject identified with that first complement's subject, and then its complements list will include two items: first the transitive predicate it picked up, and then the transitive predicate's own complement. And so on for ditransitive predicates.

As indicated in §3.1.3, there are two major types of clausal second-position lexemes: the auxiliary predicate root, and the article. The predicative versions are part of the mood complex, and belong to the type *mood-2p-verb-lex* (54), which inherits from (is a subtype of) *2p-lex-item* above. This rule needs to state that this lexical item makes a predicate and inherits its complement's semantic event. Then the lexical entry for each morpheme further specifies the clitic's particular properties: the mood of the complement, and the person and number properties of the subject.

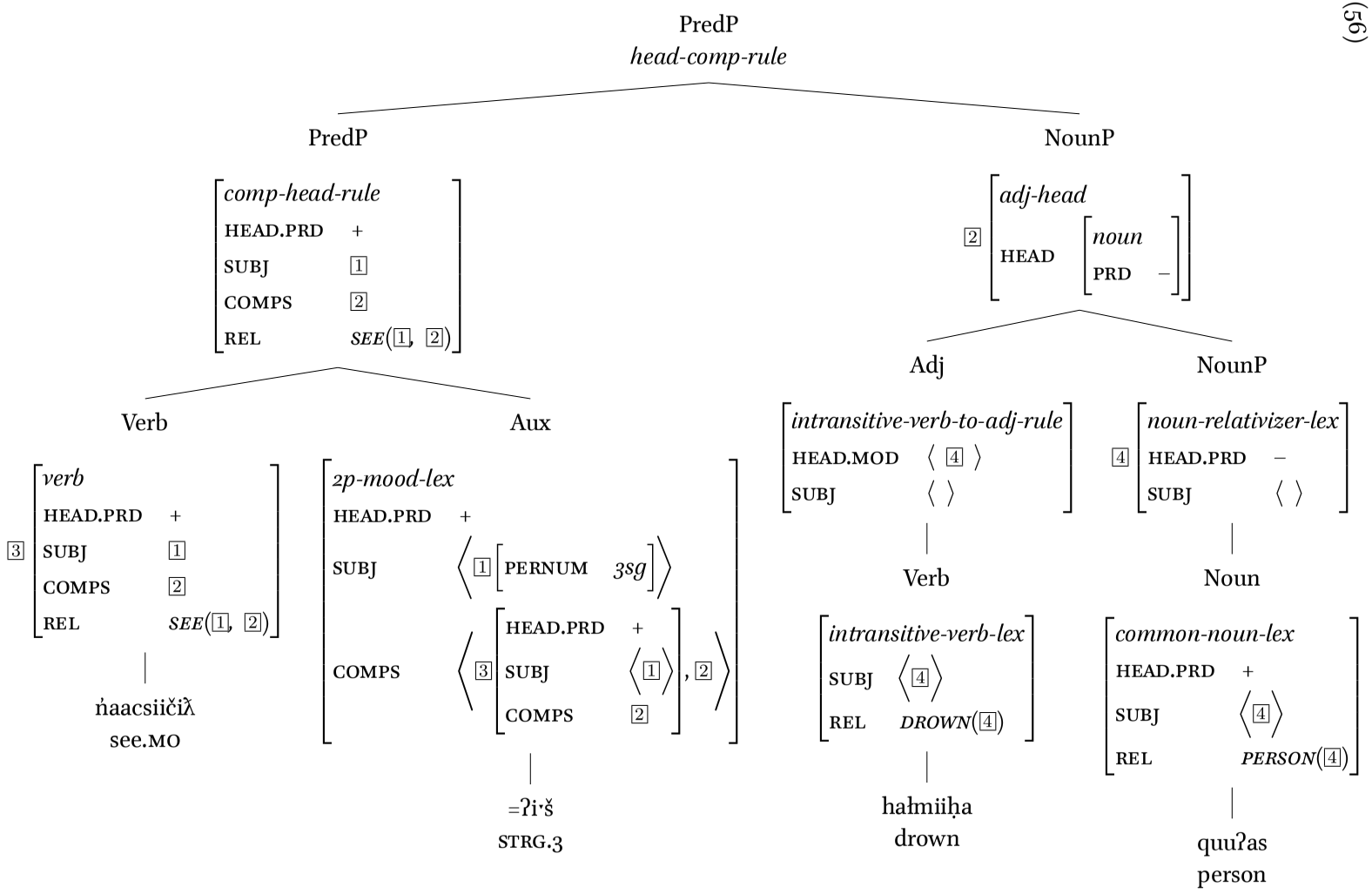
(54)
$$\begin{bmatrix} \textit{mood-2p-verb-lex} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD.PRD} & + \\ \text{VAL.COMPS} & \left\langle \begin{bmatrix} \ldots\text{INDEX} & \boxed{1} \end{bmatrix}, \ldots \right\rangle \end{bmatrix} \\ \text{CONT.HOOK.INDEX} & \boxed{1} \end{bmatrix} \end{bmatrix}$$

The article lexeme also inherits from *2p-lex-item*, but adds different constraints, shown in (55). The article needs to state that it creates a participant (that is, a non-predicate), that it is picking up its complement's subject's semantics (that is, the referential index and not the event), and that that referent is in the third person.

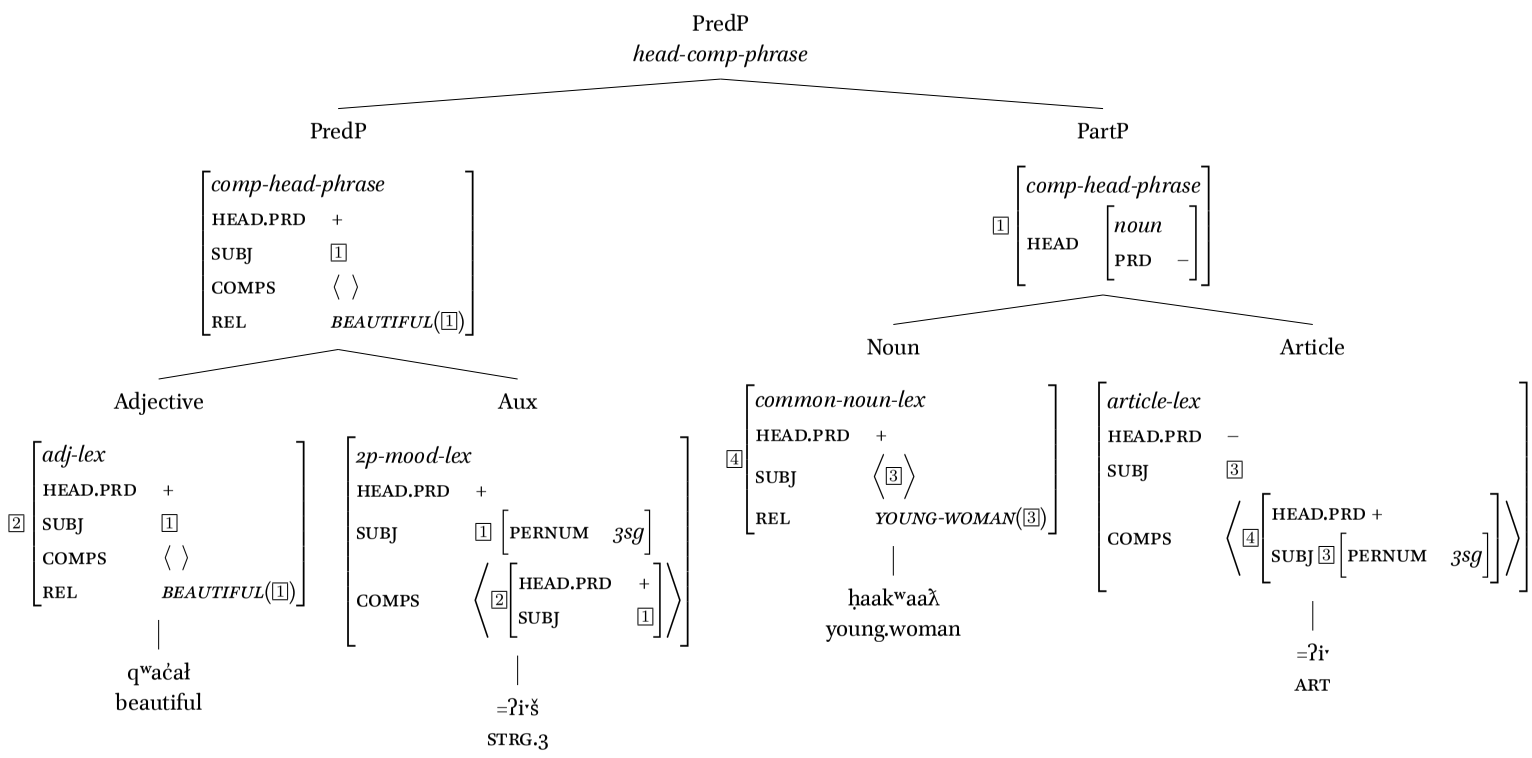
(55)
$$\begin{bmatrix} \textit{article-lex} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD.PRD} & - \\ \text{VAL.COMPS} & \left\langle \begin{bmatrix} \ldots\text{SUBJECT} & \begin{bmatrix} \ldots\text{INDEX} & \boxed{1} \end{bmatrix} \end{bmatrix}, \ldots \right\rangle \end{bmatrix} \\ \text{CONT.HOOK.INDEX} & \boxed{1}\begin{bmatrix} \text{PNG.PER} & \textit{3rd} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

The above definitions for second-position elements license trees that have simple second-position elements. I will give sample trees for the three types of predicates introduced in §3.1.1: verbs (8), adjectives (9), and nouns (10). Trees for each of the sentences are given in (56), (57), and (58) respectively. The attribute-value matrices have been somewhat simplified to fit on the page, and semantic features (through HOOK.INDEX and HOOK.XARG) have been elided. Identification of semantic features is shown simply by identifying a slot (e.g., the x the relation SEE(x, y)) with an entire feature structure. In the implemented grammar, this is done through the identification of values with the HOOK features. Finally, there are some phrase structure rules that have not yet been introduced. They are present to complete the trees. The main points I am illustrating are second-position argument composition and the predicate-participant distinction, which is created by the HEAD.PRD value at each level of the tree.

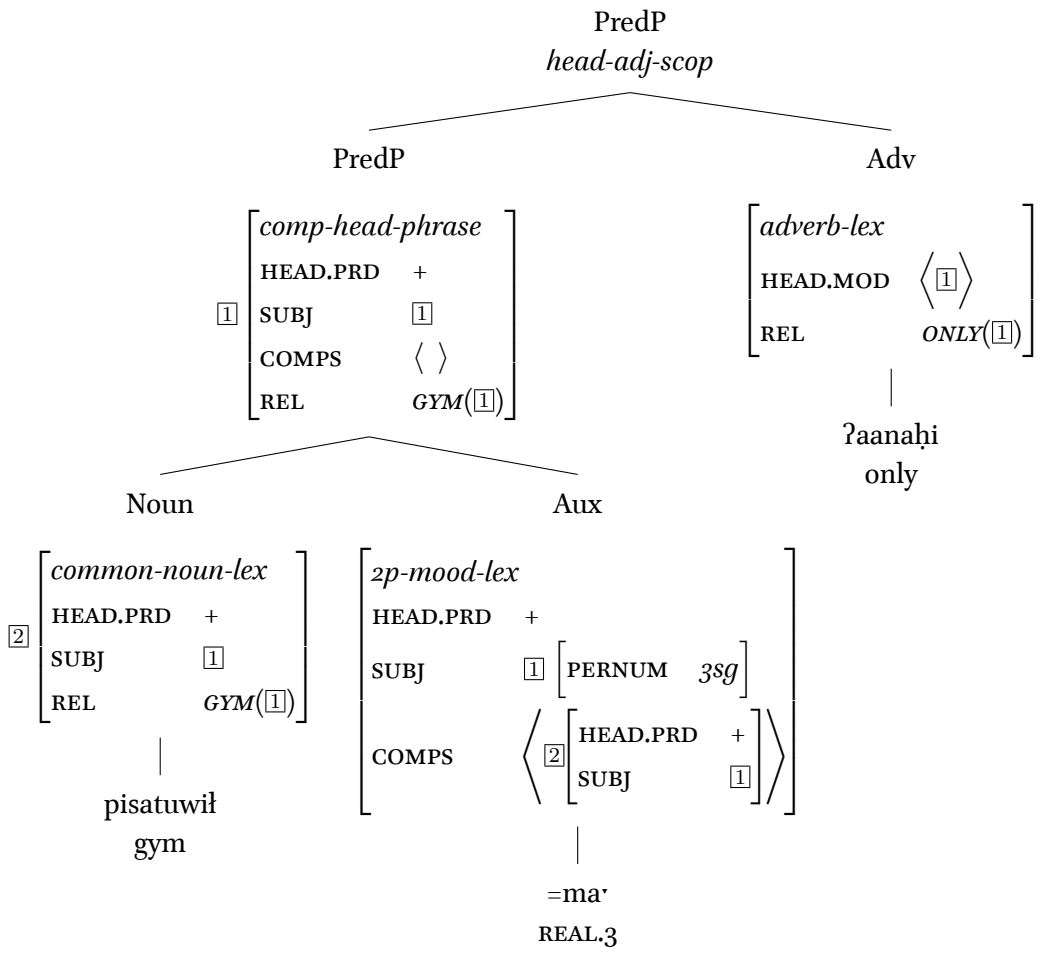
(56)


PredP
head-comp-rule
PredP
NounP
comp-head-rule
HEAD.PRD +
SUBJ 1
COMPS 2
REL SEE(1, 2)
adj-head
2
HEAD
noun
PRD –
Verb
Aux
Adj
NounP
3
verb
HEAD.PRD +
SUBJ 1
COMPS 2
REL SEE(1, 2)
ṅaacsiičiƛ
see.MO
2p-mood-lex
HEAD.PRD +
SUBJ 1 PERNUM 3sg
COMPS 3 HEAD.PRD + SUBJ 1 COMPS 2, 2
=ʔi·š
STRG.3
intransitive-verb-to-adj-rule
HEAD.MOD 4
SUBJ
Verb
4
noun-relativizer-lex
HEAD.PRD –
SUBJ
Noun
intransitive-verb-lex
SUBJ 4
REL DROWN(4)
hałmiiḥa
drown
common-noun-lex
HEAD.PRD +
SUBJ 4
REL PERSON(4)
quuʔas
person

(57)

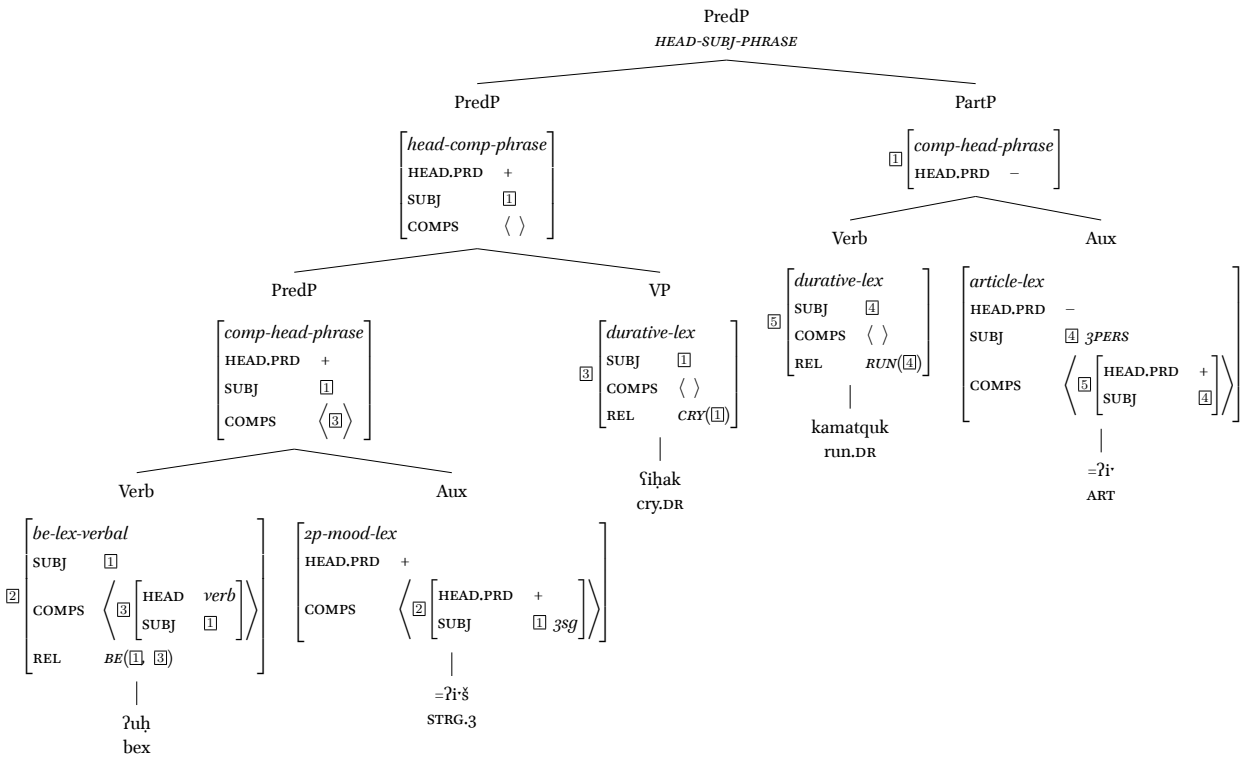

PredP
head-comp-phrase
PredP
comp-head-phrase
HEAD.PRD +
SUBJ 1
COMPS ⟨ ⟩
REL BEAUTIFUL(1)
Adjective
2 adj-lex
HEAD.PRD +
SUBJ 1
COMPS ⟨ ⟩
REL BEAUTIFUL(1)
qʷaċał
beautiful
Aux
2p-mood-lex
HEAD.PRD +
SUBJ 1 PERNUM 3sg
COMPS ⟨ 2 HEAD.PRD + SUBJ 1 ⟩
=ʔiˑš
STRG.3
PartP
1 comp-head-phrase
HEAD noun PRD –
Noun
4 common-noun-lex
HEAD.PRD +
SUBJ ⟨ 3 ⟩
REL YOUNG-WOMAN(3)
ḥaakʷaaƛ
young.woman
Article
article-lex
HEAD.PRD –
SUBJ 3
COMPS ⟨ 4 HEAD.PRD + SUBJ 3 PERNUM 3sg ⟩
=ʔiˑ
ART

(58)

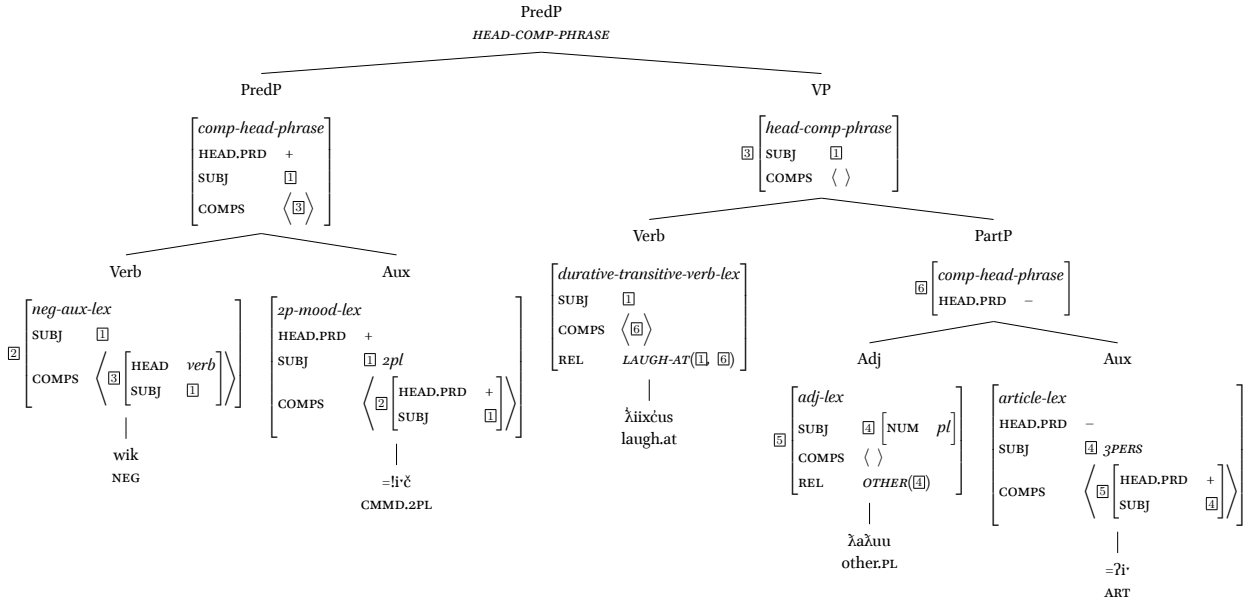


(56–58) show predicates of different lexical categories. This is straightforward because all these lexical categories are [PRD +], and thus can be the complement of the inflecting second-position element. In the same way, predicative elements like verbs (59) and adjectives (60) can become participants through composition with the article *=ʔiˈ*, as shown below.

(59)


PredP
HEAD-SUBJ-PHRASE
PredP
PartP
head-comp-phrase
HEAD.PRD +
SUBJ 1
COMPS ⟨ ⟩
1 comp-head-phrase
HEAD.PRD –
Verb
Aux
PredP
VP
comp-head-phrase
HEAD.PRD +
SUBJ 1
COMPS ⟨3⟩
3 durative-lex
SUBJ 1
COMPS ⟨ ⟩
REL CRY(1)
5 durative-lex
SUBJ 4
COMPS ⟨ ⟩
REL RUN(4)
kamatquk
run.DR
article-lex
HEAD.PRD –
SUBJ 4 3PERS
COMPS ⟨5 HEAD.PRD + SUBJ 4⟩
=ʔi·
ART
Verb
Aux
ʕiḥak
cry.DR
2 be-lex-verbal
SUBJ 1
COMPS ⟨3 HEAD verb SUBJ 1⟩
REL BE(1, 3)
2p-mood-lex
HEAD.PRD +
COMPS ⟨2 HEAD.PRD + SUBJ 1 3sg⟩
ʔuḥ
bex
=ʔi·š
STRG.3

(60)


PredP
HEAD-COMP-PHRASE
PredP
VP
comp-head-phrase
HEAD.PRD +
SUBJ 1
COMPS ⟨3⟩
3 head-comp-phrase
SUBJ 1
COMPS ⟨ ⟩
Verb
Aux
Verb
PartP
2 neg-aux-lex
SUBJ 1
COMPS ⟨3 HEAD verb SUBJ 1⟩
2p-mood-lex
HEAD.PRD +
SUBJ 1 2pl
COMPS ⟨2 HEAD.PRD + SUBJ 1⟩
durative-transitive-verb-lex
SUBJ 1
COMPS ⟨6⟩
REL LAUGH-AT(1, 6)
6 comp-head-phrase
HEAD.PRD –
Adj
Aux
wik
NEG
=!i·č
CMMD.2PL
ʎiixc̓us
laugh.at
5 adj-lex
SUBJ 4 [NUM pl]
COMPS ⟨ ⟩
REL OTHER(4)
article-lex
HEAD.PRD –
SUBJ 4 3PERS
COMPS ⟨5 HEAD.PRD + SUBJ 4⟩
ʎaʎuu
other.PL
=ʔi·
ART

This analysis depends on viewing the second-position enclitic complex as its own syntactic word. Since my implementation currently lacks a morphophonological component, I have whitespace-separated the second-position enclitic complex. It also requires that only one of the enclitics inherit from (53): one of the enclitics must be the stem of the syntactic word. Every enclitic is optional, with the exception of the subject-mood portmanteaus. Given this, I have modeled the subject-mood portmanteau as the root, with preceding enclitics attaching to the subject-mood portmanteau as "prefixes" and following morphemes attaching as "suffixes" that modify the appropriate syntactico-semantic properties.

This creates an analytical issue for the third person neutral mood, which is null-marked. Notionally, there is an invisible "=∅" in the string, but to avoid it being written in the output, I use some work-arounds in the DELPH-IN architecture. There are two cases where the null third person element may be formally introduced: (1) when there are other enclitics (the habitual or causative, for example) but no subject-mood portmanteau; (2) when there are no enclitics at all, only the understood null third person neutral mood. My grammar handles the two cases differently.

In case 1, the string "=∅" is generated just like any other enclitic. I introduce a special inflectional flag (Goodman, 2013) SOME-INFLECTION and set its value to – just for the third person neutral. This means that a string consisting only of "=∅" is not fully inflected and not allowed to combine directly with other words in the syntax.[23] For all of the prefixes and suffixes, I allow them to overwrite the string "=∅" with themselves, and these inflectional rules set the SOME-INFLECTION flag to +. This means that the first prefixing or suffixing element to be added to the enclitic makes it a fully inflected word, and removes the "=∅" from the output. So the string "=ʔaała" (habitual) is underlyingly "=∅=ʔaała", and the subject and mood information is generated by the "=∅".

In case 2, there is no additional enclitic to overwrite the "=∅" string, so this approach does not work. In this case, I create a lexical rule which takes any fully-inflected predicative word and creates a second-position auxiliary out of it with the information of the third person neutral mood embedded in its semantics. I do not believe this analysis is notionally different from a null morpheme. It has the vice of being a

[23]The reason for this is that all phrase structure rules require that their daughters be *infl-satisfied*, which includes SOME-INFLECTION *na-or-+*. So effectively, all syntactic rules forbid SOME-INFLECTION – on their daughters.

little more complicated, but the virtue of not outputting any unpronounced elements in the string. The predicate-to-third-person-neutral rule looks like this:

(61)
$$\begin{bmatrix} \textit{neutral-3rd-pred-lex-rule} & \\ \text{SYSNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{AUX} & + \\ \text{PRD} & + \\ \text{FORM} & \textit{finite} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{1}\begin{bmatrix} \text{LOCAL. . .PNG.PER} & \textit{3rd} \end{bmatrix} \right\rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \end{bmatrix} \\ \text{CONT. . .MOOD} & \textit{neutral} \end{bmatrix} \\ \text{DAUGHTER} & \begin{bmatrix} \text{INFLECTED} & \textit{infl-satisfied} \\ \text{LOCAL.CAT} & \begin{bmatrix} \text{HEAD.PRD} & + \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{1} \right\rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

As discussed in §3.1.3, the second-position clausal clitics can also attach to a preceding modifier of the predicate. In the case of the main clause predicates, they may attach to preceding adverbs, and for the article it may attach to preceding adjectives. Because there is no movement in HPSG, my analysis cannot simply say that clitics "move" into position of the leftmost item in the phrase. There are benefits to this design decision (faster computation, fidelity to the ordering of the surface string, bidirectionality of parsing and generation), but second-position phenomena is one of the areas that requires extra analytical work in HPSG.

In both the cases where the mood clitic attaches to a preceding adverb (20) and when the article attaches to a preceding adjective (23), the second-position enclitic containing the subject information is attaching to a modifier of a later predicate. In the version of the lexical entry seen in (53), these clitics are selecting for predicate complements, to which they assign semantic information (such as tense),

and take on their subject and complements. However, in the case where the clitics attach to a modifier, I cannot model the clitics as selecting for a predicate. I have the clitic select for a modifier, and assign its semantic information to the modifyee.

I do this through a lexical rule which creates the appropriate modifier-selecting structure from lexical entries of the type in (53). Because the mood enclitics are creating a structure that is a semantic event and the article enclitic is creating a structure that is an entity, the manipulations done to these two categories need to be somewhat different. I have two types for this: *auxiliary-unary-type-raise-clause* and *auxiliary-unary-type-raise-article*. Each of these inherit common properties from a common supertype, *auxiliary-unary-type-raise-super*, the key parts of which are replicated below.[24]

(62)
$$\begin{bmatrix} \textit{auxiliary-unary-type-raise-super} & \\ \text{SYNSEM.LOCAL.CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{TYPE-RAISE} & + \\ \text{AUX} & + \end{bmatrix} \\ \text{VAL.COMPS} & \left\langle \begin{bmatrix} \text{SYNSEM.LOCAL.CAT} & \begin{bmatrix} \text{HEAD.AUX} & - \\ \text{POSTHEAD} & - \\ \text{OPT} & - \end{bmatrix} \end{bmatrix}, \boxed{1}\begin{bmatrix} \text{SYNSEM}\ldots\text{POSTHEAD} & + \end{bmatrix} \right\rangle \oplus \boxed{2} \end{bmatrix} \\ \text{ARGS} & \left\langle \begin{bmatrix} \text{SYNSEM.LOCAL.CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{TYPE-RAISE} & - \\ \text{AUX} & + \end{bmatrix} \\ \text{VAL.COMPS} & \left\langle \boxed{1}\begin{bmatrix} \text{SYNSEM}\ldots\text{POSTHEAD} & - \end{bmatrix} \right\rangle \oplus \boxed{2} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

This supertype states that type auxiliary type raising is a unary operation that takes some auxiliary which has not been type raised, marks it as type raised, and adds one item to its complements list. The item that was previously the first complement and was [POSTHEAD −] (that is, had to be realized to the left) is now the second complement and is [POSTHEAD +] (that is, realized to the right). The supertype does not say much about the added complement, as that is left for its two subtypes, in (63) and (64) below.

[24]For brevity, I have pretended in (62) that I can modify the POSTHEAD value from + to −. In fact, in my implementation I have to copy up every other value, changing only POSTHEAD.

(63)
$$\begin{bmatrix} \textit{auxiliary-unary-type-raise-clause} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{LOCAL.CAT.HEAD.MOD} & \langle \boxed{2} \rangle \end{bmatrix}, \boxed{2}, \ldots \right\rangle \end{bmatrix} \end{bmatrix} \\ \text{CONT.HOOK} & \boxed{3} \end{bmatrix} \\ \text{ARGS} & \left\langle \begin{bmatrix} \textit{2p-mood-lex} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.VAL.SUBJ} & \langle \boxed{1} \rangle \\ \text{CONT.HOOK} & \boxed{3} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

This rule specifies that the old subject is the same as the new subject, and the semantic value and type of the construction (the HOOK) is the same as the old one. That is to say, it is still an event, and has the same subject. The new complement introduced has a MOD value which is identical to the second complement (what was previously the first complement). So the *auxiliary-unary-type-raise-clause* appends a new element to the beginning of the complements list which is a modifier of the old first complement.

There is a possible competing analysis for this phenomenon, where adverbs can simply directly modify the second-position enclitics. The reason I do not take this approach is I need to constrain the relative ordering of complements. The predicate complement of second-position enclitics typically occurs to their left, which I define by constraining their complement to be [POSTHEAD −]. With a modifier, however, the predicate appears to the right (along with any additional adverbs). So in this analysis I would still need to alter the enclitic complex to change its complement to [POSTHEAD +], and require it to have a preceding modifying adverb. This type-raising analysis allows the syntactic structure of the auxiliary enclitics to remain similar regardless of whether they are attaching directly to their predicate or to a preceding modifier.

The article type raising rule is given in (64). It contains a few differences to account for the difference in semantic type.

(64)
$$\begin{bmatrix} \textit{auxiliary-unary-type-raise-article} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{noun} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle\ \rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{LOCAL...MOD} & \left\langle \boxed{1}\begin{bmatrix} \text{LOCAL.CAT.HOOK} & \boxed{2} \end{bmatrix} \right\rangle \end{bmatrix}, \begin{bmatrix} \text{LOCAL.CAT.VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{3} \end{bmatrix} \end{bmatrix}, \ldots \right\rangle \\ \text{CONT.HOOK} & \boxed{2} \end{bmatrix} \end{bmatrix} \\ \text{CONT.HOOK} & \boxed{3} \end{bmatrix} \end{bmatrix} \\ \text{ARGS} & \left\langle \begin{bmatrix} \textit{article-lex} & \\ \text{SYNSEM.LOCAL.CAT.VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{3} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

Like its sister rule, the first item on the complements list is a modifier. However, instead of that modified value being identified with the second complement, it is identified with the second complement's subject. This is because that complement can be any predicate: noun, verb, or adjective. Since predicates are events that have their referential index associated with their subject, the modifying adjective needs to grab a hold of the subject value. Related to this, the rule's semantic content (its HOOK) is identified with that modified element's hook, rather than the HOOK of the original *article-lex*. With these rules in place, I can now parse sentences with a leading adverb, and participant phrases with a leading adjective. The enclitic will simply go through the appropriate type-raising lexical rule first.

3.2.3 Second-position suffixes

In §3.1.4 I give some examples of second-position suffixes (as opposed to the second-position auxiliary enclitics). The two classes that I have implemented are the "main predicate" suffixes and the "auxiliary predicate" suffixes. As a reminder, main predicate suffixes are verbs that take nominal complements and attach to the first element of their complement (65–66, repeated from 32–33). Auxiliary predicate suffixes are suffix verbs that behave in the same way, except that they take a predicate (and eventive) complement rather than a nominal (and non-eventive) one.

(65) nuuknaaks.

nuuk-na·k=s

song-have=STRG.1SG

'I have a song/songs.' (**T**, *yuułnaak* Simon Lucas)

(66) ʔaƛanaks nuuk.

ʔaƛa-na·k=s	nuuk
two-have=STRG.1SG	song

'I have two songs.' (**T**, *yuułnaak* Simon Lucas)

I will first show my implemented analysis of the main predicate suffixes. As a reminder, all these type descriptions are partial representations of the full description, which is present in the implemented grammar. Certain features—such as well-formedness for inflection and restricting daughter types by morphological class—are omitted in the interest of space and clarity.

I will here point out that an analysis of second-position suffixes in Nuuchahnulth in HPSG has been done in Waldie (2004). However, Waldie's analysis uses linearization: an augmentation to basic HPSG theory that allows for word scrambling using an additional feature called the word-order domain DOM (Reape, 1993). My analysis, grounded in the DELPH-IN formalism, does not have linearization. In my analysis, I am constrained by the surface order of suffixation.

3.2.3.1 Main predicate suffixes

Main predicate suffixes are the class of verbal suffixes that may attach to a noun, in which case the noun satisfies the verb's complement, an adjective, in which case the adjective modifies the verb's (possibly dropped) complement, or an adverb, in which case the adverb modifies the verb itself (§3.1.4.1).

I model all incorporating suffixes as lexical incorporation that occurs through the application of two successive lexical rules. The first lexical rule applies to the incorporated element (the noun, adjective, adverb, or, in the case of auxiliary predicate suffixes, verb) and modifies its properties. Then the rule that attaches the suffix applies, and relates its syntactico-semantic features to the type that prepared the root

for incorporation. The reason for this two-step process is to avoid having lexical duplication for suffix verbs. Since the behavior of the suffixes changes based on the syntactic category of what it attaches to, that difference must be captured somewhere. It can be captured by having different versions of each suffix based on what it is attaching to, or in this two-step manner which first prepares lexical items for incorporation.

All of the first-stage, preparatory rules share some similarities, which I abstract into a higher type, *incorporating-lex-rule* (67). This rule states that all incorporation rules apply to non-auxiliaries, and create verbs that are predicative, non-root, non-finite forms. The parent node will have some non-predicative subject and no modifiers.

(67)
$$\begin{bmatrix} \textit{incorporating-lex-rule} & \\ \text{SYNSEM.LOCAL.CAT} & \begin{bmatrix} \text{VAL.SUBJ} & \left\langle \begin{bmatrix} \text{LOCAL.CAT.HEAD.PRD} & - \end{bmatrix} \right\rangle \\ \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{PRD} & + \\ \text{AUX} & - \\ \text{FORM} & \textit{non-root-nonfinite} \\ \text{MOD} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{DAUGHTER} & \begin{bmatrix} \text{SYNSEM.LOCAL.CAT.HEAD.AUX} & - \end{bmatrix} \end{bmatrix}$$

The subtypes of *incorporating-lex-rule* that prepare nouns, adjectives, and adverbs for incorporation are given in (68, 69, 71) below. The noun incorporation rule (68) simply states that it needs a root form noun daughter and will not have any complements.

(68)
$$\begin{bmatrix} \textit{noun-incorporation-lex-rule} & \\ \text{SYNSEM} & \begin{bmatrix} \text{LOCAL.CAT.VAL.COMPS} & \langle\ \rangle \end{bmatrix} \\ \text{DAUGHTER} & \begin{bmatrix} \text{SYNSEM.LOCAL.CAT.HEAD} & \begin{bmatrix} \textit{noun} & \\ \text{FORM} & \textit{root} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

The adjective incorporation rule (69) states that it needs an adjective daughter, also in root form, and goes on to identify the adjective's subject's index with its own complement's index.

(69)
$$\begin{bmatrix} \textit{adj-incorporation-lex-rule} & \\ \textsc{synsem} & \begin{bmatrix} \textsc{local.cat.val.comps} & \left\langle \begin{bmatrix} \textsc{local.cont.hook.index} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix} \\ \textsc{daughter} & \begin{bmatrix} \textsc{synsem.local.cat} & \begin{bmatrix} \textsc{head} & \begin{bmatrix} \textit{adj} & \\ \textsc{form} & \textit{root} \end{bmatrix} \\ \textsc{val.subj} & \left\langle \begin{bmatrix} \textsc{local}\ldots\textsc{index} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

The adverb rule (71) is the most complex. Parallel to the other rules, it takes a daughter that is in root form and an adverb. It inserts a value into its complements list which is not an auxiliary and not type-raised.[25] It identifies the XARG of its complement—that is, the complement's subject—with its own XARG. Since the syntactic structure of incorporated adverbs is *Adverb-SuffixVerb Object*, this XARG identification will, down the line, have the effect of tying the suffix verb's subject to the (yet-to-be-added) complement's subject.

Finally, there is the identification of the daughter's modified element's LTOP with the parent's GTOP. I will admit this is a bit of a hack. Non-scopal modifiers in MRS are "quantificationally equivalent" with what they modify, which means they share scopal properties (Copestake et al., 2005). Non-scopal modifiers include words like *green* or *fast* in English. Non-scopal modifiers always share the same scopal properties with what they modify, so that in the scope tree for a sentence they share a node with their modifyee. Scopal modifiers, on the other hand, do *not* share the same scopal properties as what they modify, and have their own nodes in a sentence's scope tree. These scopal domains are modeled in the MRS through a *handle*, which I abbreviate with *h*. Handles are related to each other through a *qeq* re-

[25]This is important so that certain rules, for instance intransitive-verb-to-adjective, cannot be the complement of an incorporated adverb.

lation where scopal properties can be defined: a HIGHER scope and a LOWER scope. A simple semantic expression for *I only sing*, with the scopal adverb *only*, looks like (70), which shows why my incorporation rules need to worry about handle values. The handle for *only* scopes higher than the handle for *sing*, as defined in the *qeq* relation.

(70)
$$\left\langle \begin{bmatrix} only & \\ \text{LBL} & h \\ \text{ARG0} & e \\ \text{ARG1} & \boxed{1}\ h \end{bmatrix}, \begin{bmatrix} sing & \\ \text{LBL} & \boxed{2}\ h \\ \text{ARG0} & e\begin{bmatrix} \text{TENSE} & present \end{bmatrix} \\ \text{ARG1} & x\begin{bmatrix} \text{PERNUM} & 1sg \end{bmatrix} \end{bmatrix}, \begin{bmatrix} qeq & \\ \text{HIGHER} & \boxed{1} \\ \text{LOWER} & \boxed{2} \end{bmatrix} \right\rangle$$

In the *adv-incorporation-lex-rule* (71), I need to preserve the adverb relation's LBL value (a handle, stored in LTOP) so that, when the suffix verb is attached, that LBL is around for me to associate with the verb. This is not what the GTOP value is intended for, but it works, and that GTOP is not associated with anything else once the suffix verb is applied, so no harm done.[26]

[26]The reader may have noticed that all my rules so far are treating the suffix verbs as though they are transitive only—there is only at most one item in the COMPS list. However, in §3.1.4.1 I noted one ditransitive suffix verb. I do in fact parse ditransitives in my implemented grammar, but it requires parallel copies of all these incorporating rules, in order to account for a longer COMPS list. I pull a similar trick to the GTOP trick here in those rules, where I temporarily store the second complement in the intermediate rule's SPEC. This is not what this list is intended for, but once again, after the suffix verb applies, that list is hidden. As with all these rules, the full versions can be seen in my implemented grammar at `https://bitbucket.org/davinman/nuuchahnulth-grammar`.

(71)
$$\begin{bmatrix} \textit{adv-incorporation-lex-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.VAL.COMPS} & \left\langle \begin{bmatrix} \text{LOCAL} & \begin{bmatrix} \text{CAT.HEAD} & \begin{bmatrix} \text{AUX} & - \\ \text{TYPE-RAISE} & - \end{bmatrix} \\ \text{CONT. . .XARG} & \boxed{1} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{CONT.HOOK} & \begin{bmatrix} \text{XARG} & \boxed{1} \\ \text{GTOP} & \boxed{2} \end{bmatrix} \end{bmatrix} \\ \text{DAUGHTER} & \begin{bmatrix} \text{SYNSEM.LOCAL.CAT.HEAD} & \begin{bmatrix} \textit{adv} & \\ \text{FORM} & \textit{root} \\ \text{MOD} & \left\langle \begin{bmatrix} \text{LOCAL. . .LTOP} & \boxed{2} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Once one of the above rules has applied, the main predicate suffix can be added. There is one rule for preparing each of the lexical categories (noun, adjective, and adverb), but there is one rule for adding suffixes, given in (72).

This rule introduces a new semantic relation (C-CONT.RELS) that has not yet been assigned a semantic predication value. All this rule states is that it is an event (ARG0 *e*) that relates two referents. The parent also will have an event index, since its INDEX is the same as the introduced relation's ARG0. It will also inherit the relation's ARG1 as its XARG and its LBL as its LTOP (these are standard relationships for verbs).

The rule passes up its daughter's subject and complements. All of its possible daughters will minimally have a subject, defined in the parent type (67). The noun incorporation rule does not add any complements, while the adjective and adverb incorporation rules do, so a main predicate suffix applied to an incorporated noun will only have a subject, while incorporated adjectives and adverbs will have a complement. Finally, the new relation's LBL is identified with the daughter's GTOP. This was only defined for incorporating adverbs, and this will have the effect of allowing scopal adverbs to scope over the verb in the semantics.

(72)
$$\begin{bmatrix} \textit{2p-suffix-transitive-verb-lex-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{S}\begin{bmatrix} \ldots\text{INDEX} & \boxed{1} \end{bmatrix} \right\rangle \\ \text{COMPS} & \boxed{C} \\ \text{SPEC} & \langle\ \rangle \\ \text{SPR} & \langle\ \rangle \end{bmatrix} \\ \text{CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{0} \\ \text{XARG} & \boxed{1} \\ \text{LTOP} & \boxed{3} \end{bmatrix} \end{bmatrix} \\ \text{C-CONT.RELS} & \left\langle \begin{bmatrix} \text{ARG0} & e\boxed{0} \\ \text{ARG1} & x\boxed{1} \\ \text{ARG2} & x\boxed{2} \\ \text{LBL} & \boxed{3} \end{bmatrix} \right\rangle \\ \text{DAUGHTER} & \begin{bmatrix} \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{S} \right\rangle \\ \text{COMPS} & \boxed{C} \end{bmatrix} \\ \text{CONT.HOOK} & \begin{bmatrix} \text{XARG} & \boxed{2} \\ \text{GTOP} & \boxed{3} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

All that is missing is the new relation's predication value, the small-caps symbol that indicates what meaning is. For instance, the suffix *-na·k* inherits from the type *2p-suffix-transitive-verb-lex-rule* and adds only the following:

(73)
$$\begin{bmatrix} \textit{na·k} & \\ \text{PHON} & \textit{“-na·k”} \\ \text{C-CONT} & \left\langle \begin{bmatrix} \text{PRED} & \textit{HAVE} \end{bmatrix} \right\rangle \end{bmatrix}$$

To make this more concrete, I give a derivation of the word *nuuknaak* ‘have a song’ in (74) below, somewhat condensed and abbreviated for space.

(74)

$$\begin{bmatrix} \textit{na·k} & \\ \text{PHON} & \textit{“nuuknaak”} \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{3}\begin{bmatrix} \ldots\text{INDEX} & \boxed{1} \end{bmatrix} \right\rangle \\ \text{COMPS} & \boxed{4} \end{bmatrix} \\ \text{HEAD} & \boxed{5} \end{bmatrix} \\ \text{CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{0} \\ \text{XARG} & \boxed{1} \end{bmatrix} \end{bmatrix} \\ \text{C-CONT.RELS} & \left\langle \text{HAVE}(\boxed{0}\, e, \boxed{1}\, x, \boxed{2}\, x) \right\rangle \\ \text{RELS} & \left\langle \text{SONG}(\boxed{7}, \boxed{2}) \right\rangle \\ \text{DAUGHTER} & \boxed{A} \end{bmatrix} \end{bmatrix}$$

$$\boxed{A}\begin{bmatrix} \textit{noun-incorporation-lex-rule} & \\ \text{PHON} & \textit{“nuuk”} \\ \text{SYNSEM} & \begin{bmatrix} \text{LOCAL.CAT} & \begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{3} \right\rangle \\ \text{COMPS} & \boxed{4}\,\langle\,\rangle \end{bmatrix} \end{bmatrix} \\ \text{HEAD} & \boxed{5}\begin{bmatrix} \textit{verb} & \\ \text{AUX} & - \\ \text{FORM} & \textit{non-root-nonfinite} \end{bmatrix} \\ \text{CONT} & \boxed{6} \end{bmatrix} \\ \text{DAUGHTER} & \boxed{B} \end{bmatrix}$$

$$\boxed{B}\begin{bmatrix} \textit{nuuk-noun-lex} & \\ \text{PHON} & \textit{“nuuk”} \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{VAL.SUBJ} & \left\langle \ldots\text{INDEX}\,\boxed{1} \right\rangle \\ \text{HEAD.FORM} & \textit{root} \end{bmatrix} \\ \text{CONT} & \boxed{6}\begin{bmatrix} \text{INDEX} & \boxed{7} \\ \text{XARG} & \boxed{2} \end{bmatrix} \end{bmatrix} \\ \text{RELS} & \left\langle \text{SONG}(\boxed{7}\, e, \boxed{2}\, x) \right\rangle \end{bmatrix}$$

The *ʔu-* root is modeled as a special lexeme that has properties that allow it to go through the incorporation rules in such a way that it obtains the right subject and complement(s) once the suffix applies. This means going through the adverb and adjective incorporation rules, since those are the rules that

pass up the complements list of the suffix verb. The lexical type description for *ʔu-* is given in (75).

(75)
$$\begin{bmatrix} \textit{ʔu-lex} & \\ \textsc{phon} & \textit{“ʔu”} \\ \textsc{synsem.local} & \begin{bmatrix} \textsc{cat} & \begin{bmatrix} \textsc{val} & \begin{bmatrix} \textsc{subj} & \left\langle \begin{bmatrix} \textsc{local.cat.head.prd} & - \end{bmatrix} \right\rangle \\ \textsc{comps} & \left\langle \boxed{2} \begin{bmatrix} \textsc{local} & \begin{bmatrix} \textsc{cat.head.prd} & - \\ \textsc{cont.hook.index} & \boxed{1} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \\ \textsc{head} & \begin{bmatrix} \textit{adjective-or-adverb} & \\ \textsc{prd} & + \\ \textsc{aux} & - \\ \textsc{form} & \textit{root-and-nonroot} \\ \textsc{mod} & \left\langle \boxed{2} \right\rangle \end{bmatrix} \end{bmatrix} \\ \textsc{cont.hook.xarg} & \boxed{1} \end{bmatrix} \end{bmatrix}$$

This lexical entry shares many properties with *incorporating-lex-rule* (67), since the *ʔu-* lexeme will not undergo one of the preparatory incorporation rules, and a suffix verb will directly attach to it. The lexical entry associates its complement's INDEX with its own XARG, so that the semantics of the suffix verb's ARG2 get associated with it. It also constrains its head value as a supertype of adjectives and adverbs and places its complement on its MOD list. This is so that this lexeme can only go through the adverb and adjective incorporating rules. *ʔu-* forms always have the full set of the suffix verb's complements, which is what happens with adjectives and adverbs. The difference between adjectives and adverbs and *ʔu-* is that *ʔu-* has no semantics. Finally, the morpheme *ʔu-* itself, despite being a root form, is defined as the supertype of root and non-root. I cannot leave its FORM value completely underspecified, because I do not want it to be considered *finite* or *nonfinite* by other rules, values that are separate form *root* and *nonroot*. This definition of a type as root-and-nonroot is conceptually strange, but it is so that the main predicate incorporating lex rules here (67), which require a root form, can accept *ʔu-*, but so can the auxiliary predicate incorporation rules below (78), which require a nonroot form.

3.2.3.2 Auxiliary predicate suffixes

Auxiliary predicate suffixes are suffix verbs that take a predicate complement, rather than a nominal predicate (§3.1.4.2). This attachment property can be seen in the suffix *-maḥsa* 'want to do' in (76–77) below, repeated from (46–47).

(76) hišuḱaƛ čaakupiiḥ sukʷiƛ**maḥsa** ḥaa ṗaacsaćumʔi

hišuk=!aƛ	čaakupiiḥ	su-kʷiƛ-**maḥsa**	ḥaa	ṗaacsaćum=ʔi˙	
all=NOW	man.PL	hold-MO-**want.to.do**	D3	football[28]=ART	

'All the men want to get that *ṗaacsaćum*.' (**C**, *tupaat* Julia Lucas)

(77) ʔaani**maḥsa**s waa ʔin čamiḥtaʔaƛni ʔiiḥʔiiḥa ...

ʔaani-**maḥsa**=s	waa	ʔin	čamiḥta=!aƛ=ni˙	ʔiiḥʔiiḥa	...
really-**want.to.do**=REAL.1SG	say	COMP	proper=NOW=NEUT.1PL	do.something.important	...

'I really want to say that we are doing something important ...' (**T**, *yuułnaak* Simon Lucas)

The strategy I apply to auxiliary predicate suffixes is extremely similar to that for main predicate suffixes. Like main predicate suffixes, incorporation proceeds in two steps: first a lexical rule that moves the needed syntactic properties into place, and then a final inflecting lexical rule that supplies the suffix itself. Because auxiliary predicate suffixes handle all predicates in the same way (§3.1.4.2), I only need two "preparatory" lexical rules: one for predicates (78), and one for adverbs (79). As with the main predicate suffixes, these lexical types inherit from *incorporating-lex-rule* (67).

The lexical rule *pred-incorporation-lex-rule* (78) below asserts that its daughter is a predicate (a noun, adjective, or verb) and not a root form. It then passes up that word's subject and complements.

(78)
$$\begin{bmatrix} \textit{pred-incorporation-lex-rule} & \\ \text{SYNSEM.LOCAL.CAT.VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \\ \text{DAUGHTER} & \begin{bmatrix} \text{SYNSEM.LOCAL.CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{PRD} & + \\ \text{FORM} & \textit{non-root} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

The rule for adverbs, *adv-incorporation-pred-lex-rule* (79) does much of the same work that the previously-described adverb incorporation rule for main predicate suffixes does (71). The modifications are that, rather than identifying the complment's INDEX with the mother's XARG, the complement's INDEX is identified with the mother's INDEX. This will have the effect of allowing the adverb to modify the complement. The complement's XARG is also identified with the subject. This will give the subject-control properties of the suffix. The rest of the structure is the same as in (71), and in fact in my implementation, the commonalities are stored in an abstract type that both daughters inherit from.

(79)
$$\begin{bmatrix} \textit{adv-incorporation-pred-lex-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.VAL} & \begin{bmatrix} \text{SUBJ} & \langle \text{LOCAL.CONT.INDEX} \quad \boxed{1} \rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{LOCAL} & \begin{bmatrix} \text{CAT.HEAD} & \begin{bmatrix} \text{AUX} & - \\ \text{TYPE-RAISE} & - \end{bmatrix} \\ \text{CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{2} \\ \text{XARG} & \boxed{1} \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{2} \\ \text{GTOP} & \boxed{3} \end{bmatrix} \end{bmatrix} \\ \text{DAUGHTER} & \begin{bmatrix} \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.HEAD} & \begin{bmatrix} \textit{adv} & \\ \text{MOD} & \langle \begin{bmatrix} \text{LOCAL...LTOP} & \boxed{3} \end{bmatrix} \rangle \end{bmatrix} \\ \text{CONT.HOOK.INDEX} & \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Once again, a final type applies the actual suffix verb itself, this time called *2p-suffix-pred-verb-lex-rule*. This type is similar to the version seen for main predicate suffixes in (72), and there is in fact only one difference: the ARG2 of the C-CONT is an event type rather than a referent and is identified with the daughter's INDEX rather than its XARG. Other than that, the rules are identical. Again, I put the common restrictions in a supertype from which both subtypes inherit. The daughter subtype *2p-suffix-pred-verb-lex-rule* is given in (80).

(80)
$$\begin{bmatrix} \textit{2p-suffix-pred-verb-lex-rule} & \\ \text{C-CONT} & \left\langle \begin{bmatrix} \text{ARG2} & \boxed{2}\ e \end{bmatrix} \right\rangle \\ \text{DAUGHTER} & \begin{bmatrix} \text{SYNSEM.LOCAL.CONT.HOOK.XARG} & \boxed{2} \end{bmatrix} \end{bmatrix}$$

Some special care that has to be taken with *ʔu-* attachment. I need to block certain auxiliary suffixes from taking it, while allowing it for others. I do this by defining morphological hierarchies. Some suffixes, like *-maḥsa*, inherit from a type which underspecifies its daughter as either a predicate lexeme or *ʔu-*. Others, like *-ẇiṫas*, inherit from a morphologically-defined type which forbids its daughter to be of the lexical type *ʔu-*.

I give a sample derivation of the word *ʔaanimaḥsa* 'really want to' in (81).[29]

[29] I will here and throughout suppress the HCONS list, which is the list that introduces *qeq* relations that define scopal properties. I will fold *qeq* relations it into the RELS list. This is only a convenience to save space.

(81)

$$\begin{bmatrix} \textit{maḥsa} & \\ \text{PHON} & \textit{“ʔaanimaḥsa”} \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{S}\begin{bmatrix} \ldots\text{INDEX} & \boxed{1} \end{bmatrix} \right\rangle \\ \text{COMPS} & \boxed{C} \end{bmatrix} \\ \text{CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{0} \\ \text{XARG} & \boxed{1} \\ \text{LTOP} & \boxed{3} \end{bmatrix} \end{bmatrix} \\ \text{C-CONT} & \left\langle \begin{bmatrix} \text{PRED} & \textit{WANT-TO} \\ \text{ARG0} & \boxed{0}\, e \\ \text{ARG1} & \boxed{1}\, x \\ \text{ARG2} & \boxed{2}\, e \\ \text{LBL} & \boxed{3} \end{bmatrix} \right\rangle \\ \text{DAUGHTER} & \boxed{A} \end{bmatrix}$$

$$\Big|$$

$$\boxed{A}\begin{bmatrix} \textit{adv-incorporation-pred-lex-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{S}\begin{bmatrix} \text{LOCAL.CONT.INDEX} & \boxed{1} \end{bmatrix} \right\rangle \\ \text{COMPS} & \boxed{C}\left\langle \begin{bmatrix} \text{LOCAL.CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{2} \\ \text{XARG} & \boxed{1} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{2} \\ \text{GTOP} & \boxed{3} \end{bmatrix} \end{bmatrix} \\ \text{DAUGHTER} & \boxed{B} \end{bmatrix}$$

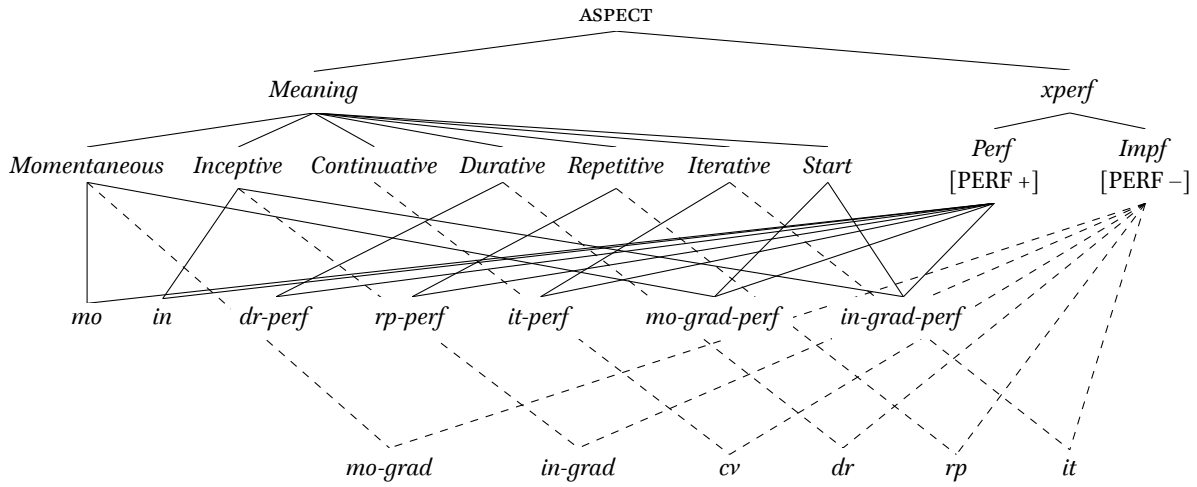
$$\Big|$$

$$\boxed{B}\begin{bmatrix} \textit{ʔaani-adv-lex} & \\ \text{PHON} & \textit{“ʔaani”} \\ \text{SYNSEM.LOCAL.CAT.HEAD} & \begin{bmatrix} \text{MOD} & \left\langle \begin{bmatrix} \ldots\text{LTOP} & \boxed{3} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{RELS} & \left\langle \begin{bmatrix} \text{PRED} & \textit{really} \\ \text{ARG0} & e \\ \text{ARG1} & \boxed{2}\, h \end{bmatrix}, \begin{bmatrix} \textit{qeq} & \\ \text{HIGHER} & \boxed{2} \\ \text{LOWER} & \boxed{3} \end{bmatrix} \right\rangle \end{bmatrix}$$

3.2.4 Verbal aspect

As indicated in (§3.1.5), I have implemented the traditional aspect system in my analysis. This is done in two parts. The first is a hierarchy of aspectual values for meaning. For each final word form in the morphological diagram given in the traditional understanding of Nuuchahnulth aspect in Fig. 3.1, there is a node in the meaning graph (Fig. 3.3) corresponding to it. This graph has two main subtypes of aspect: meaning, which encompasses categories like momentaneous, inceptive, repetitive, and so on, and a separate type xperf, which defines whether something is perfective or imperfective. I have added an additional type to the meaning hierarchy labeled "start," which is meant to represent a final perfective form in morphology that already has perfective marking (momentaneous-graduative-perfective, inceptive-graduative-perfective). These perfective forms are always inceptive or at the beginning of an action, thus "start." This hierarchy is shown in Fig. 3.3, where all possible aspect values (except the Iterative II) are leaf nodes that inherit from at least one meaning subtype and one perfective subtype. Perfective types (the second from last row) inherit from Perf, and imperfective types (the last row) inherit from Impf. This will allow later parts of the grammar to refer to perfective and imperfective aspects, without having to worry about which specific perfective or imperfective aspect a word is (4.3).

Figure 3.3: Traditional aspectual hierarchy

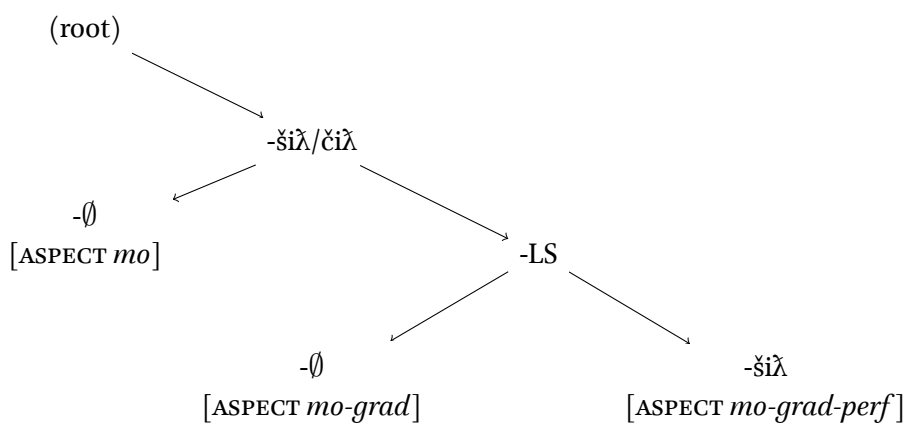


While this describes the values of the ASPECT feature and their interpretations, this is not yet a way

of morphologically applying them to a root. In fact, this hierarchical description makes straightforward application impossible. The momentaneous value *mo* is defined as [PERF +], and the momentaneous graduative *mo-grad* is [PERF −]. So the aspect value *mo-grad* cannot, in this schema, apply to a lexeme that has the aspectual value *mo*, because a thing cannot be both [PERF +] and [PERF −]. So I cannot apply the aspectual morpheme form and the corresponding aspectual value at the same time.

As indicated at the start of this section, I handle this by separating value (described above) from morphological form. Separate morphological rules apply the aspectual form via suffixation and others apply aspectual meaning (the values in Fig. 3.3). Fig. 3.4 below shows the pathway for lexical rule applications for momentaneous-derived forms. A root first takes the morphology for momentaneous morphology (-šiƛ, -čiƛ), without adding any aspectual meaning. If this is the only suffix on the lexical form, in order to be fully formed the lexeme must go through a rule that applies the aspectual value *mo* (momentaneous and perfective) but no morphology. A further graduative form (-LS) template can be applied to the stem immediately following the initial momentaneous form, after which a rule can add the aspectual value *mo-grad* (momentaneous and imperfective). Alternatively, a final rule can add both the final perfective morphology (-šiƛ) and the complex aspectual value *mo-grad-perf* (momentaneous, "start", and perfective).

Figure 3.4: Application of morphology to momentaneous forms



3.3 Summary

Because of predicate flexibility in Nuuchahnulth, I have defined special terminology to distinguish between semantic and syntactic phenomena. I use *relation* to refer to atomic semantic units and *argument* to refer to the variables that those semantic units relate. I refer to syntactic *predicates*, which are in the position in the clause where semantic arguments may be filled. *Participants* are the syntactic units that fulfill a predicate's semantic arguments, and thus are a syntactic correlate to arguments.

Verbs, adjectives, and common nouns may all be used predicatively, but proper nouns cannot be. All of these lexical categories can be used as participants, but verbs and adjectives require an "article," which I argue is a relativizer. Each clause is headed by a second-position element which provides, among other things, subject agreement. Adverbs may precede the clausal predicate, in which case the second-position enclitics appear after the adverb. In my modeling, I treat these differently from the clausal second-position element.

A series of suffixes may also occur in a second position, but not with respect to the clause as a whole but with respect to their complement. The only two types of second-position suffixes I model are main predicate suffixes, which relate two or three entities to each other (with meanings like 'have,' 'take,' and 'give'), and auxiliary predicate suffixes, which are subject-controlling predicates that relate an entity to an event (with meanings like 'going to' and 'want to').

Finally, I describe the complex aspect system in Nuuchahnulth, and give its traditional interpretation and a proposed revised interpretation. In either interpretation, the system has a few perfective forms and a large number of imperfective forms.

All of these facts are modeled in an implemented grammar based in the HPSG formalism. The predicate/participant distinction is modeled through a boolean-valued feature [PRED +|−], which keeps track of the eventiveness or referentiality of the element's semantic index. Nouns, adjectives, and verbs are all words that introduce events and contain a syntactic subject, they must go through a lexical or syntactic rule in order to be used as participants, which causes them to expose a referential index or entity instead of an event. Second-position clausal elements are modeled as syntactic words that attach to the leftmost element in the phrase as an auxiliary verb that heads the entire clause. Second-position suffixes

on the other hand are modeled as lexically incorporating suffixes which behave differently depending on the lexical item they incorporate. The aspectual system's meaning is modeled as a type hierarchy which separates notional meaning from perfectivity. Aspectual form is added in the syntax separately from aspectual meaning. With this basic sketch of the clause and my HPSG analysis of it, I will be able to describe my understanding of serial verbs (§4) and the predicate linker (§5), and how I model these phenomena.

Chapter 4

SERIAL VERBS

In this chapter I will introduce what I mean when I refer to serial verb constructions (SVCs) in Nuuchahnulth (§4.1), give the data on the construction (§4.2), and finally my analysis as implemented in my grammar (§4.3). I will ultimately define four different types of serial verb constructions in Nuuchahnulth and analyze them as a type of coordination that occurs within a single clause and beneath the scope of subject agreement and tense.

4.1 Serial verb definition

To investigate the properties of serial verb constructions (SVCs) I first have to define what I count as such a construction in the language.[1] It is difficult to find a single widely accepted definition of serial verbs in the linguistic literature. Even in their typological survey, Aikhenvald and Dixon (2006) give several definitions, some of which conflict with each other. They define SVCs as multiple verbs that (i) are monoclausal; (ii) from a "single predicate"; (iii) form a "single event"; (iv) form one unit phonologically; (v) are negated singly. Some of these properties are either vague or not universally applied to all serial verbs. Aikhenvald and Dixon give no clear definition for a single predicate or a single event. Without a formal semantic representation, the interpretation of a single event is left open for individual linguists, and the definition of a single predicate (when it is not synonymous with a single event) seems to come down to monoclausality (i). While serial verbs may be phonologically connected (iv), they give several examples where the serial verbs are separated by intervening words (such as a direct object), and give instances of serial verbs (on their definition) where one verb is negated while the other is not. So none of these definitional properties are necessary and no single one seems to be sufficient. Some properties are left underdefined. Leaving some definitions vague and lacking to have universal tests is almost certainly

[1]Jaccobsen (1993) was the first to apply the term "verb serialization" to this phenomenon in Nuuchahnulth.

necessary when attempting to define a phenomenon across all of human language, as Aikhenvald and Dixon do.

I am only looking at one language, Nuuchahnulth, and will tailor my definition of a serial verb construction to the language, while attempting to keep the definition as neutral as possible with respect to syntactic framework. My functional definition of a serial verb construction in Nuuchahnulth is as follows:[2]

(82) Any clause containing two or more verbs without an overt coordinator and where the verbs share the semantic interpretation of the second-position clausal inflection[3] is a serial verb construction.

Each matrix and dependent clause is marked with a second-position enclitic, and so the boundaries of a clause are often easy to determine. The one exception to this is that the third-person neutral mood is null-marked. For this reason, when working with speakers I deliberately elicted examples not in this person-mood combination. However, in running text it is unavoidable that many constructions will have third person subjects. Because of the restriction that serial verb constructions lack an overt coordinator, constructions containing a linker morpheme (Chapter 5) do not count as SVCs.

The requirement of sharing second-position clausal inflection is clearly Nuuchahnulth-specific. However, it is designed to capture the distinction between a single clause with a serial verb construction and two separate clauses. The way to determine a clause boundary will differ language to language. Because clause boundaries in Nuuchahnulth include subject information, the verbs necessarily share a subject. This may be true of all SVCs, but I make no such claim here. My definition says nothing about the semantics or event properties of an SVC, only that a serial verb construction is one where verbs relate to one another within the limits of a clause. There is room for a great deal of difference and diversity within SVCs that meet this definition.

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[2]Although he does not articulate it in these terms, I believe this definition is equivalent to that used in Nakayama (2001, p. 97–113).

[3]I will later show that some of the elements in this clausal complex do not scope over the entire clause, but narrowly over a verb. See §4.3.2.

4.1.1 Semantic compositionality

I have an analytical preference for semantic compositionality where possible. Semantic compositionality means that one can create the semantics of the sentence directly from the semantics of lexical items and combinatoric rules in the syntax. In my analysis (§4.3) I will be able to maintain compositionality for Nuuchahnulth SVCs. This may be a result of the facts about Nuuchahnulth as well as my framework, and I make no claims about semantic compositionality in SVCs cross-linguistically.

As an example of an SVC analysis that does not maintain compositionality, I will use Butt (1995)'s analysis of Urdu serial verbs. A key component of Butt's analysis is the notion of a "complex predicate," which is the creation of a new atomic unit of meaning from two separate words. The two components of a complex predicate may have a hierarchical relation in the syntax of the language (which contradicts the monoclausality requirement from Aikhenvald and Dixon (2006)), but form a new semantic unit. The semantic relation for the word 'write' might be WRITE(x,y), but when combined with the Urdu permissive verb LET(a,b), the new semantic relation is LET-WRITE(x, y, z). The composed semantic relation in this case has a different number of arguments from either of its dependent relations.

Despite the apparent relationship between WRITE, LET, and LET-WRITE, this analysis, without the development of a fuller semantic formalism, violates semantic compositionality. We write a relation and its elementary predication with upper-case letters as a shorthand for the 'meaning' of that morpheme. However, this convention is only for human readability, since we are not actually defining what those units mean but just using them as placeholders for "whatever the fuller lexical semantics are." We could write the meaning of *write* as MEANING1647 with no loss of specificity. Butt's analysis creates a situation where there is a new mathematical operation in the semantic representation: 'let' LET + 'write' WRITE = LET-WRITE. There is no formal relationship between these three meaning representations except through that equation. It is just as though the equation had been MEANING1647 + MEANING2119 = MEANING8780. Even though the meaning of Urdu's *let-write* is semantically compositional in the language, the meaning representation of Butt's "complex predicate" in the formalism is non-compositional with respect to its members.

This is not necessarily a bad thing in all contexts. Some sort of arbitrariness is necessary when mod-

eling multi-word expressions like idioms, which have for a long time been understood as not fully compositional (Chafe, 1968), although multi-word expressions can vary in their semantic compositionality (Nunberg et al., 1994). It is possible that many SVCs are not-quite compositional and a non-compositional semantic relation is an appropriate model. However, when this kind of rule is productive and has predictable semantics (as I will claim is the case for SVCs in Nuuchahnulth), I believe it is preferable to adhere to semantic compositionality in the formal analysis. Otherwise, one ends up with a list of semantic equations which is nearly the size of the set of verbs in the lexicon, if not larger.

In Lexical-Functional Grammar (LFG), which is the framework that Butt uses, the elementary predication (the all-caps semantic relation) of a word is linked to the number of its arguments. That is, the meaning of 'write' isn't merely WRITE, but WRITE(x, y). In MRS (Copestake et al., 2005), which is the semantic framework I use, the elementary predication and its arguments are separated from each other. That is, the meaning of 'write' is represented with the relation or elementary predication separate from its arguments:

(83) $$\begin{bmatrix} \text{PRED} & \textit{WRITE} \\ \text{ARG0} & e \\ \text{ARG1} & x \\ \text{ARG2} & y \end{bmatrix}$$

This separability is something the formalism shares with Neodavidsonian representations (Parsons, 1990), and it is this framework that will allow me to maintain strict semantic compositionality in my analysis of serial verbs in Nuuchahnulth.

4.1.2 Non-SVCs

I have defined Nuuchahnulth serial verb constructions in (82) as any clause (defined by the position of second-position clausal enclitics) which contains more than one verb, without any overt coordinator, and where the clausal enclitics are semantically interpreted as belonging to all verbs in the construction. There are a few types of constructions that nearly fit this definition, but are excluded. The first is

juxtaposed clauses (84).

(84) hačˀa pawałšiƛ [pause] ʔuušp̓iq [pause] ʔuušp̓iqqačˀa wawaa.

hačˀa	pawał-šiƛ	ʔuušp̓iq	ʔuušp̓iq=qaˑčˀa	wawaa.
maybe	lost-MO	something.bad.happens.MO	something.bad.happens.MO=DUBV	say.CV

‘ “Maybe he got lost... something happened... perhaps something happened,” they said.’ (**C**, *tupaat* Julia Lucas)

(84) comes from a text about a man who was lost at sea and returns. Although one could claim that the first two verbs, *pawałšiƛ* and *ʔuušp̓iq*, are in an SVC, the prosody used in the utterance indicates something else. The repeated *ʔuušp̓iq*, complete with a second-position clitic, suggests that these are clauses (the first two under null-marked third person neutral mood) that are adjacent. This kind of structure occurs in speech as people are rephrasing or redescribing an event. (85) has the same structure, and is from a description of Raven in a narrative text.

(85) ʔayiisšiƛ, hiy̓iisšiƛ haʔumukʔi.

ʔaya-!iis-šiƛ	hiš-!iis-šiƛ	haʔum=uk=ʔiˑ
many-consume-MO	all-consume-MO	food=POSS=ART

‘He ate a lot, he ate all of the food.’ (**B**, Marjorie Touchie)

Like (84), (85) is in the third person, and I believe the two verbs are part of two separate clauses, rather than a serialization structure. When these sorts of constructions occur outside the third person, the adjacent clauses require an overt enclitic, and so this apparent ambiguity (serialization vs adjacent clause) only occurs in the third person.

The second kind of construction that falls outside my definition of an SVC is temporal expressions. The way to express a duration of time is to juxtapose the time period with the rest of the clause. If the time expression is in the durative aspect, the interpretation is ‘for *x* time’ (86). If the time expression is in a perfective aspect, the interpretation is ‘after *x* time’ or ‘at the end of *x* time’ (87).

(86) sučˀačłintiis hił ċuumaʕaas.

sučˀa-či·ł=int=(y)iis	hił	ċuumaʕaas
five-day.DR=PST=WEAK.1SG	be.at	Port.Alberni

'I was in Port Alberni for five days.' (**Q**, Sophie Billy)

(87) ʔaḥʔaaʔaƛqačˀa ṅupqʔičḥšiʔeƛ ṅaacsaaƛ ḥiškʷiiʔatḥ čˀapac hintšiƛ ʔuucaẏuk ḥiškʷiiʔatḥ.

ʔaḥʔaaʔaƛ=qa·čˀa	ṅup-qʔičḥ-šiƛ=!aƛ	ṅaacsa=!aƛ	ḥiškʷiiʔatḥ	čˀapac	hintšiƛ
and=DUBV	one-year.DR-MO=NOW	see=NOW	Hesquiaht	canoe	arrive.MO.GR

ʔu-L.caẏuk	ḥiškʷiiʔatḥ
X-go.DR	Hesquiaht

'And one year later the Hesquiahts saw a boat arriving toward Hesquiaht.' (**C**, *tupaat* Julia Lucas)

Although these two types of temporal expression are distinct, it is possible to use the second construction, which uses a perfective form, to express a duration, i.e. *it has become X length of time that Y has been done*, as in (88). The opposite (interpreting the durative form to mean 'after') is not possible to my knowledge.

(88) ʔaḥʔaaʔaƛ muučiiłšiƛna hił siẏa ʔaḥʔaaʔaƛ ḥaakʷaaƛuk Matthew, kʷaaʔuucukqs.

ʔaḥʔaaʔaƛ	muu-či·ł-šiƛ=na·	hił	siẏa	ʔaḥʔaaʔaƛ	ḥaakʷaaƛ=uk	Matthew
and	four-day.DR-MO=NEUT.1PL	be.at	1SG	and	young.girl=POSS	Matthew

kʷaaʔuuc=uk=qs
grandchild=POSS=DEFN.1SG

'We were there for four days, me and Matthew's daughter, my granddaughter.' (**C**, *tupaat* Julia Lucas)

What differentiates these expressions from serial verb constructions, as well as linker constructions (see §5) is the interpretation of the subject. While the temporal component can take the subject-mood portmanteau (86, 88), the person expressed in the subject clitic is not in any way the subject of the temporal expression. In (86), 'I' is not the subject of 'five days.' This is also the case for the subjects of the

verbs in (87, 88). Instead, the time expression seems to be opaque to the subject information present in the clause. So while this construction does have two verbs in a single clause, the interpretive scope of the second-position enclitics, and particularly the subject-mood enclitic, only falls on one of the verbs (the non-temporal one). Thus, this type of construction is excluded from my scope for serial verbs.

4.2 Data

4.2.1 Types of serial verb constructions

Descriptively, I have categorized observed serial verb constructions into four types. These types are not motivated a priori by any external typological theories or a commitment to these categories, but were created an attempt to make sense of my data. In contrast to the description in Nakayama (2001, p. 102–109), my serialization types are differentiated from each other syntactically rather than semantically.[4] In my analysis (§4.3) I will create a type that collapses (a modified version of) Type I and III, but I leave them separated here in an attempt to maintain a distinction between data and analysis.

4.2.1.1 Type I: Simultaneity

This SVC links two verbs together that necessarily occur simultaneously. Semantically, they can often be described loosely as "manner and action"—where one verb is expressing the main action, and another is expressing how it is done. This includes motion and manner of motion (e.g., 'go' + 'walk' as in 89), a semantically light verb like "do" coordinating with the actual action (e.g., 'only-do' + 'lie-down' as in 90), and metaphoric motion and action (e.g., 'go-back' + 'become-alive' as in 91).

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[4]There is however considerable overlap in our categories. Nakayama's "Action + Manner" (p.102–103) maps onto my Type I (§4.2.1.1), "Action + Location" (p.104–105) maps onto my Type II (§4.2.1.2), "Action + Relational" (p.106–109) maps rather loosely onto my Type III (§4.2.1.3), and "Action + Action" (p.105) maps onto my Type IV. That two researchers could come up with these categories independently, one from a more semantic and one from a more syntactic perspective, lends considerable credibility to this category structure. My points of departure from Nakayama have to do with his "Action + Time" (p.103–104) category, where I believe his temporal elements are adverbs, and certain of his "relational" elements in his "Action + Relational" category, which are functional elements and not full verbs—either little-*v* on Woo's (2007a) account, or adpositions on mine.

(89) **ʔuucuʔuk**ẇiṭasaḥ **yaacuk** ċuumaʕas.

ʔuucuʔuk-ẇiṭas=(m)aˑḥ **yaacuk** ċuumaʕas

go.to.DR-going.TO=REAL.1SG **walk.DR** Port.Alberni

'I'm going to walk to Port Alberni.' (**B**, Bob Mundy)

(90) **ʔanasł**intwaʔš **ṭawiłšƛ.**

ʔana-siła=int=waˑʔš **ṭawił-šiƛ**

only-do=PST=HRSY.3 **lie.down-MO**

'He just laid down.' (**Q**, Sophie Billy)

(91) **huʔacačiʔ**aqƛsuuk **tiičačiƛ.**

huʔa-ca-čiƛ=!aqƛ=suuk **tiič-°ačiƛ**

back-go-MO=FUT=NEUT.2PL **live-IN**

'You will come back to life.' (**C**, *tupaat* Julia Lucas)

This construction is not limited to the semantics of "manner and motion." Speakers can also coordinate verbs that describe resultative and simultaneous actions (e.g., feel sorry for + mistreat as in 92), or what I sometimes call serial repetition, which includes cases where a transitive and intransitive verb are both used to express an action (e.g., eat + eat in 93, and cry + cry for in 94), or where two transitive verbs, one more specific and less specific, are used (e.g., say + talk about in 95). The only unifying property of this SVC type seems to be simultaneity.

(92) wiḱiis **ẋaẋaał łaakʷiił** siẏa.

wik=!iˑs **ẋaẋaał** **łaakʷiił** siẏa

NEG=CMMD.2SG>1SG **feel.sorry** **mistreat** 1SG

'Don't feel sorry for me, mistreating me.' (**C**, *tupaat* Julia Lucas)

(93) ʔu**ʔiić**aƛ̓ **haʔuk.**

ʔu-**!iic**=!aƛ=!iˑ **haʔuk**

x-**eat.DR**=NOW=CMMD.2SG **eat**

'Eat it!' (**Q**, Sophie Billy)

(94) **ʕiḥak**itʔiš **ʔuʔuuy̓uk**[5] ʔumʔiiqsakʔi.

ʕiḥ-ak=(m)it=ʔiˑš **ʔuʔuuy̓uk** ʔumʔiiqsu=ʔak=ʔiˑ

cry-DR=PST=STRG.3 **cry.for** mother=POSS=ART

'She cried for her mother.' (**C**, *tupaat* Julia Lucas)

(95) **waa**ʔaƛiič **ʔuumaćk**^{w} ʔuušḥy̓imskqs.

waa=!aƛ=(y)ii=č **ʔu-L.maćuk** ʔuuš-(q)ḥy̓uˑ-mis=uk=qaˑs

say=NOW=WEAK.3=HRSY **x-talk.about** some-be.related.or.friends-NMLZ=POSS=DEFN.1SG

'I heard he was talking about my friends or family.' (**Q**, Sophie Billy)

This kind of SVC can "stack" beyond coordinating just two verbs, to at least three (96).

(96) **huʔacačiƛ**ẃiṫasaḥ **šiiƛuk wałaak** yuuɬuʔiɬʔatḥ.

huʔa-ca-čiƛ-ẃiṫas=(m)aˑḥ **šiiƛuk** **wałaak** yuuɬuʔiɬʔatḥ

back-go-MO-going.to=REAL.1SG **move.house.DR** **go.to** Ucluelet

'I'm going to move back to Ucluelet.' (**B**, Bob Mundy)

It is possible for one of the verbs and its object (that is, the full VP of one of the serial verbs) to interrupt the other verb and its object, as in (97, 98, 99).

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[5]This is not the normal form of the verb 'cry for' which is *ʔuʔuuyuk*. Compare with *-RL.ayuk* in Sapir and Swadesh (1939, p. 317).

(97) ʔuucṭ̓iiḥs$_{v_1}$ [ƛ̓iḥaa]$_{v\_2}$ Queens Cove$_{obj_1}$.

ʔuucṭ̓iiḥ$_{v_1}$=s [ƛ̓iḥ-(y)aˑ]$_{v\_2}$ Queens Cove$_{obj_1}$

go.toward.DR=STRG.1SG drive-CV Queens Cove

'I am driving to Queens Cove.' (**T**, Fidelia Haiyupis)

(98) ʔuʔiisʔaƛ̓in$_{v_1}$ [haʔuk]$_{v\_2}$ suuḥaa$_{obj_1}$.

ʔu-!iis$_{v_1}$=!aƛ̓=!in [haʔuk]$_{v\_2}$ suuḥaa$_{obj_1}$

X-eat=NOW=CMMD.1PL eat.DR spring.salmon

'Let's eat spring salmon!' (**B**, Bob Mundy and Marjorie Touchie)

(99) hiniicintiisʔinł$_{v_1}$ [ʔucičƛ̓$_{v\_2}$ ciquuwłi$_{obj_2}$]$_{vp\_2}$ ṭ̓aatṅaʔiskqs$_{obj_1}$.

hina-iic$_{v_1}$=int=(y)iis=ʔinł [ʔu-ci-čiƛ̓$_{v\_2}$ ciq-uwił=ʔiˑ$_{obj_2}$]$_{vp\_2}$ L.<t>-ṭ̓aṅa=ʔis=uk=qaˑs$_{obj_1}$

EMPTY-carry=PST=WEAK.1SG=HABIT X-go.to-MO pray-building PL-child=DIM=POSS=DEFN.1SG

'I would always take my children to church.' (**Q**, Sophie Billy)

I noticed in the course of working on this project that this type of SVC has a strong tendency to agree in perfectivity. For an overview of Nuuchahnulth's aspect system, see §3.1.5. Here it is most relevant that verb forms that end in the "inceptive" or "momentaneous" aspect are perfective,[6] while all other forms are imperfective.

Despite my belief that there is a preference for aspectual matching, speakers were often very flexible on the grammaticality of perfective mismatching when asked about it directly. I made several attempts to work out whether this was a grammatical rule in one-on-one sessions with speakers, but often received contradicting information, with speakers sometimes correcting a construction to match in perfectivity and other times volunteering mismatched verbs. I tried to resolve the issue by annotating SVCs that occurred in running texts. The texts I used came from a number of sources: (1) Sapir and Swadesh (1939); (2) Texts gathered by Adam Werle and provided to me (some from speakers I have not worked with and

[6]The inceptive and momentaneous may in fact just be a simple perfective aspect. See §3.1.5.

some I have); (3) Texts I elicited with speakers. Some of these were texts I have interlinearized and some I have not.

I went through these texts and marked instances of what I believed to be SVCs. Because a large number of cases in running text are third person, and thus possibly involve more than one clause with a null-marked third person, I had to make educated guesses about whether some third-person constructions were two clauses or an SVC. I used a few heuristics to discriminate. (I) If surrounding clauses always began with an overt (non-neutral) third-person inflection, then I considered it less likely that a null neutral mood third person would appear in the midst of them, and so the two verbs were likely within the same clause. (II) If the verbs shared an overt object, I considered it more likely that they were within the same clause than that one had a dropped object. (III) If both verbs in the possible SVC were in an embedded clause, then I considered this proof they were serialized. I ranked possible SVCs on a confidence level of 1-4, with 1 being uncertain, 2 a toss-up, 3 likely, and 4 completely positive. I then counted how many times the two verbs in the SVC matched or mismatched in perfectivity. For a few cases (see below) I was uncertain about the perfectivity of a verb, but confident that it was in a serial verb construction. I created half-counts of 0.5 in these cases. I then threw away all SVCs ranked as 1 or 2. The remaining data are presented in Table 4.1 below. I have broken this data into five sections: Data from the Nootka Texts (that is, strictly from Sapir and Swadesh 1939), which is roughly 100-year-old Tseshaht Nuuchahnulth, and then one for each of the modern dialect regions (Barkley, Central, Northern, and Kyuquot-Checleseht). The majority of the Central data comes from my consultant Julia Lucas, and the majority of the Kyuquot-Checleseht data comes from an in-progress Bible translation from Sophie Billy. I lumped these together with other smaller sources, which (from my limited data) appear to have similar broad characteristics.

Table 4.1: Type I SVCs and Perfectivity

	Word count	Type I SVCs	Perfectivity mismatches
Nootka Texts	2220	22	1
Barkley speakers	942	10	3
Central speakers	2456	26	9.5
Northern speakers	1621	12	3.5
Kyuquot-Checleseht speakers	6928	36	11

Perfectivity mismatches almost do not occur in my sampling of the Nootka Texts. The 1 count comes from 2 cases that were given a 0.5. The first is due to the verb *ʔuḥtinʔap* 'make out of', which appears to be made with the imperfective form of the suffix *-ḥtin* 'made of', but could plausibly be interpreted as perfective (since it is an act of creation), which then coordinates with perfective *ʔukʷiiłšiƛ*. Another case was given a 0.5 count because it coordinated the verb *qʷis* 'do thusly' with *ḥaʔukʷiƛ* 'do in return' (perfective).[7] It is possible to interpret *qʷis* as imperfective (there is a clear perfective *qʷisšiƛ*), but it is also possible that 'do thus' is in a different kind of non-serialized relationship with the following verb and not an SVC.

Mismatches are much more common among modern speakers, occurring about a third of the time. Many of these cases share some common features: 5 include the imperfective verb *hiniic* 'carry' coordinated with a perfective verb of motion; 3 include imperfective *ʔucaap* 'put' coordinated with a perfective verb of motion; and 2 include imperfective *ʔukʷiił* 'make' with a perfective verb. I single out these cases because they are cases where the corresponding perfective forms, *hiniicšiƛ*, *ʔucaẏap*, and *ʔukʷiiłšiƛ* are relatively rare, and the semantics of these verbs are such that they may be lexical exceptions to perfectivity matching. These three verbs account for half of the mismatching cases in Table 4.1. The remaining cases are mostly various motion verbs mismatching with one another: imperfective *ʔuyiiq* 'be in a canoe' and perfective *wałaak* 'go' (Bob Mundy, Barkley dialect); perfective *ʔucačiƛ* 'go' and imperfective *ƛatẃaa* 'paddle' (Julia Lucas, Central dialect); perfective *wałšiƛ* 'go home' and imperfective *kamitqkʷ* 'run' (Sophie Billy, Kyuquot-Checleseht dialect); and so on. It is significant that mismatches like this do not occur

[7]This exact same construction *qʷis* + *ḥaʔukʷiƛ* also appears in a text from Earl Smith, a Northern dialect speaker, and so may also be a formulaic expression.

in any of my annotations of Sapir and Swadesh (1939). My interpretation of these distributional facts is that there was either a grammatical requirement or grammatical preference in the past for a serial verb construction to have matching perfectivity, but in the present status of the language that preference has significantly relaxed.

In an attempt to directly confirm this perfectivity preference, I put together a short set of forced-choice tests, which included perfectivity matching, to see if speakers would choose matching verb forms or non-matching verbs. The results were mixed, and I believe this is partly due to cultural factors making this kind of forced-choice test difficult and partly due to the limits of the test itself. Speaker responses were different in this out-of-the-blue forced choice from their responses when working with sentences presented in context. TODO: additional info here?

In elicitation sessions where sentences were situated within a given context, a stronger preference for perfectivity matching did in fact emerge. This happened in two ways: Speakers typically rejected a rephrasing of matched perfectivity sentences that used mismatched perfectivity, and speakers (when ruminating on a sentence) would sometimes repeat it until they reached matching perfectivity, and say, "Yes, that's the best way to put it." This is consistent with my interpretation that the perfectivity requirement is an older component of the grammar that has relaxed in the modern language.

An example of this kind of judgment from speakers can be seen in (100, 101). In (100), a sentence that was provided initially by my consultant, the two verbs are both in the durative aspect. In the ungrammatical (101), which I suggested, the second verb has been moved to the momentaneous.

(100) ʔuucaẏukẇiṫass yuułuʔiłʔatḥ yaacuk.

ʔuucaẏuk-ẇiṫas=s	yuułuʔiłʔatḥ	yaacuk
go.DR-going.to=STRG.1SG	Ucluelet	walk.DR

'I'm going to walk to Ucluelet.' (C, *tupaat* Julia Lucas)

(101) *ʔuucaẏukẇiṭass yuułuʔiłʔatḥ yaacšiƛ.

ʔuucaẏuk-ẇiṭas=s yuułuʔiłʔatḥ yaacšiƛ

go.DR-going.to=STRG.1SG Ucluelet walk.MO

Intended: 'I'm going to walk to Ucluelet.' (**C**, *tupaat* Julia Lucas)

In another context, the same consultant Julia Lucas had the precisely opposite judgment of perfectivity mismatching. (102, 103) below are a near inversion of (100, 101) above. The verb 'go' is second, rather than first, in the construction, and the clause is in the future tense with *=!aqƛ* rather than the modal intentional future *-ẇiṭas*. When Julia rejected (103) she said, "No, *yaacuk* because you are on your way."

(102) ƛiiḥšiʔaqƛs ʔuuciẏuk yuułuʔiłʔatḥ.

ƛiiḥšiƛ=!aqƛ=s ʔuuciẏuk yuułuʔiłʔatḥ

drive.MO=FUT=STRG.1SG go.DR Ucluelet

'I'm going to drive to Ucluelet.' (**C**, *tupaat* Julia Lucas)

(103) *ƛiiḥšiʔaqƛs ʔucačiƛ yuułuʔiłʔatḥ.

ƛiiḥšiƛ=!aqƛ=s ʔu-ca-čiƛ yuułuʔiłʔatḥ

drive.MO=FUT=STRG.1SG X-go-MO Ucluelet

Intended: 'I'm going to drive to Ucluelet.' (**C**, *tupaat* Julia Lucas)

In an initial session with Bob Mundy and Marjorie Touchie when I examined this issue, they expressed a strong preference for perfectivity matching (104–106). In other sessions and with other sentences they did not express this preference (see **??**).

(104) **haʔuk**ẇiṭasin ʔu**ʔiis** suuḥaa.

haʔuk-ẇiṭas=(m)in ʔu-**!iis** suuḥaa

eat.DR-going.to=REAL.1PL X-**eat** spring.salmon

'We're going to eat spring salmon.' (**B**, Bob Mundy and Marjorie Touchie)

(105) ***haʔuk**ẃiɬasin ʔu**ʔiisšiƛ** suuḥaa.

haʔuk-ẃiɬas=(m)in ʔu-!iis-**šiƛ** suuḥaa

eat.DR-going.to=REAL.1PL X-**eat-MO** spring.salmon

Intended: 'We're going to eat spring salmon.' (**B**, Bob Mundy and Marjorie Touchie)

(106) **haʔukšiʔaƛin ʔuʔiisšiƛ** suuḥaa.

haʔuk-šiƛ=!aƛ=(m)in ʔu-**!iis-šiƛ** suuḥaa

eat.DR-MO=NOW=REAL.1PL X-eat-MO spring.salmon

'We start eating spring salmon.' (**B**, Marjorie Touchie)

My best interpretation of this apparently contradictory data is this: perfective aspect on 'going' verbs is dispreferred in the future tense, because the typical interpretation of perfectivity is that an action is completed. This helps explain the grammaticality judgments in (102, 103), although it doesn't do anything to explain why the verb *ƛiiḥšiƛ* is in a perfective aspect. Without this complication of tense, as in (100, 101), a preference for perfectivity matching can emerge, although this is no longer an absolute preference (Table 4.1). Requirements on perfectivity matching are eroding, and perfectivity preferences for verbs of motion appear to be the least strict.

Sensitivity to perfectivity matching also varied by consultant. Fidelia Haiyupis consistently preferred perfectivity matching. Even in cases like (107) below, which I suggested, she responded that it was fine, but then went on to rephrase it as (108).

(107) ? yaacukʷints ʔucačiƛ ʕaʔukʔi.

yaacuk=int=s ʔu-ca-**čiƛ** ʕaʔuk=ʔiˑ

walk.DR=PST=STRG.1PL X-go-MO lake=ART

Intended: 'I walked to the lake.' (**T**, Fidelia Haiyupis)

(108) yaacukʷints ʔuucṭiiḥ ʕaʔukʔi.

yaacuk=int=s ʔuucṭiiḥ ʕaʔuk=ʔiˑ

walk.DR=PST=STRG.1PL go.toward.DR lake=ART

'I was walking to the lake.' (**T**, Fidelia Haiyupis)

For one of my consultants, Sophie Billy, who is the youngest speaker and the only Checleseht speaker I worked with, there was absolutely no preference for perfectivity matching in her speech. This could be a property of Kyuquot-Checleseht, her generation, or her idiolect, and I have no way of knowing. In elicitation sessions, she would productively produce matching (109) and mismatching (110) SVCs, and I was unable to get any judgments on perfectivity matching from her in rewording tests.

(109) wałšaʔƛk huʔaičƛ ċuumaʕaas.

wał-šiƛ=!aƛ=k huʔa-ci-čiƛ ċuumaʕaas

go.home-MO=NOW=QUES.2SG back-go-MO Port.Alberni

'Did you go home to Port Alberni?' (**Q**, Sophie Billy)

(110) yaacukẇiṭsiis wałšiƛ.

yaacuk-ẇiṭs=(y)iis wał-šiƛ

walk.DR-going.to=WEAK.1SG go.home-MO

'I'm going to walk home.' (**Q**, Sophie Billy)

4.2.1.2 Type II: Location and action

Most location words in Nuuchahnulth are verbs, more closely aligning to English 'be at a place' rather than 'at a place.' Locative verbs are simply juxtaposed with the action performed there. This strategy is used for transitive *hił* 'be at' as well as intransitive locations like *hitaas* or *ƛ̓aaʔaas* 'be outside' and *hitinqis* 'be at the beach.'

(111) hiłʔii wiinapuƛ̓.

hił=!iˑ wiinapuƛ̓

be.at=CMMD.2SG stop.MO

'Stop there.' (**B**, Bob Mundy)

(112) hitaasitaḥ ciiqciiqa.

hitaas=(m)it=(m)aˑḥ ciq-LR2L.a

be.outside=PST=REAL.1SG speak-RP

'I was outside speaking.' (**B**, Bob Mundy)

As with Type I, it is possible in this construction for the transitive location verb *hił* 'be at' to be split from its object by the other verb (113), or the other verb and its object (114).

(113) hiłqiimitʔišʔał huuxsʔatu nučii.

hił-qii=(m)it=ʔiˑš=ʔaˑł huuxsʔatu nuč-iˑ

be.at-on.top=PST=STRG.3=HABIT rest.DR mountain-NMLZ

'He rested on top of mountains.' (**T**, Fidelia Haiyupis)

(114) hiłqiiʔaƛin ṅaacsiičiƛ̓ čums nučii.

hił-qii=!aƛ̓=in ṅaacsa-iˑčiƛ̓ čums nuč-iˑ

be.at-on.top=NOW=WEAK.1PL see.CV-IN bear mountain-NMLZ

'We saw a bear (we being) on top of the mountain.' (**T**, Fidelia Haiyupis)

Unlike Type I SVCs, there does not appear to be any requirement that the verbs match in their aspect. This may be partly because some locatives do not inflect for aspect. For the basic verb *hił* 'be at' there is no perfective form of **hiłšiƛ̓* or **hiłiičiƛ̓*, and *hił* can serialize with both perfective (111) and imperfective verbs (113). There exist perfective forms for some of the other location words, for instance *hitinqsaƛ̓* 'go to the beach' from *hitinqis* 'be at the beach.' However, there is still no requirement for perfectivity

agreement here, as these location verbs can serialize with both perfective (114) and imperfective verbs (112).

Unlike Type I verbs, there is a strong ordering preference. When presented with alternative constructions, all my consultants insisted that the location verb must come before the action verb (115– 120).

(115) mačiiłʔaƛniš mamuuk.

mačiił=!aƛ=ni·š mamuuk

inside-NOW=STRG.1PL work.DR

'I am working inside.' (**C**, *tupaat* Julia Lucas)

(116) *mamuuk̓aƛniš mačiił.

mamuuk=!aƛ=ni·š mačiił

work.DR=NOW=STRG.1PL inside

Intended: 'I am working inside.' (**C**, *tupaat* Julia Lucas)

(117) hiłʔaƛin mamuuk wałyookqs.

hił=!aƛ=(y)in mamuuk wałyuu=ʔak=qa·s

be.at=NOW=WEAK.1SG work.DR home=POSS=DEFN.1SG

'We are working at my home.' (**Q**, Sophie Billy)

(118) *mamuuk̓ƛin hił wałyookqs.

mamuuk=!aƛ=in hił wałyuu=ʔak=qa·s

work=NOW=STRG.1SG be.at home=POSS=DEFN.1SG

Intended: 'We are working at my home.' (**Q**, Sophie Billy)

(119) ƛ̓aaʔaasči ʕaaqʕaaqa.

ƛ̓aaʔaas=či· ʕaq-LR2L.a

outside=CMGO.2SG yell-RP

'Go yell outside.' (**T**, Fidelia Haiyupis)

(120) *nunuukči ƛaaʔaas.

nunuuk=či˙ ƛaaʔaas

sing.DR=CMGO.2SG outside

Intended: 'Go sing outside.'[8] (**T**, Fidelia Haiyupis)

As I did for Type I SVCs (Table 4.1), I annotated texts to see if this preference was reflected in natural language. There were fewer location words in my sample, so Table 4.2 includes examples I rated as 2-4 on my scale of SVC likelihood (probable to certain). The results were surprising.

Table 4.2: Type II SVCs and Ordering

	Word Count	Type II SVCs	Location second
Nootka Texts	2220	8	4
Barkley speakers	942	1	0
Central speakers	2456	5	1
Northern speakers	1621	2	0
Kyquot-Checleseht speakers	6928	7	3
Total	14167	22	8

The results of this table seem to contradict my speakers' judgments above. I looked more deeply into each case where the location is the second verb in an SVC. They break cleanly into two cases: (1) Cases where the location verb is in a perfective aspect; and (2) cases where *hił* is occurring second.

Four of the above cases are instances where the second verb is a perfective location word. (121, 122) are typical examples.

(121) ʔuʔuʔiiḥšiʔaƛweʔin hitinqsaʔaƛ.

ʔu-R.ʔiiḥ-šiƛ=!aƛ=we˙ʔin hitinqsaƛ=!aƛ

x-go.after-MO=NOW=HRSY.3 at.beach.MO=NOW

'She went out to get them going down to the beach.' (**B**, Big Fred (Sapir and Swadesh, 1939, p. 54))

[8](120) can be "saved" by adding a linker to the location, i.e. *nunuukči ƛ̓aaʔaasḥ*. This creates a new type of construction, which I will discuss in §5.

(122) kamitqukʷint hitaaqƛ̓iƛ qʷayaċiik.

kamitq-uk=int hitaaqƛ̓iƛ qʷayaċiik

run-DR=PST in.forest.MO wolf

'The wolf ran into the forest.' (**T**, Fidelia Haiyupis)

My interpretation of these data is that the location ordering requirement only applies to imperfective locations, *being somewhere* rather than *moving somewhere*. It is possible then that perfective locations behave in some ways like Type I SVCs (§4.2.1.1). (122) also contains a perfectivity mismatch which is very unusual for Fidelia Haiyupis, who was the speaker I worked with who was most consistent with perfectivity matching in Type I SVCs. I do not have a full analysis of perfective location words, and unintentionally focused on imperfective forms in my fieldwork. In my analysis (4.3.3.2), I will define perfective location words as non-locations so they can be parsed as Type I SVCs. However, this is unsatisfactory given the mismatches above, and I must leave questions about how to fully treat this for future work.

The remaining five cases of location-second SVCs are cases using the location word *hił* 'be at' as the second verb. (123, 124) give two examples from my Central consultant Julia Lucas where the phrase *hił ʕaaḥuusʔatḥ* 'being at Ahousaht' behaves as a modifying element of a verb. The *hił*-second construction also occurs in the Sapir-Thomas texts (125).

(123) ʔuyimitʔišʔaałʔał ʔaḥʔaa tuupšiʔeƛquu hił ʕaaḥuusʔatḥ.

ʔuyi=(m)it=ʔiˑš=ʔaał=ʔał ʔaḥʔaa tuupšiƛ=!aƛ=quu hił ʕaaḥuusʔatḥ

and.then=PST=STRG.3=HAB=PL DTOP get.dark.MO=NOW=PSSB.3 be.at Ahousaht.

'It was when it would get dark at Ahousaht.' (**C**, *tupaat* Julia Lucas)

(124) ʔaḥʔaaʔaƛqač̓a ḥiškʷiiʔatḥ hinin hił ʕaaḥuusʔatḥ.

ʔaḥʔaaʔaƛ=qaˑč̓a ḥiškʷiiʔatḥ hinin hił ʕaaḥuusʔatḥ

and.then=DUBV.3 Hesquiaht arrive.MO be.at Ahousaht.

'And then the Hesquiahts would arrive at Ahousaht.' (**C**, *tupaat* Julia Lucas)

(125) muułčiiłsi wiinapi hił ṗaačiinaʔa.

muuł-či·ł=si· wiinapi hił ṗaačiinaʔa

four-day.DR=NEUT.1SG not.move be.at Port.San.Juan

'I waited at Port San Juan for four days.' (**B**, Tom Sayaachapis, Sapir and Swadesh (1939, p. 148))

There are a few ways I can interpret this: (i) call the location-first ordering restriction a preference than a grammatical requirement; (ii) relax ordering constraints for both *hił* and perfective location words; (iii) analyze the above *hił* uses as a different (non-SVC) construction.

Option (i) is unappealing to me because despite this data speakers were able to clearly articulate their preference for location-first SVCs. More than one consultant said, without any prompting, "Put it the other way, so you say where you are first." Option (ii) would require two location SVC constructions. I instead selected option (iii), and analyze the above examples of *hił* as non-SVCs. Instead, I analyze *hił* as heading a modifying adverbial phrase in these cases. *hił* is already an unusual defective verb—it cannot take perfective morphology. By analyzing *hił* as both a verb and the head of adverbial phrase, I preserve speaker's intuitions about locations having to occur first in presented SVCs, but also account for the conflicting data. Once these two cases—perfective location verbs and modifying *hił* are accounted for—I had no counterexamples to location ordering in my annotated corpus.

Finally, this restriction on location serialization can be interpreted as a grammaticalization of a larger preference in Nuuchahnulth for modifying expressions to precede what they modify. Adverbs will preferentially precede the verb (and speakers will correct themselves and others by moving adverbs before to a verb). The preference for location-first SVCs seems to be stronger than the adverb-first preference, and I interpret it as a grammatical rule for non-perfective location SVCs.

4.2.1.3 Type III: Adposition-like verbs

A fuller discussion of adposition-like verbs will have to wait for §5.2.3. It is enough here to mention that, according to the analysis in Woo (2007a), a series of words with meanings that in English are expressed with prepositions are, in Nuuchahnulth, expressed with verbs. This includes verbs with com-

mitative, benefactive, and instrumentive meanings. All of these words are suffixes that attach in the default case to the semantically empty root *ʔu-*. I have included in this category *ʔuuḥẇał* 'use', *ʔuuʔink* 'use', *ʔuuʔatup* 'for', *ʔucḥin* 'for', and *ʔukʷink* 'with' (all from Woo (2007a, p. 15)), as well as *ʔuupaał* 'with.' This is not meant to be a complete list. These verbs can enter into an SVC (126, 127), and these constructions have the same property of SVC Types I and II, where a second verb can "interrupt" a transitive verb and its object (128).

(126) hiinasiƛayaʔiš haaẇacsaćumʔi ʔuuḥẇał kʷaacsaćum.

hina-aˑsiƛ-LS.aya=ʔiˑš	haaẇacsaćum=ʔiˑ	ʔu-L.ḥẇał	kʷaacsaćum
EMPTY-on.a.platform.MO-GRAD=STRG.3SG	table=ART	X-use	chair

'Using the chair he climbed onto the table.' (**T**, Fidelia Haiyupis)

(127) ʔuupaałẇiṫasniš ẏukʷiiqsu ʔucačiƛ Campbell River.

ʔuupaał-ẇiṫas=niˑš	ẏukʷ-iˑqsu	ʔu-ca-čiƛ	Campbell	River
with-going.to=STRG.1PL	younger.sibling-relation	X-go.to-MO	Campbell	River

'I'm going with my younger sister to Campbell River.' (**C**, *tupaat* Julia Lucas)

(128) ʔucḥins mamuuk Trudeau.

ʔu-cḥin=s	mamuuk	Trudeau
X-do.for=STRG.1SG	work.DR	Trudeau

'I'm working for Trudeau.' (**T**, Fidelia Haiyupis)

Like Type II SVCs, adposition-like verbs freely serialize with both perfective (127) and imperfective verbs (126, 128). Some of the verbs in this class have perfective forms as well (129, 130, 131, 132). As with the non-perfective forms, there is still no requirement for perfectivity matching (129, 130).

(129) ƛaḥs ʔucḥinčiƛ mamuuk.

ƛaḥ=s ʔu-cḥin-čiƛ mamuuk

now=STRG.1SG X-BENEF-MO work.DR

'I started to work for him/her/them.' (**T**, Fidelia Haiyupis)

(130) ʔuuʔatupšiƛwaʔiš mamuuk Friendship Center.

ʔu-L.ʔatup-šiƛ=waˑʔiš mamuuk Friendship Center

X-BENEF-MO=HRSY.3 work.DR Friendship Center

'I hear she started to work for the Friendship Center.' (**C**, *tupaat* Julia Lucas)

(131) ʔukʷinkšiƛẇiɫassiš ṁaaṁiiqsakqs ʔucačiƛ ṅačiqs.

ʔu-(č)ink-šiƛ-ẇiɫas=siˑš ṁaaṁiiqsu=ʔak=qs ʔu-ca-čiƛ ṅačiqs

X-with-MO-going.to=STRG.1SG older.sibling=POSS=DEFN.1SG X-go-MO Tofino

'I'm going to go with my older sister to Tofino.' (**C**, *tupaat* Julia Lucas)

(132) ʔuuḥẇałšiƛmaʔał muuna.

ʔu-L.ḥẇał-šiƛ=maˑ=ʔał muuna

X-use-MO=REAL.3=PL motor

'They started using motors.' (**B**, Bob Mundy)

As with Types I and II, there are cases of Type III serialization where one of the coordinated verbs is separated form its object by the intervening verb, as in (133).

(133) ʔuuʔatupaḥ č̓aapaciiɫ yaa quuʔasʔi.

ʔu-L.ʔatup=(m)aˑḥ č̓apac-L.(č)iiɫ yaa quuʔas=ʔiˑ

X-BENEF=REAL.1SG canoe-make D3 person=ART

'I'm making a canoe for that person.' (**B**, Bob Mundy)

Type III serialization in my ontology involves two verbs, one of which expresses an adposition-like meaning. They are like Type II location serializations in that there is no requirement that the verbs match in perfectivity. But they are different in that there is no ordering preference.

4.2.1.4 IV. Sequential or separable action

In all the above types of serialization, the verbs are describing in some way "the same action" or something that is at least simultaneous. When Aikhenvald and Dixon (2006) talk about serial verbs describing the "same event" I believe this is an attempt to capture the sort of unity seen in these (and other) types of serialization. When I model the semantics of these constructions (§4.3) I will preserve semantic compositionality and thus the different verbs will each have separate semantic event variables, and so they are not the "same event" in this formal way. But in all SVCs Types I–III there is, at minimum, some kind of "meanwhile" interpretation applied to the two verbs, and this is not insignificant. When I turn to the modeling, I will introduce a separate semantic relation for this "meanwhile" component.

The sequential/separable action subtype of SVC is different from the other serialization types. In these constructions, there is no interpretation of simultaneity and there is sometimes a (perhaps pragmatic) interpretation of sequentiality. For instance, (134) is from an exhortative text, and immediately follows the command "Don't throw your clothes on the floor."

(134) sukʷiʔi ḱašsaap

su-kʷiƛ=!iˑ ḱaš-saˑp

hold-MO=CMMD.2SG put.away-MO.CAUS

'Take it and put it away.' (**C**, *tupaat* Julia Lucas)

When presented with a possible reordering (135), my consultant said it was in the wrong order, and didn't make sense.

(135) # ḱašsaaṕi sukʷiƛ

ḱaš-sa·p=!i· su-kʷiƛ

put.away-MO.CAUS=CMMD.2SG hold-MO

'Put it away, then take it.' (**C**, *tupaat* Julia Lucas)

This ordering effect is apparent in other constructions where one action leads to another. (136) was a sentence given by a consultant, and when I asked about (137) her response was that it sounded backwards.

(136) ʔucičiʔim pankuupaa ẏakšiƛ siičił.

ʔu-ci-čiƛ=!im pankuupaa ẏak-šiƛ si-L.(č)ił

X-go.to-MO=CMFU.2SG Vancouver appear-MO 1SG-do.to

'Come to Vancouver and see me.' (**Q**, Sophie Billy)

(137) # ẏakšiʔim siičił ʔučičƛ pankuupaa.

ẏak-šiƛ=!im si-L.(č)ił ʔu-ci-čƛ pankuupaa

appear-MO=CMFU.2SG 1SG-do.to X-go.to-MO Vancouver

'See me and come to Vancouver.' (**Q**, Sophie Billy)

This construction can also be used to describe planning actions (138) or when giving formal instructions to children (139).

(138) ƛ̓iptqšiʔin ḱanisẏakukqin wałaak hitinqisʔi.

ƛ̓iptq-šiƛ=!in ḱan-°is-ẏak=uk=qin wałaak hitinqis=ʔi·

pack-MO=CMMD.1PL camp-at.beach.DR-for=POSS=DEFN.1SG go.to.MO at.beach=ART

'Let's pack our camping stuff and go to the beach.' (**B**, Marjorie Touchie)

(139) naʔaataḥʔatmaʔaała nunuukʔi ṅaacsa huyaałʔi.

naʔaataḥ=!at=maˑ=ʔaała nunuuk=ʔiˑ ṅaacsa huyaał=ʔiˑ

listen=PASS=REAL.3=HABIT sing=ART see.CV dance.DR=ART

'One listens to the singing and watches the dancing.' (**B**, Marjorie Touchie)

The sequential interpretation of (139) is not required: it is possible (indeed, likely) that the children will be watching dancers and listening to singing at the same time. This sentence can be used to describe both eventualities: listening to a song, followed by watching dancing, or listening while also watching.

As with other SVCs, it is possible to get more than two verbs in this construction.

(140) naʔaatḥi ṅaacuuḥ huuḥtikšiiḥ.

naʔaatḥ=ʔiˑ ṅaacuuḥ huuḥtikšiiḥ

listen.DR=CMMD.2SG watch.DR learn.MO.GR

'Listen, watch, and learn.' (**Q**, Sophie Billy)

There is no requirement for perfectivity matching, which is predicted if this SVC has a sequential (or at least, not necessarily simultaneous) interpretation. The examples below show the verbs in this construction disagreeing (141) and then agreeing (142) in aspect. There is a slight difference in meaning.

(141) ʔuʔukʷaqḥʔi ƛ̓iptqšiƛ̓ hiniic mučičtup.

ʔuʔukʷaqḥ=!iˑ ƛ̓iptq-šiƛ̓ hina-iic mučič-(s)tuˑp

on.your.own=CMMD.2SG pack-MO EMPTY-carry.DR clothing-kind

'Pack and carry your own clothes.' (**C**, *tupaat* Julia Lucas)

(142) ʔuʔukʷaqḥʔi ƛ̓iptqšiƛ̓ hiniicšiƛ̓ mučičtup.

ʔuʔukʷaqḥ=!iˑ ƛ̓iptq-šiƛ̓ hina-iic-šiƛ̓ mučič-(s)tup

on.your.own=CMMD.2SG pack-MO EMPTY-carry-MO clothing-kind

'Pack and take along your own clothes.' (**C**, *tupaat* Julia Lucas)

Type IV SVCs do not allow VPs to be interrupted, as seen in Types I-III. The context I gave in eliciting (143–145) was as follows: You are sitting outside, eating a picnic that you brought in a pail. A dog comes to eat your food, and you pick up your food and chase it off. The context entails an ordering of the actions (first picking up the bucket, then chasing away the dog), but it is possible to give the verbs in either ordering depending on how the story goes. (143) was suggested by my consultant, and I suggested (144) and (145).

(143) cassaaps ʕiniiƛ č̓axʷaciic.

cas-saˑp=s	ʕiniiƛ	č̓axʷac-iic
chase-MO.CAUS=STRG.1SG	dog	bucket-hold.DR

'I chased the dog, (I) carrying the bucket.' (**C**, *tupaat* Julia Lucas)

(144) č̓axʷaciicsiš cassaap ʕiniiƛ.

č̓axʷac-iic=siˑš	cas-saˑp	ʕiniiƛ
bucket-hold.DR=STRG.1SG	chase-MO.CAUS	dog

'Carrying the bucket, I chased the dog.' (**C**, *tupaat* Julia Lucas)

(145) *cassaaps č̓axʷaciic ʕiniiƛ.

cas-saˑp=s	č̓axʷac-iic	ʕiniiƛ
chase-MO.CAUS=STRG.1SG	bucket-hold.DR	dog

Intended: 'Carrying the bucket, I chased the dog.' (**C**, *tupaat* Julia Lucas)

(146) and (147) are a minimal pair showing the same kind of judgment from speaker Sophie Billy, where in (147) there is a "typical" (to Types I–III) V1 VP2 Obj1 structure. Much like (143–145), despite the verb of motion 'go' and the action 'carry', this is not a Type I construction but carries an pragmatic assumption about temporal ordering. Sophie consistently translated *hiniic ṗatqukkqs* as 'get my luggage,' and as a preparatory step for moving to Vancouver. The interpretation of (146) is sequential action: First carry one's things, then go to Vancouver.

(146) hiniiċƛintiis ṗatqukkqs ʔučičƛ Vancouver.

hina-iic=!aƛ=int=(y)iis	ṗatquk=uk=qaʼs	ʔu-ci-čiƛ	Vancouver
EMPTY-carry=NOW=PST=WEAK.1SG	baggage=POSS=DEFN.1SG	X-go-MO	Vancouver

'I carried[9] my belongings and went to Vancouver.' (**Q**, Sophie Billie)

(147) *hiniiċƛintiis ʔučičƛ Vancouver ṗatqukkqs.

hina-iic=!aƛ=int=(y)iis	ʔu-ci-čiƛ	Vancouver	ṗatquk=uk=qaʼs
EMPTY-carry=NOW=PST=WEAK.1SG	X-go-MO	Vancouver	baggage=POSS=DEFN.1SG

Intended: 'I carried my belongings and went to Vancouver.' (**Q**, Sophie Billie)

4.2.1.5 Summary and overview of SVC types

I have defined four different types of serial verb constructions, all with slightly different properties. These properties are summarized in Table 4.3. The one issue not cleanly summarized is perfectivity matching, which seems to historically have been necessary for Type I SVCs, but is either being lost or has already been lost in the modern grammar.

Table 4.3: Summary of SVC Types

	Description	Perfectivity matching	Verb-object splitting	Ordering restriction
Type I	Simultaneous	(✓)	✓	None
Type II	Location	✗	✓	Location first
Type III	Adposition-like	✗	✓	None
Type IV	Separable / Sequential	✗	✗	Temporal ordering

Finally, there are a few things true about all SVCs. Cross-serial dependencies are never possible, as illustrated in (148, 149).

[9]Sophie used the word 'pack' here, which I have changed to carry. It is a feature of Vancouver Island English that the word *pack* can mean both to put materials into a suitcase, and also to carry luggage. From my understanding of the word *hiniic* I believe the semantics of Sophie's *pack* here align more closely with Standard English *carry*.

(148) ʔuuḥẇałʔiš kʷaacsaċum ƛ̓amaasiƛ haaẇacsaċumʔi.

ʔu-L.ḥẇał=ʔiˑš kʷaacsaċum ƛ̓amaasiƛ haaẇacsaċum=ʔiˑ

x-use=STRG.3 chair climb.MO table=ART

'Using a chair he climbed onto the table.' (**C**, *tupaat* Julia Lucas)

(149) *ʔuuḥẇałʔiš ƛ̓amaasiƛ kʷaacsaċum haaẇacsaċumʔi.

ʔu-L.ḥẇał=ʔiˑš ƛ̓amaasiƛ kʷaacsaċum haaẇacsaċum=ʔiˑ

x-use=STRG.3 climb.MO chair table=ART

Intended: 'Using a chair he climbed onto the table.' (**C**, *tupaat* Julia Lucas)

Also, more than one type of serialization can cooccur in a clause. (150) is an example of Type IV (separable action) serialization and Type III (adposition-like) serialization in a single clause. As in English, the sentence itself is ambiguous with respect to whether the adposition is scoping over both the previous verbs or just one.

(150) ƛ̓iptqšiʔi hiniic mučičtup ʔuuʔatup ʔumʔi.

ƛ̓iptq-šiƛ-!iˑ hina-iic.DR mučič-(s)tup ʔuuʔatup ʔumʔi

pack-MO=CMMD.2SG EMPTY-carry clothing-stuff do.for your.mother

'Pack and carry clothes for your mother.' (**C**, *tupaat* Julia Lucas)

4.2.2 Interaction with valency changing operations

These serialization strategies can all interact with operations that change the verb's valency: in Nuuchahnulth the most common of these are the causative, the passive, and the possessive (under "possessor raising," Davidson 2002, p. 307–309, Braithwaite 2003). What is unique about these three morphemes in Nuuchahnulth is that they are all part of the second-position clausal clitic complex, which normally attaches to the first word of a clause and scopes over the clause as a whole. This makes their interaction with SVCs interesting and not a priori predictable. Does the valency operation affect both verbs in the

SVC, or does it target just one? I will leave aside possessor raising when answering this question, as it was easier to get examples of the causative and passive.

All serialization strategies may have the causative attach to and affect the valence of one verb and not the other, as shown in (151) (Type I), where the causative only affects the semantics of the verb *-ca-* 'go' and not to the verb *ƛ̓ičiƛ* 'shoot'. The same kind of construction occurs with *wałaak̓ap* 'make go' in (152). In these examples, the causative is *not* in the clausal second-position complex, but appears lower down on the verb whose valency it modifies.

(151) ʔaḥʔaaʔaƛna ƛ̓ičiƛ ʔucaap ḥaa hupałʔi.

ʔaḥʔaaʔaƛ=naˑ	ƛ̓i-čiƛ	ʔu-ca=!ap	ḥaa	hupał=ʔiˑ	
and.then=NEUT.1PL	shoot-MO	X-go=CAUS	D3	sun.or.moon=ART	

'Then we shoot them toward the moon.' (**C**, *tupaat* Julia Lucas)

(152) hiniiċi qałaatikukʔitqak qicuwił wałaak̓ap.

hina-iic=!iˑ	qałaatik=uk=ʔiˑtqak	qicuwił	wałaak=!ap
EMPTY-carry=CMMD.2SG	youngest.sibling=POSS=DEFN.2SG	school	go=CAUS

'Take your younger brother to school.' (**B**, Bob Mundy)

I attempted to get interpretations from speakers where the causative appeared once and was interpreted on two verbs in a serial verb construction and was unsuccessful. It is possible that I did not find the right context, but I now believe that in SVCs the causative morpheme scopes narrowly over the verb it attaches to. I have already shown an example where a causative morpheme applies to the first verb in a sequence, but not the second (143), which is repeated in (153) below for convenience. It is also the case that when both verbs have a causative interpretation, speakers will use the causative on both verbs (155).

(153) cassaaps ʕiniiƛ č̓axʷaciis.

cas-saˑp=s ʕiniiƛ č̓axʷac-iis

chase-MO.CAUS=STRG.1SG dog bucket-hold.DR

'I chased the dog, (I) carrying the bucket.' (**C**, *tupaat* Julia Lucas)

(154) ʔuuwaʔaƛquuk č̓iṗatmił[10] hašaḥsapsuuk k̓ašsaap.

ʔu-L.waƛ=!aƛ=quuk č̓iṗatmił hašaḥ-saˑp=suuk k̓aš-saˑp

x-find=NOW=PSSB.2SG sea.serpent.scale precious-MO.CAUS=PSSB.2SG put.away-MO.CAUS

'If you find a sea serpent scale, you treasure it and put it away.' (**C**, *tupaat* Julia Lucas)

(155) haptsaapint ʔucaap hiłaayiłkʷ.

hapt-saˑp=int ʔu-ca=!ap hił-aayił=uk

hide-MO.CAUS=PST x-go=CAUS be.at-above=POSS

'She hid them on her roof.' (**Q**, Sophie Billy)

I have already given an example where the passive scopes over both verbs in an SVC while appearing singly, in (139). However this was a case where the passive morpheme is being used to indicate generic action ("what one does") as a command. This is not a valence changing operation. When the passive morpheme is used to change valence properties, the pattern is identical to the causative and it appears to scope narrowly over the verb in an SVC, as in (156, 157).[11]

(156) ʔuḥʔats ʕiniiƛ ƛawiičiʔat kamatquk.

ʔuḥ=!at=s ʕiniiƛ ƛaw-iˑčiƛ=!at kamatq-uk

be=PASS=STRG.1SG dog near-IN=PASS run-DR

'It was the dog that ran toward me.' (**C**, *tupaat* Julia Lucas)

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[10]The normal word for a seaserpent scale is č̓ipałmis (see Sapir and Swadesh 1939, p. 271). However, Julia Lucas insists that for her it is č̓iṗatmił.

[11]In (156) the passive also appears on the clefting copula *ʔuḥ*. Voice agreement is a required feature of clefts.

(157) čimqstuƛitaḥ nanaʔiičiʔat.

čimqstuƛ=(m)it=(m)aˑḥ nanaʔiičiƛ=!at

be.happy.MO=PST=REAL.1SG understand.MO=PASS

'I was happy being understood.' (**B**, Bob Mundy)

Causative and passive morphemes in SVCs scope narrowly over the verb they modify. This contradicts an earlier observation that these morphemes are in the clausal second position (§3.1.3). That earlier claim is dependent on the observation that these clitic elements move to adverbs that precede the main predicate. My modified analysis based on evidence from serial verb constructions is that the serial verb constructions (as here defined) coordinate clauses that contain everything except subject, tense, mood and related information. The coordinated elements may be small clauses themselves that contain valence-modifying morphology. In an SVC, enclitics like the causative and passive only modify their particular coordinated clause, and not the entire structure.[12] I call this phrase the "maximal predicate phrase"—the largest phrase in an utterance that includes a predicate, its modifiers, and valence-altering enclitics, but does not include enclitics with subject, mood, or tense information. This concept will come up again in Chapter 5.

4.2.3 Summary

I have used a particular definition of serial verb constructions (SVCs) in Nuuchahnulth that attempts to capture a family of phenomena while making the minimum number of assumptions: Any clause that contains two verbs without a coordinator, and where one verb is not clearly subordinating the other, is a serial verb construction. I have further broken this construction type into four subtypes: (I) simultaneous SVC, (II) location SVC, (III) adposition-like SVC, (IV) separable or sequential SVC. Type I historically requires aspectual agreement of the verbs involved, although this requirement appears to have loosened for modern speakers. Types II–IV do not require aspectual agreement. Type II requires that locations

[12]The enclitic that occurs in-between the causative and passive in the rigid clitic ordering is *=!aƛ* 'now', and is one of the elements that was listed as "copying" to predicates across a clause. It is possible then that there is evidence here to suggest that the attachment properties of the early clitics, causative *=!ap*, 'now' *=!aƛ*, passive *=!at*, and maybe possessive *=uk* all have different scoping properties from the later clitics. This hypothesis would require further investigation.

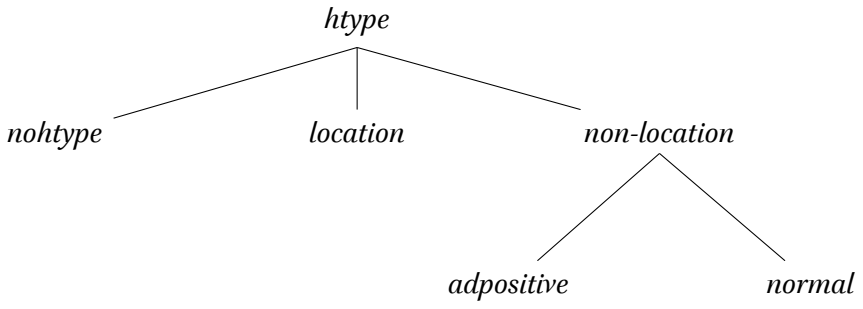
occur as the first element. Types I-III allow for a verb to be separated from its object (e.g., Verb1 Verb2 Verb1-Obj), while type IV disallows this kind of verb-object separation. Causative and passive morphology narrowly affect the verb in the SVC that they attach to. Together with the fact that this morphology will attach to preceding adverbs, I take this as evidence for a distinct and targetable syntactic phrase intermediate between the verb phrase and a fully inflected clause, which I call a maximal predicate phrase. This intermediate element is a phrase that lacks subject and mood, and it is what is coordinated in SVCs. I now turn to my formal HPSG analysis of this data.

4.3 HPSG analysis and implementation

4.3.1 Defining verb types

The SVCs are sensitive to three verb types: locative verbs, adposition-like verbs, and others. To keep track of this, I introduce a HEAD feature HTYPE. Every type of verb defines its HTYPE to be either *locative*, *adpositive*, *normal*, or *nohtype* (for non-verbs). These are arranged into a type hierarchy as in Fig. 4.1. This schema allows location verbs to be distinguished from non-location verbs, which will be useful when addressing the collapse of the requirement for perfectivity matching described in §4.2.1.1.

Figure 4.1: HTYPE hierarchy



In order for HTYPE to be useful, it must also be inherited by second-position elements from their predicate. To this end, I add to the definition of *2p-lex-item*, last seen in (53) in §3.2.2. I only show the added the component pertaining to the HTYPE in (158) below.

(158)
$$\begin{bmatrix} \textit{2p-lex-item} & \\ \text{SYNSEM.LOCAL.CAT} & \begin{bmatrix} \text{HEAD.HTYPE} & \boxed{1} \\ \text{VAL.COMPS} & \left\langle \begin{bmatrix} \text{LOCAL.CAT} & \begin{bmatrix} \text{HEAD.HTYPE} & \boxed{1} \\ \text{VAL.COMPS} & \boxed{2} \end{bmatrix} \end{bmatrix} \right\rangle \oplus \boxed{2} \end{bmatrix} \end{bmatrix}$$

As a result of this, all phrases headed by a verb, and all phrases headed by a second-position element that has a verb (or an adverb modifying a verb) as its complement will end up with the HTYPE of that verb, and be eligible for coordination with the appropriate SVC type.

4.3.2 Valence operations and scope

The second-position enclitic complex hosts the second-position elements in the basic clause (§3.1.3). But evidence from serial verb constructions shows that the valence changing causative and passive clitics scope only over a single verb (§4.2.2), unlike the subject clitics which scope over all coordinated verbs (§4.1).

The valence enclitics as defined in §3.2.2 scope only over the first predicate that the second-position enclitics modify. This analysis correctly accounts for valence changes that affect the first predicate, but it is not yet able to account for valence operations on the second verb in an SVC. In order to allow other verbs to take valence-changing morphology, I add homophonous versions of the causative and passive that apply without depending on a subject enclitic to attach to. These versions of this morphology need to not be able to head a sentence.

I accomplish this using a null morpheme trick very similar to that described for the third person neutral mood in §3.2.2, which was accounted for in the DELPH-IN morphophonology as a null morpheme =∅ that was erased when additional morphology attached to it. I need the same sort of phonologically null root that accepts only causative and passive morphology, and does not create an element that is considered a second-position auxiliary, which are the heads of sentences. The lexical entry for this zero morpheme looks like (159).

(159)
$$\begin{bmatrix} \textit{svc-zero-morpheme} & \\ \text{SYNSEM.LOCAL.CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{MOD} & \langle\ \rangle \\ \text{FORM} & \textit{non-root-nonfinite} \\ \text{AUX} & + \\ \text{PRD} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{1}\begin{bmatrix} \text{LOCAL.CAT.HEAD.PRD} & - \end{bmatrix} \right\rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{OPT} & - \\ \text{LOCAL.CAT} & \begin{bmatrix} \text{HEAD.PRD} & + \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle \oplus \boxed{2} \end{bmatrix} \end{bmatrix} \\ \text{INFLECTED.SOME-INFLECTION} & - \end{bmatrix}$$

This lexical entry is very similar to the second-position lexical entries given in (53) and (54). The differences are that this lexical entry is defined as not fully inflected, and its form is *nonfinite*. The nonfinite constraint prevents phrases headed by this morpheme from forming clauses. The specification [SOME-INFLECTION –] ensures that the zero morpheme must go through some lexical rule before it can participate in the syntax.

I create special versions of the causative and passive morphemes which are morphologically constrained to only attach to this zero stem. While the syntactic properties of these morphemes are identical to (and inherited from a common type with) the versions used in the main clause enclitic complex (§3.2.2), I require different morphological properties: These are suffixes rather than prefixes (which allows greater ease in applying the semantics of causative + passive), and the other elements in the enclitic complex (including tense and subject information) cannot be generated here.[13]

In the case where verbs do not have valence-changing morphology attached, I need a unary rule that elevates them to a second-position auxiliary in much the same way as I did for the third person neutral mood (61) in §3.2.2.[14] This rule is given in (160) below. It only modifies a few head features of

[13]There is room here for a more parsimonious analysis that treats all valence-altering enclitics as one category and clausal enclitics as another, thus avoiding the need for this lexical doubling. Such a reanalysis is beyond the scope of this work.

[14]I require this in order to coordinate two verbs: my coordination rule needs the second element to either be headed

the verb, and constrains it to not be in the main clause. Constraints not given in (160) are left the same. Importantly, the subject is not constrained.

(160)
$$\begin{bmatrix} \textit{neutral-non-head-verb-lex-rule} & \\ \text{SYSNSEM.LOCAL.CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{AUX} & + \\ \text{FORM} & \textit{nonfinite} \\ \text{PRD} & + \end{bmatrix} \\ \text{MC} & - \end{bmatrix} \\ \text{DAUGHTER} & \begin{bmatrix} \text{SYNSEM.LOCAL.CAT.HEAD} & \begin{bmatrix} \text{AUX} & - \\ \text{FORM} & \textit{nonfinite} \\ \text{PRD} & + \end{bmatrix} \\ \text{INFLECTED} & \textit{infl-satisfied} \end{bmatrix} \end{bmatrix}$$

4.3.3 Coordination rules

The way that the Grammar Matrix models coordination is through binary branching in two to three parts (Drellishak and Bender, 2005). First a bottom coordination rule which marks the "end" of the coordination and attaches the coordinator (if there is one), (optionally) a middle coordination rule which attaches intermediate (non-initial and non-final) coordinands, and a top coordination rule that combines with the top (or first) coordinand and marks the "start" of the coordination structure. In the case where there is no overt coordinator, there is only a bottom coordination rule and a top coordination rule, since the structure can be accounted for through sequential applications of top-bottom rule pairs (Drellishak and Bender, 2005, p. 9). Since I am analyzing serial verb construction in Nuuchahnulth as a type of coordination and am using the same framework on which the Grammar Matrix is based, I use

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by one of these non-clausal auxiliaries (elements which extend the *svc-zero-morpheme*) or headed by a verb. If I leave the coordination rule underspecified with respect to whether something is an auxiliary, I will allow the full clausal auxiliaries with subject information to appear on the second verb. I either need two coordination rules—one which allows for the second SVC to have a verb head, and one which allows for a non-clausal auxiliary head as described here—or I will need a unary rule which changes a verb to a non-clausal auxiliary. I have chosen the latter.

the same strategy as Drellishak and Bender for SVCs. There is no overt coordinator in these cases, so I only have bottom and top coordination rules.

All serial verb constructions inherit from the same two supertypes, a *svc-bottom-coord-rule* (161) and a *svc-top-coord-rule* (162).

(161)
$$\begin{bmatrix} \textit{svc-bottom-coord-phrase} & \\ \text{SYNSEM} & \begin{bmatrix} \text{LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{VAL.SUBJ} & \langle \boxed{1} \rangle \end{bmatrix} \\ \text{CONT...MOOD} & \boxed{2} \\ \text{COORD} & + \end{bmatrix} \\ \text{NON-LOCAL} & \boxed{3} \end{bmatrix} \\ \text{NONCONJ-DTR} & \begin{bmatrix} \text{SYNSEM} & \begin{bmatrix} \text{LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \textit{nonfinite} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle \rangle \end{bmatrix} \end{bmatrix} \\ \text{CONT...MOOD} & \boxed{2} \end{bmatrix} \\ \text{NON-LOCAL} & \boxed{3} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

This rule creates a parent node that is part of a coordinated phrase [COORD +], and inherits its daughter's (a non-conjunction's) contentful subject, non-local, and mood information. It only applies to elements that have an empty complements list and are nonfinite, which excludes elements with finite second-position morphology. I restrict the lower coordinand to always have an empty complements list because there are never cross-serial dependencies in SVCs (§4.2.1.5). Only the first coordinand can have its complement realized after coordination, but the second must have its complements satisfied *in situ*. This coordination can then be discharged through the *svc-top-coord-rule* (162).

(162)

$$
\begin{bmatrix}
\textit{svc-top-coord-phrase} & & \\
\text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \boxed{1} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{2} \right\rangle \\ \text{COMPS} & \boxed{3} \end{bmatrix} \end{bmatrix} \\ \text{COORD} & - \end{bmatrix} & \\
\text{LCOORD} & \boxed{L} & \begin{bmatrix} \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD} & - \\ \text{CAT} & \begin{bmatrix} \text{HEAD} & \boxed{1} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{2} \right\rangle \\ \text{COMPS} & \boxed{3} \end{bmatrix} \end{bmatrix} \\ \text{CONT.HOOK.E} & \begin{bmatrix} \text{MOOD} & \boxed{5} \\ \text{TENSE} & \boxed{6} \end{bmatrix} \end{bmatrix} \end{bmatrix} \\
\text{RCOORD} & \boxed{R} & \begin{bmatrix} \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD} & + \\ \text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{verb} \\ \text{VAL.SUBJ} & \left\langle \boxed{2} \right\rangle \end{bmatrix} \\ \text{CONT.HOOK.INDEX.E} & \begin{bmatrix} \text{MOOD} & \boxed{5} \\ \text{TENSE} & \boxed{6} \end{bmatrix} \end{bmatrix} \end{bmatrix} \\
\text{ARGS} & \left\langle \boxed{L}, \boxed{R} \right\rangle &
\end{bmatrix}
$$

This rule coordinates two daughters, a left coordinand (LCOORD) and a right coordinand (RCOORD). The right coordinand must be [COORD +] (created through an application of a bottom-coord-rule). The mood and tense properties of both coordinated elements are identified with each other, as are their subjects. The parent node inherits its HEAD properties and its COMPS list from the leftmost element in the coordination. This is so it can inherit the HEAD properties of the clausal auxiliary, and so that complements may occur after the second verb in the SVC. When there are more than two verbs coordinated, this coordination is done through repeated applications of bottom/top coordination rules. The different types of SVCs can apply successively, so long as their HEAD properties are consistent with the constraints of a particular SVC type's bottom-coordination-rule.

From these supertypes I constrain specific subtypes that inherit from them for each of the four serial verb constructions (§4.2). I turn now to these specific constructions, their rule definitions, and example trees.

4.3.3.1 Type I: Simultaneity

I gave evidence that Type I SVCs have historically required perfectivity matching (§4.2.1.1), but in the modern language that requirement has relaxed. I here present an analysis that assumes perfectivity matching is required. I will delay the revised analysis that no longer requires perfectivity matching requirement to the section addressing Type III (§4.3.3.3). Under an analysis where Type I SVCs no longer require verbs to match in perfectivity, the distinction between Type I and Type III collapses and they can be accounted for with a single coordination strategy.

Because coordination is structured in two halves—a bottom coordination rule and a top coordination rule—I need two sets of rules, one set which requires perfective aspects and one set which requires imperfective aspects. All the rules in (163–166) inherit from *svc-top-coord-rule* (161) or *svc-top-coord-rule* (162) as appropriate.

(163)
$$\begin{bmatrix} \textit{svc1-perf-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-REL.PRED} & \textit{MEANWHILE} \\ \text{COORD-STRAT} & \textit{“1-perf”} \\ \text{CONT.HOOK.INDEX.E.ASPECT} & \textit{perfective} \end{bmatrix} \\ \text{NONCONJ-DTR. . .HTYPE} & \textit{normal} \end{bmatrix}$$

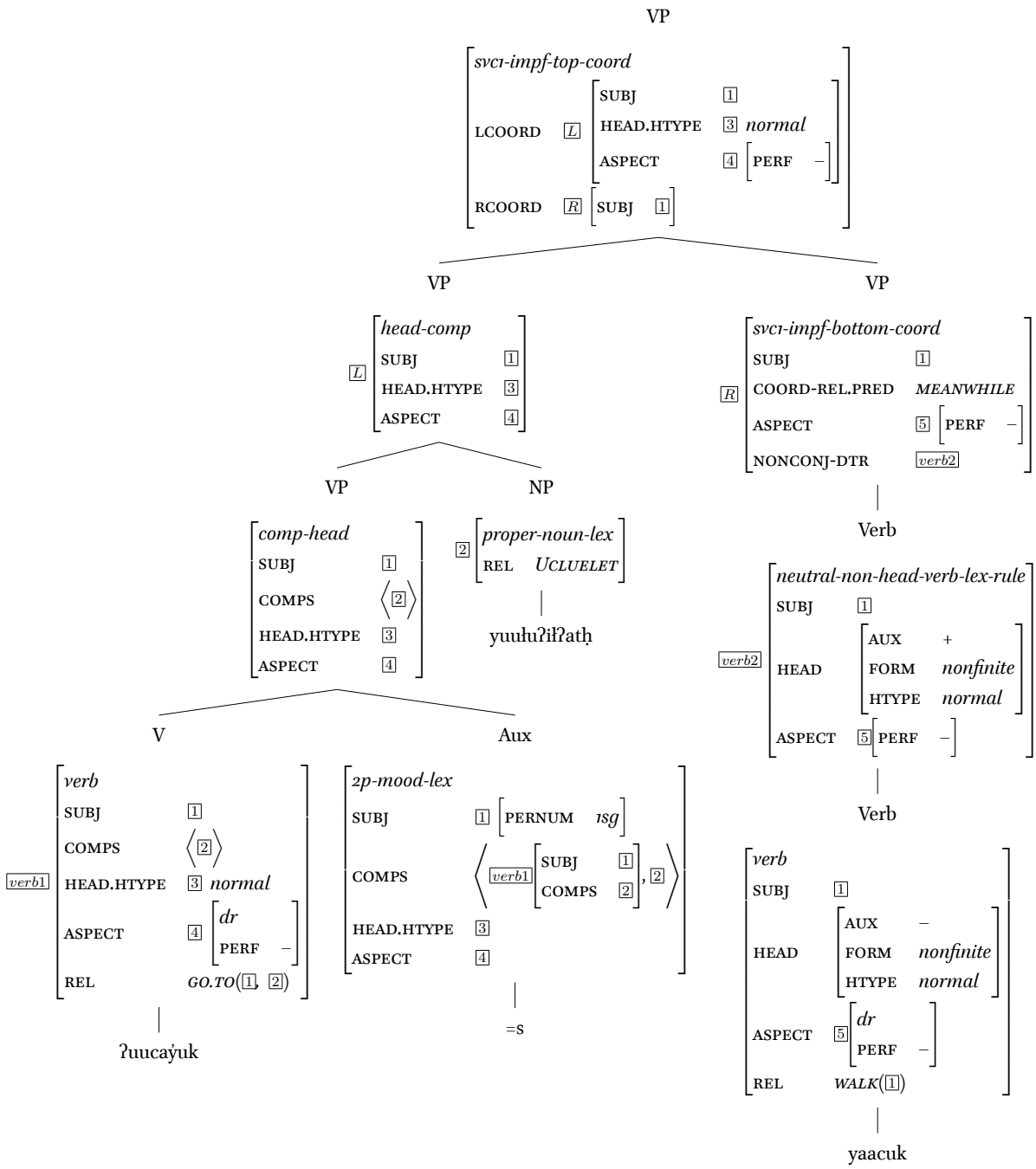
(164)
$$\begin{bmatrix} \textit{svc1-perf-top-coord-rule} & \\ \text{SYNSEM.LOCAL.COORD-STRAT} & \textit{“1-perf”} \\ \text{LCOORD-DTR.SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.HEAD.HTYPE} & \textit{normal} \\ \text{CONT.HOOK.INDEX.E.ASPECT} & \textit{perfective} \end{bmatrix} \end{bmatrix}$$

(165)
$$\begin{bmatrix} \textit{svc1-impf-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-REL.PRED} & \textit{MEANWHILE} \\ \text{COORD-STRAT} & \textit{“1-impf”} \\ \text{CONT.HOOK.INDEX.E.ASPECT} & \textit{imperfective} \end{bmatrix} \\ \text{NONCONJ-DTR. . .HTYPE} & \textit{normal} \end{bmatrix}$$

(166)
$$\begin{bmatrix} \textit{svc1-impf-top-coord-rule} & \\ \text{SYNSEM.LOCAL.COORD-STRAT} & \textit{“1-impf”} \\ \text{LCOORD-DTR.SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.HEAD.HTYPE} & \textit{normal} \\ \text{CONT.HOOK.INDEX.E.ASPECT} & \textit{imperfective} \end{bmatrix} \end{bmatrix}$$

The bottom-coord rules introduce the semantic component (MEANWHILE), and both rules constrain a string COORD-STRAT, which is used to keep track of which coordination strategy is being used. This is so that different coordination strategies cannot combine (Drellishak and Bender, 2005), e.g. a the perfective bottom coordination rule should not be able to feed the imperfective top coordination rule. (167) below shows a heavily simplified parse tree for the Type I SVC (100). I show the non-branching *neutral-non-head-verb-lex-rule* (160) in this tree, but will suppress it in later trees to save space.

(167)


VP
svc1-impf-top-coord
LCOORD L SUBJ 1
HEAD.HTYPE 3 normal
ASPECT 4 PERF –
RCOORD R SUBJ 1
VP
VP
L head-comp
SUBJ 1
HEAD.HTYPE 3
ASPECT 4
R svc1-impf-bottom-coord
SUBJ 1
COORD-REL.PRED MEANWHILE
ASPECT 5 PERF –
NONCONJ-DTR verb2
VP
NP
comp-head
SUBJ 1
COMPS ⟨2⟩
HEAD.HTYPE 3
ASPECT 4
2 proper-noun-lex
REL UCLUELET
yuuɬuʔiɬʔatḥ
Verb
verb2 neutral-non-head-verb-lex-rule
SUBJ 1
HEAD AUX +
FORM nonfinite
HTYPE normal
ASPECT 5 PERF –
V
Aux
verb1 verb
SUBJ 1
COMPS ⟨2⟩
HEAD.HTYPE 3 normal
ASPECT 4 dr
PERF –
REL GO.TO(1, 2)
2p-mood-lex
SUBJ 1 PERNUM 1sg
COMPS ⟨verb1 SUBJ 1 COMPS 2, 2⟩
HEAD.HTYPE 3
ASPECT 4
Verb
verb
SUBJ 1
HEAD AUX –
FORM nonfinite
HTYPE normal
ASPECT 5 dr
PERF –
REL WALK(1)
ʔuucaẏuk
=s
yaacuk

4.3.3.2 *Type II: Location and Action*

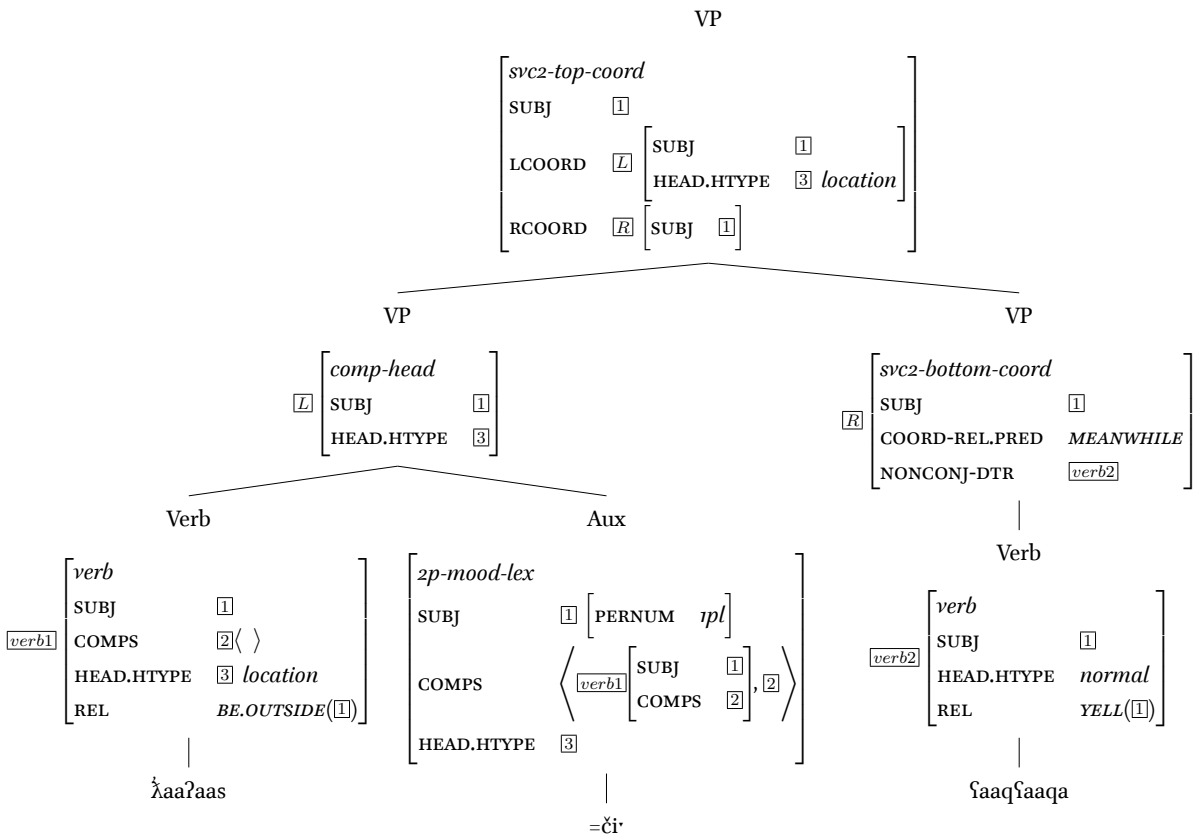
Type II SVCs include location words, which must be the first word in the construction (§4.2.1.2). Only imperfective location words have this constraint. Since location words are generally suppletive between perfective and imperfective forms, in my lexicon I describe imperfective forms as HTYPE *location* and perfective forms as HTYPE *normal*. Finally, to constrain ordering in SVCs, the top coordination rule for Type II SVCs is the only top coordination rule that unifies with HTYPE *location*, and the bottom coordination rule allows verbs of any type, thus requiring imperfective locations to occur first in all SVCs.

(168)
$$\begin{bmatrix} \textit{svc2-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-REL.PRED} & \textit{MEANWHILE} \\ \text{COORD-STRAT} & \text{“2”} \end{bmatrix} \end{bmatrix}$$

(169)
$$\begin{bmatrix} \textit{svc2-top-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-STRAT} & \text{“2”} \\ \text{CAT.HEAD.HTYPE} & \textit{location} \end{bmatrix} \end{bmatrix}$$

A simple example of this coordination structure is shown in (170), which is a tree structure for sentence (119).

(170)



4.3.3.3 *Type III SVCs: Adposition-like verbs*

Type III SVCs describe the coordination of adposition-like verbs (§4.2.1.3). The only distinction between Type I and Type III SVCs is that Type III permits perfectivity mismatching. On the analysis that Type I SVCs require matching perfectivity between the two verbs, then Type III SVCs need their own coordination structure. As with the analysis for Type I (§4.3.3.1), I will need two strategies for this: one where the adposition-like verb is the first in the SVC (171, 172), and one where it is the second (173, 174).

(171)

$$\begin{bmatrix} \textit{svc3-v1-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-REL.PRED} & \textit{MEANWHILE} \\ \text{COORD-STRAT} & \textit{“3.1”} \end{bmatrix} \\ \text{NONCONJ-DTR. . .HTYPE} & \textit{normal} \end{bmatrix}$$

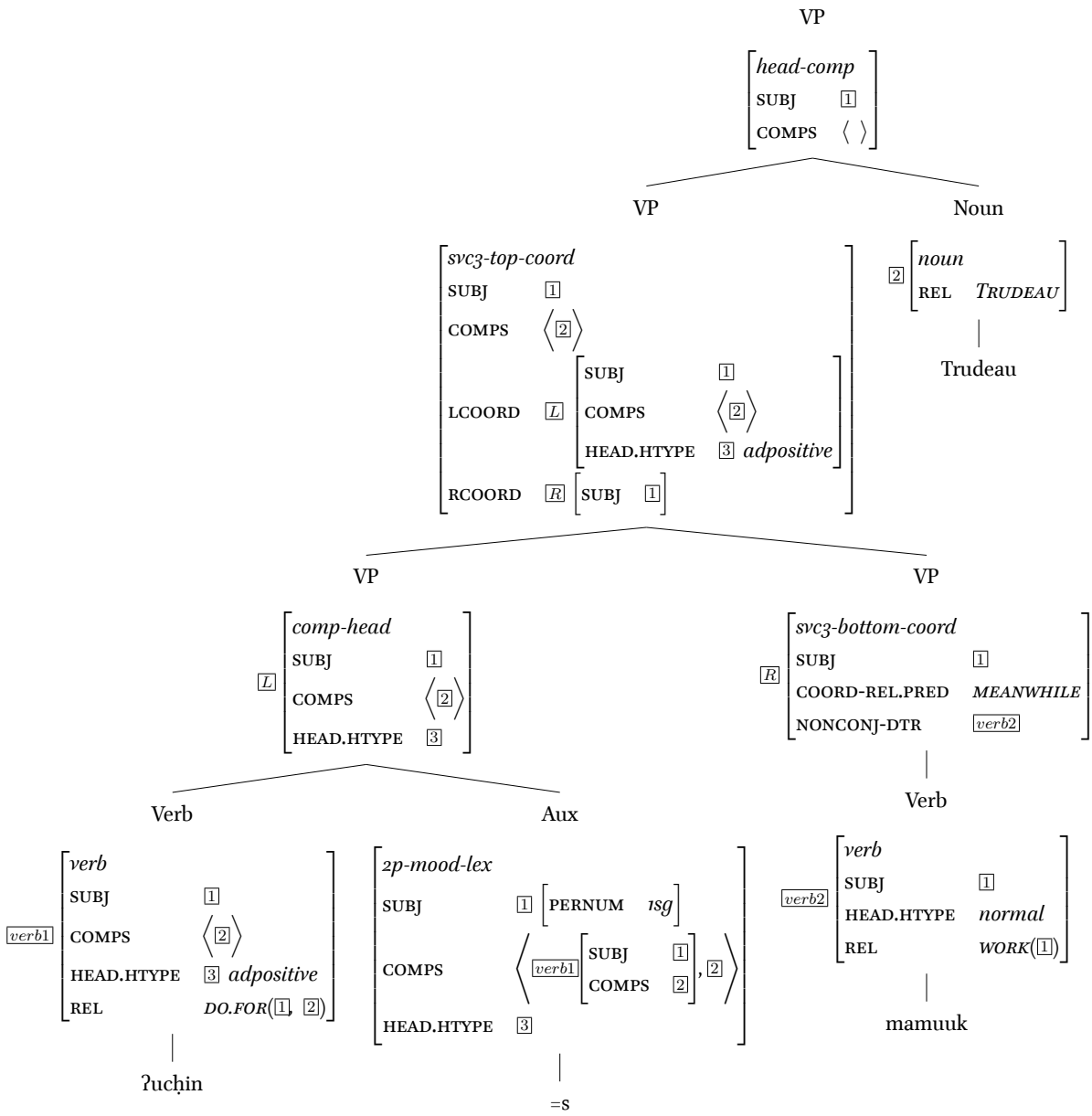
(172) $\begin{bmatrix} \textit{svc3-v1-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-STRAT} & \textit{“3.1”} \\ \text{CAT.HEAD.HTYPE} & \textit{adpositive} \end{bmatrix} \end{bmatrix}$

(173) $\begin{bmatrix} \textit{svc3-v2-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-REL.PRED} & \textit{MEANWHILE} \\ \text{COORD-STRAT} & \textit{“3.2”} \end{bmatrix} \\ \text{NONCONJ-DTR...HTYPE} & \textit{adpositive} \end{bmatrix}$

(174) $\begin{bmatrix} \textit{svc3-v2-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-STRAT} & \textit{“3.2”} \\ \text{CAT.HEAD.HTYPE} & \textit{non-location} \end{bmatrix} \end{bmatrix}$

The first pair of coordination rules (171, 172) require one adposition-like and one normal (i.e., non-locative) verb. The second pair (173, 174) require one adposition-like and one non-location verb. This asymmetry is so that a sentence that has two adposition-like verbs can only go through second version, preventing unnecessary parse ambiguity. An example tree of this kind of serial verb is given in (175), which is a tree structure for (128).

(175)



If the perfectivity requirement on Type I SVCs is relaxed, as seems to be the case in the modern language (§4.3.3.1), then Type I and Type III SVCs can be modeled in the same manner: The coordination of any two non-locative verbs. The coordination rules for this analysis are given in (176, 177) below.

(176) $\begin{bmatrix} \textit{svc3+1-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-REL.PRED} & \textit{MEANWHILE} \\ \text{COORD-STRAT} & \textit{“1+3”} \end{bmatrix} \\ \text{NONCONJ-DTR. . .HTYPE} & \textit{non-location} \end{bmatrix}$

(177) $\begin{bmatrix} \textit{svc3+1-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-STRAT} & \textit{“1+3”} \\ \text{CAT.HEAD.HTYPE} & \textit{non-location} \end{bmatrix} \end{bmatrix}$

4.3.3.4 *Type IV SVCs: Sequential action*

Type IV SVCs (§4.2.1.4) differ from Types I–III in only two ways:

1. These SVCs add a requirement that each coordinated verb phrase must have a satisfied complements list, to avoid the complement splitting (Verb1 VP2 Verb1-object) that the other SVCs allow. The other SVCs only require that the bottom coordination rule have an empty comps list (161).

2. The semantics of Type IV SVCs do not require that the two verbs describe simultaneous action, and they can possibly describe sequential action. I model this by changing the elementary predication from MEANWHILE to AND.

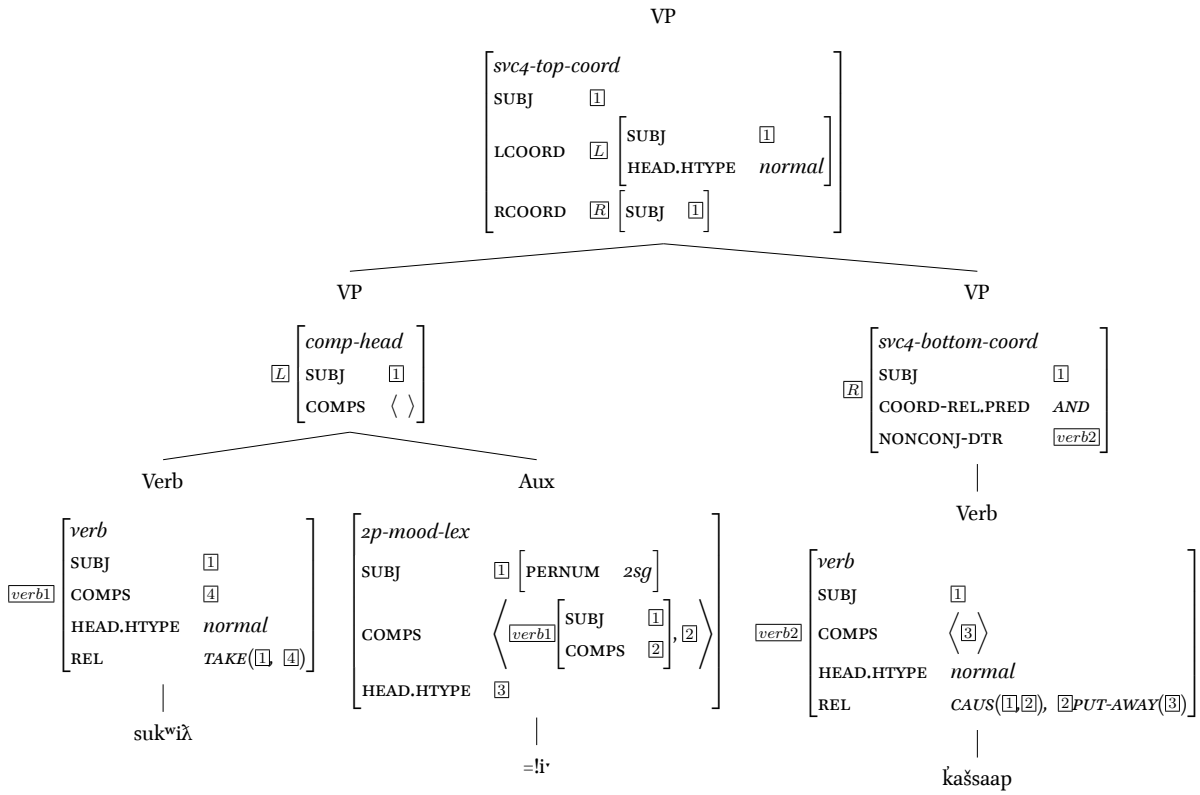
The coordination rules that capture these differences are given below.

(178) $\begin{bmatrix} \textit{svc4-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-REL.PRED} & \textit{AND} \\ \text{COORD-STRAT} & \textit{“4”} \end{bmatrix} \\ \text{NONCONJ-DTR. . .HTYPE} & \textit{normal} \end{bmatrix}$

(179)
$$\begin{bmatrix} \textit{svc4-bottom-coord-rule} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{COORD-STRAT} & \text{“4”} \\ \text{CAT} & \begin{bmatrix} \text{VAL.COMPS} & \langle\ \rangle \\ \text{HEAD.HTYPE} & \textit{normal} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

(180) shows a tree structure for the Type IV SVC in sentence (134). I have omitted complement-dropping rules for brevity.

(180)



4.3.4 *Summary*

To distinguish different serial verb constructions (SVCs) from each other, I create a HEAD feature, HTYPE, which can take on the values *location*, *adpositive*, *normal*, or *nohtype* (§4.3.1). SVCs of different

varieties require verbs with different HTYPES.

I also create homophonous versions of the valence-changing causative enclitic *=!ap* and the passive enclitic *=!at* that add causative and passive semantics but do not make a finite verb in the same way as the typical clausal enclitics. This allows valence changing morphology to act separately on different verbs in SVCs (4.3.2).

I model the four serial verb constructions (SVCs) in Nuuchahnulth as coordination processes that lack an overt coordinator (§4.3.3). Each coordination structure requires two rules, one which begins the coordination (a bottom-coord-rule) and one which ends it (a top-coord-rule). SVCs that have disjunctive properties (such as perfective *or* imperfective, or adposition-like verb first or adposition-like verb second) require two sets of rules to model. In the case where perfectivity matching is no longer a requirement for Type I SVCs, as seems to be the case for many Nuuchahnulth variants today, Type I and Type III SVCs can be modeled as the same type of coordination, where any two *non-locative* verbs are coordinated.

Chapter 5

THE LINKER

The linker morpheme in Nuuchahnulth -(*q*)*ḥ*, like serial verb constructions (§4), is a method by which the language can combine multiple predicates into a single clause. In this chapter I will examine how this construction behaves: how it differs from serialization (5.1), how the linker can be applied to answer questions about syntactic categories in Nuuchahnulth (5.2), and finally how I analyze it within the HPSG framework (5.3).

5.1 Data

In this section I will present the data I have collected on the linker morpheme and how the construction is used. As with serial verbs, I will keep this section fairly theory-neutral, saving the specifics of an HPSG analysis for §5.3.

The morpheme -(*q*)*ḥ* is one of the last possible suffixes on a word.[1] It is typically pronounced as the sequence *qḥ* following a vowel or nasal, and otherwise as *ḥ*. The Central Ahousaht elder *tupaat* Julia Lucas almost always pronounces the linker as the full *qḥ* regardless of the phonological environment, with the exception of certain light verbs. This frequent full pronunciation of the linker is an Ahousaht and Tla-o-qui-aht feature (Werle, *p.c.*).

The suffix is translated as 'meanwhile' in Sapir and Swadesh (1939), and was first dubbed the "linker" by Adam Werle (*p.c.*), on the understanding that it "links" two predicates together. In some sense, it is coordinating two elements with each other within the syntactic domain of the second-position enclitics. I will first compare the linker coordination strategy to others (5.1.1), then examine the morphological attachment properties of this special coordinator (§5.1.2), and finally look at its syntactic properties (§5.1.3–5.1.8).

[1]Exceptions are the auxiliary predicate suffixes, which follow it (§3.1.4.2).

5.1.1 Comparison with other coordination

The linker morpheme is not the only form of coordination in Nuuchahnulth. The two words associated with 'and' coordination are *ʔaḥʔaaʔaƛ*, which coordinates sentences and VPs, and *ʔuḥʔi(i)š*, which coordinates participants.

Much like English *and*, *ʔaḥʔaaʔaƛ* may occur at the beginning or in the middle of a sentence. I distinguish sentence-initial and sentence-medial *ʔaḥʔaaʔaƛ* by prosody, pause, and the presence of clausal enclitics.

When introducing a sentence, *ʔaḥʔaaʔaƛ* can host the clausal clitics (181, 182) or the clitics can be deferred to the following predicate (183).

(181) ʔaḥʔaaʔaƛitweʔinʔaała wiinapi haʔukẇiṭasin waaʔat, naẏiiʔaḳaƛquuč ṭiqsčiił haʔumʔi.

ʔaḥʔaaʔaƛ=(m)it=weˑʔin=ʔaała wiinapi haʔuk-ẇiṭas=(m)in waa=!at naẏiiʔak=!aƛ=quu=č
and=PST=HRSY.3=HABIT hold.still.DR eat-going.to=STRG.1PL say=PASS immediately=NOW=PSSB.3=HRSY
ṭiq-sči-°ił haʔum=ʔiˑ
sit-beside-indoors.DR food=ART

'Then he would stop and wait for someone to say, "We are going to eat," and immediately he would sit down by the food.' (**B**, Marjorie Touchie)

(182) ʔaḥʔaaʔaƛsa huʔaas ṅaacsiičiƛ naani.

ʔaḥʔaaʔaƛ=saˑ huʔaas ṅaacsa-iˑčiƛ naani
and=NEUT.1SG again see.CV-INCEP grizzly.bear

'And then I also saw a grizzly bear (costume used in a ceremony).' (**C**, *tupaat* Julia Lucas)

(183) ʔaḥʔaaʔaƛ ʔuḳʷičap̓aƛsuuk ʔiiḥ ciyapuxs.

ʔaḥʔaaʔaƛ ʔu-ḳʷič=!ap=!aƛ=suuk ʔiiḥ ciyapuxs
and x-wear=CAUS=NOW=NEUT.2SG big hat

'And you have them wear a big hat.' (**C**, *tupaat* Julia Lucas)

Sentence-intermediate *ʔaḥʔaaʔaƛ* coordinates two VPs, which share the semantics of the subject-mood enclitic (184, 185).

(184) ʔaa nunuukšiƛnišʔaał ʔaḥʔaaʔaƛ huułhuuła huuuu tuupšiʔeƛquu.

ʔaa nunuuk-šiƛ=ni·š=ʔaał ʔaḥʔaaʔaƛ huł-LR2L.a huuuu tup-šiƛ-LS=!aƛ=quu

oh sing.DR-MO=STRG.1PL=HABIT and dance-RP whoa.long.time dark-MO-GR=NOW=PSSB.3

'Oh, we sing and dance, hey for a long time, when it gets dark.' (**C**, *tupaat* Julia Lucas)

(185) ʔaƛa čaakupiiḥ čaaniʔišʔaałʔał ɬaaqyiił ʔaḥʔaaʔaƛ ʕapkšiƛ ʔuukʷił.

ʔaƛa čakup-L.iiḥ čaani=ʔi·š=ʔaał=ʔał ɬaaqyiił ʔaḥʔaaʔaƛ ʕapk-šiƛ

two man-PL little.while=STRG.3=HABIT=PL stand.inside.DR and grapple-MO

ʔu-L.(č)iił

x-do.to

'Two men stand inside for a little while and try to grapple each other [in wrestling games].' (**C**, *tupaat* Julia Lucas)

As with English *and*, *ʔaḥʔaaʔaƛ* can be used in this way to imply order (186).

(186) ʔutwiiʔaqƛ̓in nunuuk ʔaḥʔaaʔaƛ haʔukšiƛ.

ʔu-(t)wii=!aqƛ=!in nunuuk ʔaḥʔaaʔaƛ haʔuk-šiƛ

x-first=FUT=CMMD.1PL sing.DR and eat.DR-MO

'First we will sing and then eat.' (**C**, *tupaat* Julia Lucas)

ʔaḥʔaaʔaƛ is sometimes used to coordinate participants (187).

(187) ʔaƛamitʔišʔaałʔał ʕaaḥuusʔatḥ ʔaḥʔaaʔaƛ ḥiškʷiiʔatḥ.

ʔaƛa=(m)it=ʔi·š=ʔaał=ʔał ʕaaḥuusʔatḥ ʔaḥʔaaʔaƛ ḥiškʷiiʔatḥ

two=PST=STRG.3=HABIT=PL Ahousaht and Hesquiaht

'There were two, the Ahousahts and the Hesquiahts.' (**C**, *tupaat* Julia Lucas)

The coordinator *ʔuḥʔi*(*i*)*š* (and sometimes *ʔiš* in Barkley Sound) is more constrained. It only coordinates participants (188).

(188) ʔuḥintʔinł ʔukʷiił ṅuẇiiqsknaqs ʔuuḥẇał ḥumiis ʔuḥʔiiš ċistuup.

ʔuḥ=int=ʔinł ʔu-(č)iił ṅuẇiiqsa=ʔak=naqs ʔu-L.ḥẇał ḥumiis ʔuḥʔiiš ċis-(š)tuˑp

be=PST=HABIT X-make father=POSS=PST.DEFN.1SG X-use red.cedar and line-kind

'It was my dad that made it using red cedar and rope.' (**Q**, Sophie Billy)

ʔaḥʔaaʔaƛ coordinates clauses (which differ in subject), VPs (which share a subject), and participants. *ʔuḥʔi*(*i*)*š* coordinates only participants, although innovative speakers sometimes use it to coordinate other constituents. I will end up arguing that the linker coordinates a different syntactic category: *maximal predicate phrases* (§5.1.7), a category that includes VPs but is not identical to a VP.

One of the elements of the second-position enclitic complex, *=ƛaˑ* (see §3.1.3) also serves a coordinating function. I gloss this element as 'also' although its semantics are broader than that. It can be used alone to link a sentence to what came before (189), and can also be used along with clausal coordinating *ʔaḥʔaaʔaƛ* (190).

Context for (189): A person is giving a gift to a young woman at a coming of age ceremony.

(189) ʔuucsasaƛƛa ḥaa ḥaakʷaaƛʔi.

ʔu-iic-LS.sa=!aƛ=ƛa ḥaa ḥaakʷaaƛ=ʔiˑ

X-own-AUG=NOW=also D3 young.woman=ART

'And it now belongs to that young woman.' (**C**, *tupaat* Julia Lucas)

Context for (190): The speaker is recounting a story where she is waiting for a phone call.

(190) ʔaḥʔaaʔaƛƛa tuupšiʔeƛ.

ʔaḥʔaaʔaƛ=ƛaˑ tuupšiƛ=!aƛ

and=also get.dark.MO=NOW

'And then it became night.' (**C**, *tupaat* Julia Lucas)

There is also the coordinating suffix *-L.ṕičḥ*, which is translated as 'doing while . . .-ing' in Sapir and Swadesh (1939). It generally attaches only to verbs, and its attachment properties are highly lexicalized. For instance, all speakers I worked with recognized the word *ʕiiḥṕičḥ*, as in (191).

(191) ʕiiḥṕičḥweʔin Bob mamuuk.

ʕiḥ-L.ṕičḥ=weˈʔin Bob mamuuk

cry-while=HRSY.3 Bob work

'Bob was crying while working.'[2] (**B**, Marjorie Touchie)

The attachment properties of *-L.ṕičḥ* are fairly unpredictable. *ʕiiḥṕičḥ* shows a case where the suffix attaches to a bare root (ʕiḥ-), and it is ungrammatical for it to attach to inflected *ʕiḥšiƛ* (192). Speakers accepted the bare root *nuuk-* combining with *-L.ṕičḥ* to form *nuukṕičḥ* as well (193). However, at least for my consultant Julia Lucas, the inflected form *nunuuk* was acceptable as well (193).

(192) *ʕiiḥšiƛṕičḥweʔin Bob mamuuk.

ʕiiḥšiƛ-L.ṕičḥ=weˈʔin Bob mamuuk

cry.MO-while=HRSY.3 Bob work

Intended: 'Bob was crying while working.'[3] (**B**, Marjorie Touchie)

(193) nuukṕičḥ tuuxtuuxʷa waaʕitʔis.

nuuk-L.ṕičḥ tuxʷ-LR2L.a waaʕit=ʔis

sing-while jump-RP frog=DIM

'The little frogs are singing while they jump.' (**C**, *tupaat* Julia Lucas)

(194) nunuukṕičḥ tuuxtuuxʷa waaʕitʔis.

nunuuk-L.ṕičḥ tuxʷ-LR2L.a waaʕit=ʔis

sing.DR-while jump-RP frog=DIM

'The little frogs are singing while they jump.' (**C**, *tupaat* Julia Lucas)

---

[2]Bob was not actually crying. This was an example sentence Marj used in a joint work session, and was a joke.

This bound root/inflected stem alternation is not predictable. Marjorie Touchie volunteered *ẃaaʔakṕičḥ* (195), which Bob Mundy agreed to as well. Neither speaker accepted bare root **ẃaaṕičḥ*, although this is the version of the word that occurs in Sapir and Swadesh (1939). Fidelia Haiyupis (a Northern dialect speaker) rejected both forms.

(195) ẃaaʔakṕičḥʔaƛma ʔamawatuʔa quuquuʔaca.

ẃaa-ʔak-L.ṕičḥ=!aƛ=maˈ ʔamawatuʔa quuquuʔaca

shy-DR-while=NOW=REAL.3 Bob.Mundy speak.Nuuchahnulth

'Bob is shy to speak Nuuchahnulth.' (**B**, Marjorie Touchie)

There is no constraint on ordering for the word containing *-L.ṕičḥ*, as shown in (196, 197).

(196) wiikʕaƛṕičḥʔi haʔuk.

wik-ʕaƛ-L.ṕičḥ=!iˈ haʔuk

NEG-make.a.sound.DR-while=CMMD.2SG eat.DR

'Eat quietly.' (**T**, Fidelia Haiyupis)

(197) haʔuk̓ʷi wiikʕaƛṕičḥ.

haʔuk=!iˈ wik-ʕaƛ-L.ṕičḥ

eat.DR=CMMD.2SG NEG-make.a.sound.DR-while

'Eat quietly.' (**T**, Fidelia Haiyupis)

The ending *-L.ṕičḥ* is also not fully productive. There are some words to which it simply does not attach, such as **ʔuʔiicṕičḥ* 'eat', **haʔukṕičḥ* or **haʔuṕičḥ* 'eat.' All speakers rejected attempts to attach the ending to nouns, **quuʔasṕičḥ* 'while being a person', **qʷayaćiikṕičḥ* 'while being a wolf.'

The data around contemporary uses of *-L.ṕičḥ* is complex and contradictory. In the grammar represented in the Sapir-Thomas Nootka Texts (Sapir and Swadesh, 1939) *-L.ṕičḥ* appears to attach only to verbal roots. In the modern system, the morpheme occasionally attaches to non-roots (191, 194), but still does not attach to nouns. Which stems the morpheme attaches to are highly idiosyncratic and vary

speaker to speaker, and likely dialect to dialect. The linker, on the other hand, has a much greater degree of freedom in its sites of attachment (§5.1.2), it is for most speakers completely productive, and the scope of its coordination goes beyond that of the word it attaches to (§5.1.7).

5.1.2 Attachment properties

The linker shows considerable flexibility in the stems it attaches to, attaching to nouns (198), adjectives (199), verbs (200), and adverbs (201).

(198) łuucma**qḥ**itqačʔaʔaał taakšiƛ ṗiišmita.

łuucma-**(q)ḥ**=(m)it=qaˑčʔa=ʔaał taakšiƛ ṗiišmita

woman-**LINK**=PST=DUBV=HABIT always gossip.CV

'There was a woman who kept gossiping.' (**C**, *tupaat* Julia Lucas)

(199) t̓ikʷaamitwaʔiš čims ḥaaʔak**qḥ**.

t̓ikʷ-(y)aˑ=mit=waˑʔiš čims ḥaaʔak-**(q)ḥ**

dig-CV=PST=HRSY.3 bear strong-**LINK**

'The bear was digging and strong.' (**C**, *tupaat* Julia Lucas)

(200) ciqink̓aƛna ƛiḥaa**qḥ**.

ciq-(č)ink=!aƛ=naˑ ƛiḥ-(y)aˑ-**(q)ḥ**

speak-with=NOW=NEUT.1PL drive-DR-**LINK**

'We talked while driving.' (**C**, *tupaat* Julia Lucas)

Context for (201): My friend is going bald. I'm also going bald but I don't look in the mirror much and haven't noticed.[4]

[4]This scenario was constructed to mirror an example present in Sapir and Swadesh (1939).

(201) ẏuuqʷaa**qḥ**s ʕasqii ʔaanaḥi wik hinʔałšiƛ̓.

ẏuuqʷaa-**(q)ḥ**=s ʕasqii ʔaanaḥi wik hinʔał-šiƛ̓

also-**LINK**=STRG.1SG bald only NEG realize-MO

'I'm also bald but I don't know it.' (**C**, *tupaat* Julia Lucas)

However, the linker cannot attach to complementizers (202, 203).

(202) ʔuušcukʔisit ʔani ʔunaḥʔisitqa.

ʔuušcuk=ʔis=(m)it ʔani ʔunaḥ=ʔis=(m)it=qaˑ

difficiult=DIM=PST COMP small=DIM=PST=EMBD

'It was a little difficult (to do) because it's small.' (**B**, Bob Mundy)

(203) *ʔuušcukʔisit ʔani**qḥ** ʔunaḥʔisitqa.

ʔuušcuk=ʔis=(m)it ʔani-**(q)ḥ** ʔunaḥ=ʔis=(m)it=qaˑ

difficult=DIM=PST COMP-**LINK** small=DIM=PST=EMBD

Intended: 'It was a little difficult (to do) because it's small.' (**B**, Bob Mundy)

From only this data, the linker appears to distinguish morphologically between content and function categories. Another way of expressing this content/function division is by appealing to what can serve as a syntactic predicate in Nuuchahnulth (§3.1.1). Nouns, adjectives, and verbs may all be predicative, and while adverbs are not syntactic predicates themselves, they directly modify a predicate. I will return to the matter of adverbs in §5.1.7. Complementizers, on the other hand, are only connective material and cannot be the main predicate of a clause, nor can they be modify or otherwise be part of a predicative phrase. In following sections, I will as a terminological convenience occasionally refer to the predicate in a linker construction that hosts the linker as the "linked predicate" and the predicate that lacks it as the "unlinked" or "non-linked predicate."

5.1.3 Clause heading

In a sentence with two predicates, one with the linker and one without, the ordering does not typically make a difference.[5] It is possible for either predicate in an utterance to host the linker, as in (204, 205).

(204) hitaasḥitaḥ ciiqciiqa.

hitaas-(q)ḥ=(m)it=(m)aˑḥ ciq-LR2L.a

be.outside-LINK=PST=REAL.1SG speak-RP

'I was speaking outside.' (**B**, Bob Mundy)

(205) ciiqciiqaqḥitaḥ hitaas.

ciq-LR2L.a-(q)ḥ=(m)it=(m)aˑḥ hitaas

speak-RP-LINK=PST=REAL.1SG be.outside

'I was speaking outside.' (**B**, Bob Mundy)

Just as either predicate in a construction may take the linker, the linker may occur either on the first (206) or second (207) predicate in the utterance.

(206) ƛ̓aaʔaasḥintniš ciiqciiqa.

ƛ̓aaʔaas-(q)ḥ=int=niš ciq-LR2L.a

be.outside-LINK=PST=STRG.1PL speak-RP

'We were speaking outside.' (**T**, Fidelia Haiyupis)

(207) ciiqciiqamitniš ƛ̓aaʔaasḥ.

ciq-LR2L.a=mit=niˑš ƛ̓aaʔaas-(q)ḥ

speak-RP=PST=STRG.1PL be.outside-LINK

'We were speaking outside.' (**T**, Fidelia Haiyupis)

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[5]There are some cases where altering the ordering affects grammaticality judgments. I address these in §5.1.9.

Although there is flexibility as to which predicate takes the linker, clauses may not be headed by a single linked predicate. This can be seen for main clauses in (208–210) below.

(208) qiiʔiɬitaḥ ƛupkaa.

qii-°iɬ=(m)it=(m)aˑḥ ƛupk-(y)aˑ

long.time-indoors=PST=STRG.1SG awake-CV

'I was awake a long time.' (**B**, Bob Mundy)

(209) *qiiʔiɬitaḥ ƛupkaaqḥ.

qii-°iɬ=(m)it=(m)aˑḥ ƛupk-(y)aˑ-(q)ḥ

long.time-indoors=PST=STRG.1SG awake-CV-LINK

Intended: 'I was awake a long time.' (**B**, Bob Mundy)

(210) *qiiʔiɬḥitaḥ ƛupkaa.

qii-°iɬ-(q)ḥ=(m)it=(m)aˑḥ ƛupk-(y)aˑ

long.time-indoors-LINK=PST=STRG.1SG awake-CV

Intended: 'I was awake a long time.' (**B**, Bob Mundy)

In my analysis, (208) contains one predicate, *ƛupkaa*, and a modifying adverb *qiiʔiɬ*. Despite the two words available on which to attach a linker morpheme, there is only one predicate phrase in the utterance (here headed by a verb). There is nothing for the linker to coordinate this predicate phrase with. A linked predicate with nothing to link to (or coordinate with) is ungrammatical.

This pattern can be seen in dependent clauses as well, where a single predicate with a linker morpheme is ungrammatical (211, 212).

(211) ʔuuʕaqstuƛaḥ ʔanik hiɬ ʔaḥkuu.

ʔuuʕaqstuƛ=(m)aˑḥ ʔani=k hiɬ ʔaḥkuu

be.happy.MO=REAL.1SG COMP=2SG be.at D1

'I'm happy you're here.' (**B**, Bob Mundy)

(212) *ʔuuʕaqstuƛaḥ ʔanik hiłḥ ʔaḥkuu.

ʔuuʕaqstuƛ=(m)a·ḥ ʔani=k hił-(q)ḥ ʔaḥkuu

be.happy.MO=REAL.1SG COMP=2SG be.at-LINK D1

Intended: 'I'm happy you're here.' (**B**, Bob Mundy)

Although the word *hił* 'be at' frequently takes the linker in texts, in (212) it is the sole predicate of the dependent clause. I was able to replicate a similar example with my Checleseht consultant Sophie Billy, from the other end of the dialect continuum (213, 214).

(213) ṅaaciičƛintiis ʔin hił čimsʔii maḥṫeekitk.

ṅaaca-i·čiƛ=int=(y)iis ʔin hił čims=ʔi· maḥṫii=ʔak=ʔi·tk

see.CV-IN=PST=WEAK.1SG COMP be.at bear=ART house=POSS=DEFN.2SG

'I saw there was a bear at your house.' (**Q**, Sophie Billy)

(214) *ṅaaciičƛintiis ʔin hiłḥ čimsʔii maḥṫeekitk.

ṅaaca-i·čiƛ=int=(y)iis ʔin hił-(q)ḥ čims=ʔi· maḥṫii=ʔak=ʔi·tk

see.CV-IN=PST=WEAK.1SG COMP be.at-LINK bear=ART house=POSS=DEFN.2SG

Intended: 'I saw there was a bear at your house.' (**Q**, Sophie Billy)

From these examples, I conclude that the linker coordinates two predicates.

5.1.4 Linkers on non-verbs

The examples so far have focused on linkers attached to verbs. Verbal coordination has a straightforward analog with English. However, as detailed in §5.1.2, it is possible for the linker to attach to a wide variety of non-verbs. I will claim that the linker performs the same function in all cases—that is, it links syntactic predicates of any type (§3.1.1), not just verbal predicates.

Anecdotally, the most common type of non-verbal predicate that receives the linker is quantificational adjectives (henceforth, quantifiers). The presence or absence of the linker on a quantifier significantly changes the possible interpretations for the sentence. With a bare (non-linked) quantifier, the

quantifier may be interpreted as a syntactic object (215) and may not come before the verb (216). When a linker is attached, the quantifier must be interpreted as the subject and may either come before (217) or after the verb (218).

Context for (215–218): My family and I are looking for a Christmas present for my sister.

(215) ʔuuwaƛintʔiš ʔuuš.

ʔu-L.waƛ=int=ʔiˑš ʔuuš

x-find=PST=STRG.3 some

'He/she found something.' (**T**, Fidelia Haiyupis)

(216) *ʔuušintʔiš ʔuuwaƛ.

ʔuuš=int=ʔiˑš ʔu-L.waƛ

some=PST=STRG.3 x-find

Intended:'He/she found something.' (**T**, Fidelia Haiyupis)

(217) ʔuuwaƛintʔiš ʔuušḥ.

ʔu-L.waƛ=int=ʔiˑš ʔuuš-(q)ḥ

x-find=PST=STRG.3 some-LINK

'Someone found it.' (**T**, Fidelia Haiyupis)

(218) ʔuušḥintʔiš ʔuuwaƛ.

ʔuuš-(q)ḥ=int=ʔiˑš ʔu-L.waƛ

some-LINK=PST=STRG.3 x-find

'Someone found it.' (**T**, Fidelia Haiyupis)

In (217, 218), the two predicates being coordinated are *some* and *find*. Because quantifiers are predicates in Nuuchahnulth, the same analysis applied to two verbs coordinated with the linker can apply here: These are two syntactic predicates that share a subject. That is, there is a (null) third-person subject

that is shared between the predicates *some* and *find*: "There exists an *x* such that SOME(*x*) and FIND(*x*,*y*)." This subject sharing makes the objective reading impossible in (217, 218).

Julia Lucas rejected an interpretation of (215) where *ʔuuš* 'some' was interpreted as the subject. However, in another context (219), she used *ʔuuš* 'some' with a subjective interpretation.

(219) ʔuušʔiišʔaał wiċik, ʔuuš ʕaċik, ʔuuš ʔuṁaaqƛ ʔuuẏip.

ʔuuš=ʔiˑš=ʔaał wiċik, ʔuuš ʕaċik, ʔuuš ʔuṁaaqƛ ʔu-iˑẏip

some=STRG.3=HABIT not.talented, some talented, some able.to X-get

'Some are not talented, some are talented, some are able to get (the challenge).' (**C**, *tupaat* Julia Lucas)

In (219), the first two verbs are intransitive, so there is no other syntactic interpretation for *ʔuuš* 'some' other than the subjective one. The final verb is transitive, but the parallelism with the first two clauses primes the listener to interpret *ʔuuš* as subjective. The fact that Julia did not add a linker in (219) shows that a subjective interpretation is possible for non-linked quantifiers, in the right context.

This observation about quantifiers holds true for other adjectives and also nouns, as seen in (220–222). The initial sentence puts two clauses together with a complementizer (220), but can be rephrased without a complementizer by using the linker (221, 222).

Context for (220–222): I arrived on the beach in a canoe. I left my canoe and went into town. While I'm inside, my canoe is carried out on the tide and capsizes. One person left behind on the beach sees it. (220) was suggested by my consultant, and we worked to rephrase it as (221) and (222).

(220) ċawaakitwaʔiš ṅaacsa niiʔatu č̓apac.

ċawaak=it=waˑʔiš ṅaacsa niiʔatu č̓apac

one=PST=HRSY.3 see.CV sink canoe

'I hear that one (person) saw the canoe sink.' (**C**, *tupaat* Julia Lucas)

(221) ċawaakḥitwaʔiš ṅaacsa niiʔatu č̓apac.

ċawaak-(q)ḥ=it=waˑʔiš ṅaacsa niiʔatu č̓apac

one-LINK=PST=HRSY.3 see.CV sink canoe

'I hear that one (person) saw the canoe sink.' (**C**, *tupaat* Julia Lucas)

(222) quuʔasqḥitwaʔiš ṅaacsa niiʔatu č̓apacʔi.

quuʔas-(q)ḥ=it=waˑʔiš ṅaacsa niiʔatu č̓apac=ʔiˑ

person-LINK=PST=HRSY.3 see.CV sink canoe=ART

'I hear that a person saw the canoe sink.' (**C**, *tupaat* Julia Lucas)

Julia Lucas was adamant that (220) and (221) meant exactly the same thing. If this is true, then the linker is not adding any deep semantic content.[6] Using the same setup, I elicited sentences from Barkley speaker Bob Mundy. He initially proposed the sentence in (223). I proposed (224) by removing the linker, which he rejected, and then (225), which he accepted.

(223) ṅaacsiičiƛweʔin ċawaakḥ niiʔatu č̓apac.

ṅaacsa-iˑčiƛ=weˑʔin ċawaak-(q)ḥ niiʔatu č̓apac

see.CV-IN=HRSY.3 one-LINK sink canoe

'I hear that one (person) saw the canoe sink.' (**B**, Bob Mundy)

(224) *ṅaacsiičiƛweʔin ċawaak niiʔatu č̓apac.

ṅaacsa-iˑčiƛ=weˑʔin ċawaak niiʔatu č̓apac

see.CV-IN=HRSY.3 one sink canoe

Intended: 'I hear that one saw the canoe sink.' (**B**, Bob Mundy)

[6]My analysis ends up putting in a relation AND. While this may not be totally meaningless, it is nearly meaningless.

(225) ṅaacsiičiƛweʔin ċawaakḥ quuʔas niiʔatu č̓apac.

ṅaacsa.CV-iˑčiƛ=weˑʔin ċawaak-(q)ḥ quuʔas niiʔatu č̓apac

see-IN=HRSY.3 one-LINK person sink canoe

'I hear that one person saw the canoe sink.' (**B**, Bob Mundy)

Bob's response to removing the linker in (224) was to say, "It's not complete. One what? What did one see?" Following the basic structure of the Nuuchahnulth clause (Chapter 3), the two syntactic participants of the predicate *ṅaacsiičiƛ* 'see' in (224) should be *ċawaak* 'one' and *niiʔatu č̓apac* 'sink canoe'. But *ċawaak*, as an adjective, cannot be a full NP participant without an article (Jacobsen, 1979). So it is a syntactically disconnected word and the utterance is nonsensical. The presence of the linker in my consultant's initial proposed sentence (223) forces 'one' to be a predicate with the same subject as the predicate 'see'. That is, "There is an *x* such that SEE(*x*,*y*) and ONE(*x*)." The other participant in (223) *niiʔatu č̓apac* 'a canoe sink' is the clausal complement of the seeing act.

(225) shows that the coordinated elements may be more than one word. *ċawaak* 'one' is a syntactic predicate taking the subject *quuʔas* 'person'. This dependent linked clause also interrupts the matrix predicate *ṅaacsiičiƛ* 'see' and its clausal object *niiʔatu č̓apac* 'the canoe sink' in a manner similar to SVC interruptions (§4.2). A rough bracketing of (225) based on this preliminary analysis is given in (226).

(226) [ṅaacsa.CV-iˑčiƛ=weˑʔin [ċawaak-(q)ḥ quuʔas]$_{\text{linked\_clause}}$ [niiʔatu č̓apac]$_{\text{participant\_of\_see}}$]

see-IN=HRSY.3 one-LINK person sink canoe

5.1.5 Complement ordering

Briefly addressed already, like serial verb constructions (§4.2), the linker construction allows predicdates to be separated from their complements by the coordinated phrase. I have already shown that the non-linked predicate may be separated from its complement by the intervening linked predicate (223, 225, 226). The reverse ordering is also possible: The linked predicate may be separated from its direct object by the non-linked predicate. In (227) the verb *hił* 'be at' and its object 'my house' are contiguous, but in (228) they are separated by the non-linked predicate *mamuuk* 'work'.

(227) hiłḥitin maḥt̓iiʔakqas mamuuk.

hił-(q)ḥ=(m)it=(m)in maḥt̓ii=ʔak=qas mamuuk

be.at-LINK=PST=REAL.1PL house=POSS=DEFN.1SG work

'We worked at my house.' (**B**, Bob Mundy)

(228) hiłḥitin mamuuk maḥt̓iiʔakqas.

hił-(q)ḥ=(m)it=(m)in mamuuk maḥt̓ii=ʔak=qas

be.at-LINK=PST=REAL.1PL work house=POSS=DEFN.1SG

'We worked at my house.' (**B**, Bob Mundy)

Not only is (228) grammatical but this is often the structure speakers prefer. For one of my consultants, Ehattesaht speaker Fidelia Haiyupis, this kind of object separation was acceptable when the linked predicate was separated from its object (229) but not when the non-linked predicate was separated from its object (230, 231). This may be a feature of Northern dialects, the Ehattesaht dialect, or my presentation of the material. It is unclear from the small amount of data that I have.

(229) hiłḥsiiš ʔuukʷiił c̓upc̓upšumł maḥt̓iiʔakʔik.

hił-(q)ḥ=siˑš ʔu-L.(č)iił c̓upc̓upšumł maḥt̓ii=ʔak=ʔik

be.at-LINK=STRG.1SG X-make sweater house=POSS=DEFN.2SG

'I am making a sweater at your house.' (**T**, Fidelia Haiyupis)

(230) ʔuuct̓iiḥs Queens Cove ƛiḥaaqḥ.

ʔuuct̓iiḥ=s Queens Cove ƛiḥ-(y)aˑ-(q)ḥ

go.toward.DR=STRG.1SG Queens Cove drive-CV-LINK

'I am driving to Queens Cove.' (**T**, Fidelia Haiyupis)

(231) *ʔuucṭiiḥs ƛiḥaaqḥ Queens Cove.

ʔuucṭiiḥ=s ƛiḥ-(y)aˑ-(q)ḥ Queens Cove

go.toward.DR=STRG.1SG drive-CV-LINK Queens Cove

Intended: 'I am driving to Queens Cove.' (**T**, Fidelia Haiyupis)

For most speakers, however, both types of "interruption" are possible, as in (232, 233).

(232) hiłqḥsʔaał ṅačaał ƛiisuwił.

hił-(q)ḥ=s=ʔaał ṅačaał ƛiisuwił

be.at-LINK=STRG.1SG=HABIT read school

'I read at school.' (**C**, *tupaat* Julia Lucas)

(233) hiłqḥsʔaał ʔaḥkuu ṅačaał.

hił-(q)ḥ=s=ʔaał ʔaḥkuu ṅačaał

be.at-LINK=STRG.1SG=HABIT D1 read

'I read here.' (**C**, *tupaat* Julia Lucas)

5.1.6 Semantic interpretations of suffixes and clitics

Nuuchahnulth has a series of clausal second-position enclitics, which include tense and subject-mood portmanteaus (§3.1.3). In a linker construction, as in a serial verb construction (§4.2), both predicates share the same subject, mood, and tense.

(234) hiłḥʔum maḥṭiiʔakqs wiinapuƛ.

hił-(q)ḥ=!um maḥṭiˑ=ʔak=qs wiinapuƛ

be.at-LINK=CMFU.2SG house=POSS=DEFN.1SG stop.MO

'Stop at my house.' (**T**, Fidelia Haiyupis)

The command portmanteau =*!um* in (234) syntactically scopes[7] over both predicates. Fidelia did not accept this as possibly meaning that someone else was stopping. If these clitics belong to the clause as a whole, which there is good independent reason to believe (Rose (1981, p. 35–36), Woo (2007a, p. 42–50)), the linker coordinates predicates within the clause, just as SVCs do.

(235) and (236) show a situation where the obligatory subject sharing creates an odd interpretation. I was asking about different activities depending on the weather. The felicitous expression without the linker is in (235). My rephrase in (236) with the linker was met with an immediate laugh.

(235) ṅačaałaḥʔaała ṁiƛaaʔaƛquu.

ṅačaał=(m)aˑḥ=ʔaała ṁiƛ-(y)aˑ=!aƛ=quu

read=REAL.1PL=HABIT rain-CV=NOW=PSSB.3

'I read whenever it rains.' (**B**, Bob Mundy)

(236) #ṅačaałaḥʔaała ṁiƛaaqḥ.

ṅačaał=(m)aˑḥ=ʔaała ṁiƛ-(y)aˑ-(q)ḥ

read=REAL.1PL=HABIT rain-CV-LINK

'I read and I am raining.' (**B**, Bob Mundy)

The causative =*!ap* and passive =*!at* scope narrowly in linker constructions the same way they do in serial verb constructions (§4.2.2). Example (237) is from a story describing a ceremony where, under the right circumstances, someone "dies" and is brought back to life. It shows a causative morpheme only applying to the verb with the linker (*qaḥak* 'die') and not to the following verb (*hiniis* 'carry').

(237) qaḥakḥʔaṗaƛ hiniis ʔucaʔap hiłḥʔiitq ċaaċaayiqš.

qaḥ-ak-(q)ḥ=!ap=!aƛ hina-iis ʔu-ca=!ap hił-(q)ḥ=ʔiˑtq ċaayiq-R2.š

die-DR-LINK=CAUS=NOW EMPTY-carry.DR X-go=CAUS be.at-LINK=DEFN.3 do.Tsayik.ceremony-IT

'Making him dead they carry him along to the place where they do Tsayik.' (**B**, Hamilton George Sapir and Swadesh (1939, p. 106))

[7]Because of the utility of the concept of scoping in this discussion, I will use the word "scope" from here on to refer to a syntactic element that has an effect over another syntactic element. This should not be confused with semantic scope.

Example (238) shows passive *=!at* behaving similarly in an example from Bob Mundy. *ƛawiičiʔat* 'be approached by' is modified by a passive valence change, but the linked predicate *hiłḥ* is not.

(238) ƛawiičiʔataḥ ɬaṅeʔis hiłḥ maḥɬiiʔakqas.

ƛaw-i·čiƛ=!at=(m)a·ḥ ɬaṅa=ʔis hił-(q)ḥ maḥɬii=ʔak=qa·s

near-IN=PASS=REAL.1SG child=DIM be.at-LINK house=POSS=DEFN.1SG

'A child came up to me at at my house.' (**B**, Bob Mundy)

Together with the evidence of scoping in serial verb constructions, I take this as good reason to believe the enclitics are split with respect to their syntactic domain. Some enclitics scope only over the predicate they attach to: minimally this set of enclitics includes causative *=!ap* and passive *=!at*. These enclitics still occur in second position with respect to their phrase, a phrase which includes a predicate, its modifiers, and valence-changing enclitics, but not subject, tense, and mood. In Chapter 4 at the end of §4.2.2 this concept occurred as well and I termed it a "maximal predicate phrase." These maximal predicate phrases are the units I believe are coordinated in linker constructions.[8] While the valence-changing enclitics have a domain of the maximal predicate phrase, other enclitics scope over the entire clause, including all coordinated structures: minimally this set of enclitics includes tense, the subject-mood portmanteaus, and the habitual morpheme.

In addition to the clausal second-position enclitics, some of the suffix verbs—the auxiliary predicate suffixes—modify predicates and have an interpretive scope beyond the word they attach to (§3.1.4.2). The modals in this position seem to be shared across linked predicates, in a similar fashion to the non-valence-changing enclitics.

Context for (239): I am taking a friend home and we are leaving a gathering.

[8]They are also the units coordinated in serial verb constructions: The maximal predicate phrase in this case simply is a verbal predicate phrase.

(239) waałšiƛẇiṫasniš ƛiḥaaqḥ.

wał-šiƛ-LS-ẇiṫas=niˑš ƛiḥ-(y)aˑ-qḥ

go.home-MO-GRAD-going.to=STRG.1PL drive-CV-LINK

'We're going to drive home.' (C, *tupaat* Julia Lucas)

Both verbs in (239) share the semantics of the modal suffix *-ẇiṫas*, because both the driving and the going home are intentional, not-yet-occurred events. I was unable to find a context where the modal interpretation attached to only one predicate. I confirmed the sharing of the subject portmanteau *=niˑš* by asking if it were possible to say (239) to mean that we were going to walk home but someone else was driving elsewhere. My consultant said no: (239) must mean that it is we who are going to go home and we who are doing it driving in a car.

Both predicates in a linker construction share the semantics of the second-position enclitics, which means they share a subject. They also share at least modal second-position suffixes.

5.1.7 The linker and the predicate phrase

Like many bound morphemes in Nuuchahnulth, the linker appears to attach to the first word in some clause. This has already been seen in (201), repeated as (240) below.

(240) ẏuuqʷaaqḥs ʕasqii ʔaanaḥi wik hinʔałšiƛ.

ẏuuqʷaa-qḥ=s ʕasqii ʔaanaḥi wik hinʔał-šiƛ

also-LINK=STRG.1SG bald only NEG aware-MO

'I'm also bald but I don't know it.' (C, *tupaat* Julia Lucas)

The two predicates being coordinated in (240) sentence are 'also bald' and 'only not know (it).' The linker appears on the preposed adverb *ẏuuqʷaa* of the first predicate *ẏuuqʷaa ʕasqii*. This syntactic domain is once again the maximal predicate phrase: a predicate plus its modifiers (and any valence-changing enclitics). The linker is a second-position element attaching not to the first word in a clause but the first word in a maximal predicate phrase. This is typically the predicate itself but it may, as in

(240), be a preceding adverb. Again, the domain of a maximal predicate phrase is distinguished from a sentence only by the absence of the widest-scoping second-position enclitics: mood, tense, and subject.

Examples like (240), where the linker attaches to a preceding adverb, are difficult to gather directly as they require special context and it is possible to express the same meaning without the linker. However, this is not a unique case conjured by a linguist coercing his consultants. A few examples of this kind of construction occur in Sapir and Swadesh (1939, 1955). In (241) the linker also attaches to the preceding adverb of its linked predicate 'still at war', and links that to the still later predicate 'grab their guns.'

(241) ʔeʔimqḥʔaƛquuweʔin hitaḥtačiƛ sukʷiʔaƛ puuʔakʔiʔał.

ʔeʔim-(q)ḥ=!aƛ=quu=weˑʔin hitaḥta-čiƛ su-kʷiƛ=!aƛ puu=ʔak=ʔiˑ=ʔał

first-LINK=NOW=PSSB.3=HRSY.3 go.out.to.sea-MO hold-MO=NOW gun=POSS=ART=PL

'As soon as they left the land, they would take their guns.' (**B**, Sapir and Swadesh (1955, p. 395))

In (242), the two elements being coordinated are 'single a long time' and 'going to the river to bathe'. As in (241), the linker attaches to the preceding adverb of the first predicate.

(242) qiiqḥʔaƛ x̣ačłaa hat̓inʕasʔaƛ ḥaakʷaaƛʔi ʔucačiʔaƛ c̓aʔakʔisʔi.

qii-(q)ḥ=!aƛ x̣ačłaa hat̓inq-!as=!aƛ ḥaakʷaaƛ=ʔiˑ

long.time-LINK=NOW single.woman bathe-in.order.to=NOW young.woman=ART

ʔu-ca-čiƛ=!aƛ c̓aʔak=ʔis=ʔiˑ

X-go-MO=NOW river=DIM=ART

'Having been single a long time the girl went to a little stream in order to bathe.' (**B**, Big Fred Sapir and Swadesh (1939, p. 68))

5.1.8 Dangling linkers

There is one case I know of where the linker does not appear to be linking its predicate to anything. I believe that the interpretation shows that there is an elided phrase (243).

(243) ʕaʕaɬḥʔiʔaała.

ʕaʕaɬḥ-(q)ḥ=!iˑ=ʔaała

be.comforted-LINK=CMMD.2SG=HABIT

'Take care!' (**B**, Bob Mundy)

The meaning of (243) is "Be comforted, in whatever you're doing." But "whatever you're doing" is dropped from the sentence. This kind of farewell construction has been noted by researchers Adam Werle and Henry Kammler, who have understood the linker here as linking to a dropped element (*p.c.*). This is my explanation for this kind of construction as well. Especially when compared with the assertions that other such examples are ungrammatical (§5.1.3), I believe that examples like (243) are formulaic expressions and hide an elided coordinand.

5.1.9 Ordering preferences

Despite the relative flexibility of which predicate in a construction gets the linker (§5.1.3), there are some cases where speakers have a preference for one ordering over another.

In a forced choice test, when speakers had a preference they always erred on the side of expressing a linked location word first (Table 5.1). Unlike in the serial verb case (§4.3.3.2), all speakers believed both forms sounded like good Nuuchahnulth, even if they had a preference for one.

Table 5.1: Ordering of linked location predicates

		Total	SB	FH	JL	BM+MT
Pair 1	1 mamuukẇiṫasniš hiɬḥ maʔasukqs					
	2 hiɬḥẇiṫasniš maʔasukqas mamuuk	3	1		1	1
	equally good	1		1		
Pair 2	1 ciiqciiqamitniš mačiiɬḥ					
	2 mačiiɬḥitniš ciiqciiqa	2		1	1	
	equally good	2	1			1

In a rephrasing test, Bob Mundy expressed a preference for the linker to be both on the location word, as well as on the first predicate. (244–247) are the versions I tried, in order. He found them all

intelligible, but not equally good. (246) with the linker on the location and on the first word was best. (245) with the linker on the location word was okay but he remarked that it was a little off. (244) Bob described as 'backwards', and (247) he rejected.

(244) *?ciiqciiqaqḥitaḥ hitaas.

ciq-LR2L.a-(q)ḥ=(m)it=(m)aˑḥ hitaas

speak-RP-LINK=PST=REAL.1SG be.outside

?? 'I'm speaking outside.' (**B**, Bob Mundy)

(245) ?ciiqciiqamitaḥ hitaasḥ.

ciq-LR2L.a=(m)it=(m)aˑḥ hitaas-(q)ḥ

speak-RP=PST=REAL.1SG be.outside-LINK

? 'I'm speaking outside.' (**B**, Bob Mundy)

(246) hitaasḥitaḥ ciiqciiqa.

hitaas-(q)ḥ=(m)it=(m)aˑḥ ciq-LR2L.a

be.outside-LINK=PST=REAL.1SG speak-RP

'I'm speaking outside.' (**B**, Bob Mundy)

(247) *hitaasitaḥ ciiqciiqaqḥ.

hitaas=(m)it=(m)aˑḥ ciq-LR2L.a-(q)ḥ

be.outside=PST=REAL.1SG speak-RP-LINK

Intended: 'I'm speaking outside.' (**B**, Bob Mundy)

In these examples, the preference for the linker to occur on a location word is strongest, and then second to that is the preference for the linked predicate to occur first. Evidence from Checleseht speaker Sophie Billy suggests that the preference for location verbs to host the linker is a feature across Nuuchah-nulth. Sophie has the least productive use of the linker in her fluent speech. I mainly have examples from her using the linker on location words, quantifiers, and because words. There is only one word outside of

these categories I have ever seen her apply a linker morpheme to, the verb *ƛawaa* 'be near,' which is very nearly a location word. She rejected linker constructions that other speakers used, such as on adjectives like *ḥaaʔak* 'strong' (199) or on numerals like *ċawaak* 'one' (221). For Sophie, linkers are not just preferred to be on locations but are ungrammatical in many other cases.

Annotating natural texts reveals a different set of facts from ranked choice tests. Using the same corpus for annotating serial verb constructions in Table 4.1 and consisting of 14167 words, I annotated for the presence and ordering of linker morphemes in linker constructions. I split data according to attachment sites: verbs, adjectives, nouns, adverbs, and wh-words. The only wh-words in my corpus were *qʷis* 'do thus', *qʷaa* 'how' and *ʔaaqin* 'how/why.' I split the verbal category into locations, because words, and others, and the adjective category into quantifiers, numbers, and durations (numbers that are inflected for perfective aspect). The results are in Table 5.2.

Table 5.2: Occurrence of linker constructions in naturally occurring Nuuchahnulth

	Verbs						Adjectives											
	Location		**Because**		**Others**		**Quantifier**		**Number**		**Duration**		**Nouns**		**Adverbs**		**Wh-words**	
Linker 1st/2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Nootka Texts	2	6	0	0	0	2	0	0	0	1	3	0	1	0	2	0	2	0
Barkley	4	2	1	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0
Central	1	12	8	0	0	0	6	2	1	1	0	0	0	1	0	0	0	0
Northern	5	19	1	0	2	0	1	1	0	0	0	0	0	0	0	0	2	1
Kyuq.-Checl.	2	8	0	0	0	1	5	0	0	0	1	0	0	0	0	0	0	0
Subtotal	14	47	10	1	5	3	13	3	1	2	4	0	1	1	2	0	4	1
Total	61		11		8		16		3		4		2		2		5	

Fully half of linkers in the corpus appear on location words, mostly *hił*. After locations, the most common uses are on quantifiers and because words (*ʔuunuuƛ*, *ʔunẃiiƛ*). The use on nouns and adverbs is the least common, with no instances of linked adverbs in my corpus of modern Nuuchahnulth, although speakers do recognize and understand examples of this type.

Ordering preferences are not clear from this sample. Because words, quantifiers, and wh-words with a linker are all strongly likely to occur first in this data set. However, these categories are more often the first word in a clause: quantifiers and wh-words tend to front, and becausatives, as main predicates, tend to occur initially (§5.2.1). The distribution of linked location words is directly opposite Bob Mundy's opinion in a forced choice task. There is an asymmetry that may be causing this, however: Without the

linker present, locations almost always appear first (§4.2.1.2). So in most cases where a location word occurs second in a clause, there is a strong likelihood that it will have a linker attached to it, while if it occurs initially the linker may be present or absent. From the remaining categories there may be a slight preference for linkers to occur initially, but it is in no way clear.

5.1.10 Data summary

The data presented so far leads me to the following conclusions:

1. The linker may attach to any content word in Nuuchahnulth. This includes nouns, adjectives (including quantifiers), verbs, and adverbs, and excludes complementizers.[9] (§5.1.2)
2. A clause may not consist of only a linked predicate. (§5.1.3)
3. The syntactic properties of the linker do not alter depending on whether it attaches to a verb or other part of speech. (§5.1.4)
4. It is possible for either predicate in a linker construction to be separated from its complement by the other predicate. (§5.1.5)
5. Both predicates in a linker construction share the second-position inflectional information, including subject. (§5.1.6)
6. The linker does not add semantic content to a predicate. (§5.1.6)
7. The linker attaches to the first word in a maximal predicate phrase, even if that first word is an adverb that precedes the predicate. The maximal predicate phrase is a predicate phrase with its modifiers that has not yet picked up the clausal information of the second-position enclitics. (§5.1.7)
8. In certain pragmatically restricted environments, the linker can be used without attaching to a matrix clause. A plausible interpretation in this context is of an elided predicate. (§5.1.8)
9. There is a preference for linked predicates to occur on location words, and in some cases to occur on the first predicate (§5.1.9).

I will ultimately model these facts as a suffixing coordinator with the semantics of AND. The relative

[9]There is more to say about a possible class of adpositions. This is addressed in §5.2.3.

insensitivity of the linker morpheme to category is additional evidence that verbs, adjectives, and nouns are part of a natural predicate class in Nuuchahnulth (§3.1.1), and the linker is one of the places in the grammar that is insensitive to which member of this class it picks out. When the linker attaches to adverbs, it is always still linking the following predicate word as part of a predicate phrase. Before moving on to my full analysis (§5.3), I will first use syntactic facts about the linker to answer questions about syntactic categories.

5.2 Application of the linker to categoricity questions

There are some words in Nuuchahnulth whose part of speech properties are not entirely clear. Woo (2007a) examines Nuuchahnulth's large (but closed) set of adposition-like words, and ends up categorizing them as special types of verbs (some of them little-*v*, from a Minimalist perspective). There are other words whose status is somewhat unclear, such as *ʔuunuuƛ*/*ʔunẇiiƛ* 'because of an event', *ʔuusaaḥi* 'because of a thing', and *ʔuyi* 'at a time'. Some of these words accept the linker and others do not. Since the linker typically occurs freely on content words such as verbs (§5.1.2), if these words are normal verbs, the linker should be able to attach.

Briefly, I show here that *ʔuunuuƛ*/*ʔunẇiiƛ* 'because of an event' and *ʔuusaaḥi* 'because of a thing' accept the linker and are verbs (§5.2.1). *ʔuyi* 'at a time' does not accept the linker, and appears to be an incipient adposition (§5.2.2). Most of the adposition-like verbs can also accept the linker (§5.2.3), but not the special non-subject marking adpositives *ʔuukʷił* and *ʔuḥtaa*. This aligns with Woo's findings, where these words are part of the functional little-*v* category and thus non-predicative.

5.2.1 'Because' words

There are at least three words in Nuuchahnulth that roughly translate to English 'because': *ʔuusaaḥi* (all dialects), *ʔuunuuƛ*[10] (Barkley and Central, recognized but rare in Northern and Kyuquot-Checleseht) and *ʔunẇiiƛ* (Northern and Kyuquot-Checleseht only). To distinguish the two arguments of the because

[10]Ahousaht speaker *tupaat* Julia Lucas consistently pronounces this word as *ʔunʔuuƛ*. I do not know whether this is a feature of her particular idiolect or a sub-Ahousaht dialect feature of which she is the only known (to me) speaker. I transcribe the word as she pronounces it.

semantic relation, I'll refer to the *result* and the *cause*. The because words themselves I'll call *becausitives*.

ʔuunuuƛ and *ʔunẇiiƛ* appear to be dialect variants with the same meaning and use patterns. They may be used as the first word or main predicate in a clause (248–251), where they take the second-position enclitic complex, including the subject portmanteau. It is hard to conceive of the relation BECAUSE having a subject, and indeed the subject agreement marks the subject of the result. The result in these cases follows the becausative (248–251), and the cause occurs either after a complementizer (248–250) or is dropped and realized it in a later clause, if at all (251).

(248) ʔunẇiiƛiis mačiił ʔin ṁiƛaa.

ʔunẇiiƛ=(y)iis mačiił ʔin ṁiƛ-(y)aˑ

because=WEAK.1SG inside.DR COMP rain-DR

'I'm inside because it is raining.' (**Q**, Sophie Billy)

(249) ʔuunuuƛs hiniiʔiƛ ʔin ṁiƛaa.

ʔuunuuƛ=s hiniiʔiƛ ʔin ṁiƛ-(y)aˑ

because=STRG.1SG inside.MO COMP rain-CV

'I came inside because it is raining.' (**T**, Fidelia Haiyupis)

(250) ʔunʔuuƛ ƛ̓iḥasum ʔukłinuƛ ʔin ʔuḥʔatqač̓a ʔuʔaałuk witwaak.

ʔunʔuuƛ ƛ̓iḥasum ʔu-kłinuƛ ʔin ʔuḥ=!at=qaˑč̓a ʔu-!aałuk witwaak

because Red.Mist X-call.MO COMP be=PASS=DUBV X-look.after warrior.PL

'The reason why he was called Red Mist is that he led warriors.' (**C**, *tupaat* Julia Lucas)

(251) ʔuunuuƛitaḥ wik ƛuł weʔič. ʕiḥakita naẏaqak.

ʔuunuuƛ=(m)it=(m)aˑḥ wik ƛuł weʔič. ʕiḥak=(m)it=maˑ naẏaqak

because=PST=REAL.1SG NEG good sleep. cry=PST=REAL.3 baby

'I didn't sleep well because (of it); the baby was crying.' (**B**, Bob Mundy)

It is also possible for the becausative to occur second in the construction after the result, in which case the cause may (252) or may not (253, 254) be introduced by a complementizer.

(252) wikʔaaqƛeʔicuu ċukʷiƛ ʔuunuuƛ ʔani wikʔaała čamiḥta ƛ̓uššiƛ.

wik=ʔaaqƛ=(m)eˑʔicuu ċu-kʷiƛ ʔuunuuƛ ʔani wik=ʔaała čamiḥta ƛ̓uš-šiƛ

NEG=FUT=REAL.2PL wash-MO because COMP NEG=HAB proper dry-MO

'You're not going to wash because it won't dry properly.' (**B**, Marjorie Touchie)

Context for (253, 254): Two teams are playing tug of war. Our team is strongest and we won.

(253) hiteʔitapin ʔuunuuƛ našukqin.

hiteʔitap=(m)in ʔuunuuƛ našuk=qin

win=REAL.1PL because strong=DEFN.1PL

'We won because we are strong.' (**B**, Marjorie Touchie)

(254) tuunuumitniš ʔunẇiiƛ ḥaaʔakin.

tuunuu=(m)it=niˑš ʔunẇiiƛ ḥaaʔak=(y)in

win=PST=STRG.1PL because strong=WEAK.1PL

'We won because we are strong.' (**T**, Fidelia Haiyupis)

While the cause can be introduced with a complementizer, as seen in (248, 249, 250, 252), the complementizer may never be used to introduce the result (255, 256).

Context for (255, 256): There are two teams playing tug-of-war. One has access to supernatural medicine and they are the winners.

(255) ʔunʔuuƛḥitqač̓aʔał hitaʔap ʔin ʕuʔinak.

ʔunʔuuƛ-(q)ḥ=(m)it=qač̓a=ʔał hitaʔap ʔin ʕuʔi-naˑk

because-LINK=PST=DUBV=PL win COMP medicine-have

'They won because they had medicine.' (**C**, *tupaat* Julia Lucas)

(256) # ʔunʔuuƛḥitqačʼaʔał ʕuʔinak ʔin hitaʔap.

ʔunʔuuƛḥitqačʼaʔał ʕuʔi-naˑk ʔin hitaʔap

because-LINK=PST=DUBV=PL medicine-have COMP win

Intended: 'They won because they had medicine.'[11] (**C**, *tupaat* Julia Lucas)

As seen in (255), the becausative can have a linker attached.[12] The exact same types of constructions that have been seen so far can also be produced with a linker on the becausative: with the becausative occurring first (257), with it occurring second (258), and with and without the complementizer.[13]

(257) ʔuunuuƛḥʔaƛitweʔin ʕiḥak ʔani wikʼiituk ɬaatṅeʔis.

ʔuunuuƛ-(q)ḥ=!aƛ=(m)it=weˑʔin ʕiḥ-ak ʔani wikʼiit=uk L.<t>-ɬaṅa=ʔis

because-LINK=NOW=PST=HRSY.3 cry-DR COMP none=POSS PL-child=DIM

'She cried because she had no children.' (**B**, Marjorie Touchie)

(258) hiniiʔiƛs ʔunẇiiƛḥ ṁiƛšiƛ.

hiniiʔiƛ=s ʔunẇiiƛ-(q)ḥ ṁiƛ-šiƛ

inside.MO=REAL.1SG because-LINK rain-MO

'I am inside because it started raining.' (**T**, Fidelia Haiyupis)

All these sentences have similar constructions. The result is expressed adjacent to the becausative (before or after) and its subject is marked in the second-position enclitic complex, which may fall on either the becausative or the result. The cause is an embedded clause that is optionally introduced by a complementizer. The sentential cause complement may have its own subject-marking enclitics, which are always in a dependent mood (253–254).

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[11]The actual meaning of (256), 'they had medicine because they won' would be the opposite of what makes sense in the story. "It's backwards," in Julia's words.

[12]Bob Mundy translated the linker attachment in this way: *ʔuunuuƛ* is 'because' and *ʔuunuuƛḥ* is 'that's why.' This is a fairly succinct way of translating the presence of the linker.

[13]I have no instances of a dropped complementizer when the becausative is first: that is, a theoretical example of *becausative =inflection result cause*. This construction may be ungrammatical or simply dispreferred, as it makes it difficult to determine which complement is the cause. A fuller explanation would require further analysis and work with speakers.

It is tempting to analyze becausatives as having two syntactic complements: a result and a cause. However, the fact that the linker freely attaches to the becausative complicates this. What does the linker actually link the becausative *to*? It can't be the cause, since the cause can be marked with a complementizer that explicitly subordinates the phrase. The only possibilities are that this is a "dangling" linker (§5.1.8), coordinating the becausative with something in the discourse context that is syntactically dropped, or that it is coordinating the becausative with the result.

The best analysis is the second one. Becausatives have a single complement (the cause), and the linker, when present, is coordinating the becausative with the result. This makes the structure of because expressions look like adposition-like verbs in a serial verb construction (§4.3.3.3). Like adposition-like verbs, becausatives can appear with or without a linker without changing the meaning of the utterance.[14] Becausatives then are typically in a coordination structure where they are coordinated with their result. This can be achieved either covertly through a serial verb construction, or overtly with the linker.

Finally, *ʔuunuuƛ*/*ʔunẃiiƛ* must take a result that is a verbal predicate. A nominal complement is ungrammatical, as shown in (259, repeated from 251) and (260).

(259) ʔuunuuƛitaḥ wik ƛuł weʔič. ʕiḥakita naẏaqak.

ʔuunuuƛ=(m)it=(m)aˑḥ wik ƛuł weʔič. ʕiḥak=(m)it=maˑ naẏaqak

because=PST=REAL.1SG NEG good sleep. cry=PST=REAL.3 baby

'I didn't sleep well because (of it); the baby was crying.' (**B**, Bob Mundy)

(260) *wikitaḥ ƛuł weʔič ʔuunuuƛ naẏaqakʔisʔi.

wik=(m)it=(m)aˑḥ ƛuł weʔič ʔuunuuƛ naẏaqak=ʔis=ʔiˑ

NEG=PST=REAL.1SG good sleep because baby=DIM=ART

Intended: 'I didn't sleep well because of the baby.' (**B**, Bob Mundy)

The evidence suggests the following for *ʔuunuuƛ* and *ʔunẃiiƛ*. These words are verbs that take a single sentential causal complement, which is verbal and may optionally be introduced by a complementizer. The semantic relation of the becausatives CAUSE has a single argument (the cause) and is related

[14]To compare with adposition-like verbs, see the following section §5.2.3.

to its result through syntactic coordination, either in an SVC in a manner analogous to the behavior of adposition-like SVCs, or via a linker construction which links the becausative with the result.

While *ʔuunuuƛ* and *ʔunẃiiƛ* behave as verbs with a sentential complement, *ʔuusaaḥi* typically requires a participant complement. The ungrammatical example (260) can be made grammatical by switching out *ʔuunuuƛ* for *ʔuusaaḥi* (261).

(261) wikitaḥ ƛuł weʔič ʔuusaaḥi naẏaqakʔisʔi.

wik=(m)it=(m)aˑḥ ƛuł weʔič ʔuusaaḥi naẏaqak=ʔis=ʔiˑ

NEG=PST=REAL.1SG good sleep because.of baby=DIM=ART

'I didn't sleep well because of the baby.' (**B**, Bob Mundy)

The participant cause must occur immediately following *ʔuusaaḥi*, as shown in (262, 263).

(262) ʔuusaaḥi ʕuʔi hitaʔap.

ʔuusaaḥi ʕuʔi hitaʔap

because.of medicine win

'They won because of the medicine.' (**C**, *tupaat* Julia Lucas)

(263) *ʔuusaaḥi hitaʔap ʕuʔi.

ʔuusaaḥi hitaʔap ʕuʔi

because.of win medicine

Intended: 'They won because of the medicine.' (**C**, *tupaat* Julia Lucas)

ʔuusaaḥi may take a clausal cause only if the cause is preceded by the complementizer (264–266).

(264) ʔuusaaḥi hitaʔap ʔin ʕuẏinak.

ʔuusaaḥi hitaʔap ʔin ʕuẏi-naˑk

because.of win COMP medicine-have

'They won because they had medicine.' (**C**, *tupaat* Julia Lucas)

(265) ʔuusaaḥis wik ƛuł waʔič ʔin waawaałyuqʷa ʕiniiƛ.

ʔuusaaḥi=s wik ƛuł waʔič ʔin wałyuq-LR2L.a ʕiniiƛ

because.of=STRG.1SG NEG good sleep COMP bark-RP dog

'I didn't sleep well because the dog was barking.' (*C*, *tupaat* Julia Lucas)

(266) ʔuusaaḥimta ʔuusuqta ʔanis t̓iʕaaʔatimt.

ʔuusaaḥi=imt=ma· ʔuusuqta ʔani=s t̓iʕaaʔatu=imt

because.of=PST=REAL.3 be.hurt.CV COMP=1SG fall.down=PST

'I got hurt because I fell down.' (*B*, Bob Mundy)

ʔuusaaḥi is also able to take the linker, although like the use of the complementizer, this changes the syntactic category of its complement from a noun or participant to a clause.[15]

(267) ʔuusuqtumtʔiš ʔuusaaḥiqḥ wik̓aałukʷint.

ʔuusuqta=umt=ʔi·š ʔuusaaḥi-(q)ḥ wik-!aałuk=int

hurt=PST=STRG.3 because-LINK NEG-look.after=PST

'He got hurt because he wasn't paying attention.' (*N*, Fidelia Haiyupis)

Like *ʔuunuuƛ*/*ʔunẃiiƛ*, *ʔuusaaḥi* is a verb taking a single argument, a cause. This is associated with the result through either a serial verb construction or with a linker. Unlike *ʔuunuuƛ*/*ʔunẃiiƛ*, *ʔuusaaḥi* takes a nominal causal complement, although this can be changed to a sentential complement with either the introduction of the complementizer or by attaching the linker to *ʔuusaaḥi*. This behavior is unique in the language, so far as I know, and I have not modeled it in my implemented analysis.

5.2.2 ʔuyi

Of the possibly-verbal, possibly-adpositional words in Nuuchahnulth, *ʔuyi* is one of the most ambiguous cases (Adam Werle, *p.c.*). The meaning of *ʔuyi* is 'at (a time)' and it typically cooccurs with another

[15]This is an extremely rare case of linker attachment causing a syntactic shift to what it attaches to.

predicative word in a sentence. In this case, the clausal clitics scope over both predicates (268–272). The temporal complement of *ʔuyi* can be a nominal either occurring after (268) or before *ʔuyi* (269), it can be expressed in a clause with the possible mood (270) or the definite mood (271), or it can be dropped from the clause entirely (272).

(268) ʔuyaẇiṭsiis saantii ʔuičƛ ciquuwɬi.

ʔuya-ẇiṭs=(y)iis saantii ʔu-ci-čiƛ ciquwił=ʔiˑ

at.a.time-going.to=WEAK.1SG Sunday X-go.to-MO church=ART

'I'm going to church on Sunday.' (**Q**, Sophie Billy)

(269) waałakin yuułuʔiłʔatḥ kuʔał ʔuyi.

wałaak-LS=(m)in yuułuʔiłʔatḥ kuʔał ʔuyi

go.to-GR=REAL.1PL Ucluelet morning at.a.time

'We're going to Ucluelet in the morning.' (**B**, Bob Mundy)

(270) ʔuyimaḥʔaała ṅaṅaaṅič kuʔiičiʔeƛquu.

ʔuyi=maˑḥ=ʔaała ṅaṅaaṅič kuʔał-iˑčiƛ=!aƛ=quu

at.a.time=REAL.1SG=HABIT read morning-IN=NOW=PSSB.3

'I read in the mornings.' (**B**, Bob Mundy)

(271) ʔuyimtaḥ ʕimtnaakšiƛ čakupšiʔeƛqas.

ʔuyi=imt=(m)aˑḥ ʕimt-naˑk-šiƛ čakup-šiƛ=!aƛ=qaˑs

at.a.time=PST=REAL.1SG name-have-MO man-MO=NOW=DEFN.1SG

'I was a full man when I got my name.' (**B**, Bob Mundy)

(272) ʔuyiʔum kiṭḥšiƛ siičił.

ʔuyi=!um kiṭḥ-šiƛ si-L.(č)ił

at.a.time=CMFU.2SG ring-MO 1SG-do.to

'Call me then.' (**C**, *tupaat* Julia Lucas)

ʔuyi has a tendency to double in fluent speech: as the first predicate of a two-predicate utterance, then later following its object (273, 274). The doubling is always grammatically optional, so that (274) is grammatical without the doubling, as in (275).

(273) ʔuyimtinʔaała wałaak May ʔuyiʔeƛ.

ʔuyi=imt=(m)in=ʔaała	wałaak	May	ʔuyi=!aƛ
at.a.time=PST=REAL.1PL=HABIT	go.to	May	at.a.time=NOW

'We would go (there) in May.' (**B**, Bob Mundy)

(274) ʔuyisʔaał yaacuk kuʔał ʔuyi.

ʔuyi=s=ʔaał	yaacuk	kuʔał	ʔuyi
at.a.time=STRG.1SG=HABIT	walk.DR	morning	at.a.time

'I walk in the morning.' (**C**, *tupaat* Julia Lucas)

(275) ʔuyisʔaał yaacuk kuʔał.

ʔuyi=s=ʔaał	yaacuk	kuʔał
at.a.time=STRG.1SG=HABIT	walk.DR	morning

'I walk in the morning.' (**C**, *tupaat* Julia Lucas)

Except for the strange case of doubling, the features of *ʔuyi* so far are in line with other verbs. The clitic-sharing across predicates and the structure of (275) in particular is identical to other serial verb constructions (§4.2).

However, a significant point of differentiation from typical verbs is that *ʔuyi* does not accept the linker (276, 277). When I presented (276), Marjorie Touchie immediately corrected me and said that the way to say this would be with *ʔuyi ʔaṁii*. There are also no instances of linked *ʔuyiqḥ* in Sapir and Swadesh (1939, 1955).

(276) *ʔuyiqḥʔaƛaḥ ʔaḿii mamuuk hił makuwił.

ʔuyi-(q)ḥ=!aƛ=(m)aˑḥ	ʔaḿii	mamuuk	hił	makuwił
at.a.time-LINK=NOW=REAL.1SG	one.day.away	work	at.a.location	store

Intended: 'I will go to work at the store tomorrow.' (**B**, Bob Mundy & Marjorie Touchie)

(277) *ʔuyiqḥʔaƛs ʔaḿii mamuuk hił makuwił.

ʔuyi-(q)ḥ=!aƛ=s	ʔaḿii	mamuuk	hił	makuwił
at.a.time-LINK=NOW=STRG.1SG	one.day.away	work	at.a.location	store

Intended: 'I will go to work at the store tomorrow.' (**C**, *tupaat* Julia Lucas)

ʔuyi then behaves much like a verb in an SVC, but with two exceptions: (i) Unlike verbs (and all predicative words), it cannot accept the predicate linker; (ii) It can optionally double in constructions where it is separated from its direct object. I believe the reasons for this are that *ʔuyi* is an historic verb that has undergone a grammatical category shift that has caused it to lose its status as a predicate.

The shape of *ʔuyi* looks like the empty root *ʔu-* combined with some verbal suffix. Although there is no contemporary productive suffix *-yi* meaning 'at a time,' Sapir and Swadesh (1939:320) list -(*y*)*i̇ya* with the definition 'at . . . time, in . . . weather.' There are some instances of -(*y*)*i̇ya* in the Sapir-Thomas texts, such as *ʔaḥʔaayi̇ya* 'at that time' (Sapir and Swadesh, 1939, p. 16), *ċawaayi̇ya* 'one time/one day' (Sapir and Swadesh, 1939, p. 19), and *ʔuyi̇ya* 'at the time. . .' (Sapir and Swadesh, 1939, p. 112). It seems likely to me that *ʔuyi* historically derives from this suffix verb -(*y*)*i̇ya*.

ʔuyi retains many verbal properties, entering into SVCs as though it were an adposition-like verb (§4.2.1.3), including being split from its direct object by the intervening VP. It is set apart from other verbs in having lost its status as a predicate, as seen from its inability to accept the predicate linker. This is, I believe, a case of grammaticalization in progress, with *ʔuyi* moving from a verb to an adposition.

This process can also be seen in the word's "doubling" in the right contexts. This could be analyzed as a simple repetition with argument-dropping, but that doesn't explain why this structure only occurs with this one word. The better explanation is that *ʔuyi* is a word in-between two syntactic categories. As a verb, it can enter into serial verb constructions. But as an adposition, it can take a nominal com-

plement. In "doubling" contexts, *ʔuyi* occurs twice: once entering into an SVC as a verb, and then again taking a complement as an adposition. In these contexts, the verbal *ʔuyi* takes as its complement an adpositional phrase headed by adpositional *ʔuyi*. Under this analysis, this doubling phenomenon only appears because this word is in a transitory step of a grammaticalization process, which ends with *ʔuyi* becoming an adposition and losing its remaining verbal properties.

5.2.3 Adposition-like words

In her dissertation, Woo (2007a) examines the syntax of what she terms "prepositional predicates" and ultimately agrees with previous researchers that these words are verbs. The words she considers are: (1) *ʔuuḥẃał* 'using', (2) *ʔuuʔink* 'using', (3) *ʔucḥin* benefactive, (4) *ʔuuʔatup* benefactive/recipient, (5) *ʔuukčamałčiqḥ* 'do together with someone', (6) *ʔukʷink* 'go with', (7) *ʔuukʷiɬ* 'do to', (8) *ʔuḥtaa* 'do to', and (9) *ʔuḥ* subject marker.

Woo separates these words into two categories. The first six of these prepositional predicates introduce an extra argument into the clause, and using the Minimalist Framework, Woo categorizes them as full verbs (V) which, when working in concert with a main verb, coordinate at the level of *v*P. By my definition, this would be a serial verb construction (§4.3.3.2). This full verb analysis is supported in part by the fact that the first set of words can occur as the sole predicate of a sentence.

However, the last three words (*ʔuukʷiɬ*, *ʔuḥtaa*, and *ʔuḥ*) optionally mark arguments already inherent in the main verb. They require a main predicate to form a grammatical sentence (or may only be used alone in special circumstances, like question-answering). These Woo categorizes as flavors of little-*v*.

Although I approach my analysis from within a different framework, I agree with Woo's broad categorization. I checked speaker's intuitions about attaching the linker -(*q*)*ḥ* to these adposition-like words and the judgments I received support Woo's bifurcation into two categories, the first of which is verbal. Structurally, verbs should be able to coordinate either covertly through a serial verb construction or overtly with a linker morpheme. If a word is a member of a grammatical category (like an adposition or Minimalism's little-*v*), it is non-predicative, and therefore in my analysis the predicate linker should not be able to attach.

Not all speakers recognize or use all of the adposition-like words Woo lists, so I was not able to test all

of these words with all speakers. There is also a morphophonological problem testing *ʔuḥ* (which would be **ʔuḥḥ* with the linker). However, I have collected data on these from her list: (1) *ʔuuḥẃał*, (3) *ʔucḥin*, (4) *ʔuuʔatup* and *ʔuupaał(ḥ)* (not in Woo's list), (6) *ʔukʷink* with, (7) *ʔuukʷił*, and (8) *ʔuḥtaa*. In short, the words Woo calls verbs mostly accept the linker, while her "little-*v*" words do not.

5.2.3.1 ʔuuḥẃał

The adposition-like verb *ʔuuḥẃał* 'using' can accept the linker in a sentence without any change of meaning.

(278) wikcuk̓ʷapʔic ƛiisƛiisa ʔuuḥẃał ƛiisćuuẏak.

wikcuk=!ap=ʔic	ƛis-LR2L.a	ʔuuḥẃał	ƛiisćuuẏak
easy=CAUS=STRG.2SG	write-RP	using	computer

'It's easy for you to write using a computer.' (**T**, Fidelia Haiyupis)

(279) wikcuk̓ʷapʔic ƛiisƛiisa ʔuuḥẃałḥ ƛiisćuuẏak.

wikcuk=!ap=ʔic	ƛis-LR2L.a	ʔuuḥẃał-(q)ḥ	ƛiisćuuẏak
easy=CAUS=STRG.2SG	write-RP	using-LINK	computer

'It's easy for you to write using a computer.' (**T**, Fidelia Haiyupis)

5.2.3.2 ʔucḥin

The adposition-like verb *ʔucḥin* 'for, on the behalf of' can also freely accept the linker.

(280) ʔucḥins mamuuk ʔuušḥẏumsukqs.

ʔucḥin=s	mamuuk	ʔuuš-(q)ḥẏu·-mis=uk=qs
BENEF=STRG.1SG	work	some-related.or.friend-NMLZ=POSS=DEFN.1SG

'I'm working for my friend.' (**T**, Fidelia Haiyupis)

(281) ʔucḥinqḥʔaƛs mamuuk ʔuušḥẏumsukqs.

ʔucḥin-(q)ḥ=!aƛ=s mamuuk ʔuuš-(q)ḥẏuˑ-mis=uk=qs

BENEF-LINK=NOW=STRG.1SG work some-related.or.friend-NMLZ=POSS=DEFN.1SG

'I'm working for my friend.' (**T**, Fidelia Haiyupis)

5.2.3.3 ʔuuʔatup

There is speaker disagreement on whether the adpositive verb *ʔuuʔatup* 'on the behalf of, for the benefit of' freely accepts the linker. My consultant *tupaat* Julia Lucas, a Central speaker, accepted it (282, 283) but my Barkley Sound consultants Bob Mundy and Marjorie Touchie did not (284, 285). This may be another case of a change in progress, where for my Barkley consultants, *ʔuuʔatup* is in a process of grammaticalization and becoming an adposition.

(282) ʔaḵułis suẇa ḥiẏaḥi č̓apac ʔuuʔatup ḥaakʷaaƛukʔitk.

ʔaḵułi=s suẇa ḥiẏaḥi č̓apac ʔuuʔatup ḥaakʷaaƛ=uk=ʔitk.

loan=STRG.1SG 2SG D1 canoe BENEF girl=POSS=DEFN.2SG

'I'm loaning you that canoe for your daughter.' (**C**, *tupaat* Julia Lucas)

(283) ʔaḵułis suẇa ḥiẏaḥi č̓apac ʔuuʔatupḥ ḥaakʷaaƛukʔitk.

ʔaḵułi=s suẇa ḥiẏaḥi č̓apac ʔuuʔatup-(q)ḥ ḥaakʷaaƛ=uk=ʔitk.

loan=STRG.1SG 2SG D1 canoe BENEF-LINK girl=POSS=DEFN.2SG

'I'm loaning you that canoe for your daughter.' (**C**, *tupaat* Julia Lucas)

(284) huyaałaḥ ʔuuʔatup t̓aatṅeʔis.

huyaał=(m)aˑḥ ʔuuʔatup t̓aatṅa=ʔis.

dance=REAL.1SG BENEF child.PL=DIM

'I dance for the children.' (**B**, Bob Mundy, Marjorie Touchie)

(285) *huyaałaḥ ʔuuʔatupḥ ṫaatṅeʔis.

huyaał=(m)a·ḥ ʔuuʔatup-(q)ḥ ṫaatṅa=ʔis

dance=REAL.1SG BENEF-LINK child.PL=DIM

Intended: 'I am dancing for the children.' (**B**, Bob Mundy, Marjorie Touchie)

5.2.3.4 ʔuupaał(ḥ)

Though this word does not appear in Woo (2007a), it is another adposition-like verb that appears to have the same meaning as *ʔukʷink* 'with'. Only Julia Lucas recognized *ʔuupaał* as an independent word which could optionally take the linker -(*q*)*ḥ* (286, 287). For my other consultants who knew the word (Bob Mundy, Marjorie Touchie, and Fidelia Haiyupis), they only recognized *ʔuupaałḥ* and not *ʔuupaał*. They could articulate this straightforwardly (i.e., "*ʔuupaał* is not a word") but also rejected *ʔuupaał* in examples (288–291).

ʔuupaał (but not *ʔuupaałḥ*) occurs in Sapir and Swadesh (1939, 1955), so my interpretation of this is that for some speakers, *ʔuupaał* has relexicalized to include what was formerly a separate linker morpheme. That is, a relexicalization process occurred that looks like:

ʔuupaał > *ʔuupaał* + -(*q*)*ḥ* > *ʔuupaałḥ*.

(286) ciiqmałapiẇiṫasniš ʔuupaał ẏukʷiiqsakqs.

ciq-mał-L.api-ẇiṫas=ni·š ʔuupaał ẏukʷiiqsu=ʔak=qs.

speak-move.DR-above-going.to=STRG.1PL with younger.sibling=POSS=DEFN.1SG

'I am going to speak along with my younger sister.' (**C**, *tupaat* Julia Lucas)

(287) ciiqmałapiẇiṫasniš ʔuupaałqḥ ẏukʷiiqsakqs.

ciq-mał-L.api-ẇiṫas=ni·š ʔuupaał-(q)ḥ ẏukʷiiqsu=ʔak=qs.

speak-move.DR-above-going.to=STRG.1PL with-LINK younger.sibling=POSS=DEFN.1SG

'I am going to speak along with my younger sister.' (**C**, *tupaat* Julia Lucas)

(288) ʔuupaałḥitweʔin t̓aṅeʔisukqas łuučm̓uupukʔi pisat̓asw̓it̓as.

ʔuupaałḥ=(m)it=weˑʔin t̓aṅa=ʔis=uk=qaˑs łuučm̓uup=uk=ʔiˑ pisat-!as-w̓it̓as

with=PST=HRSY.3 child=DIM=POSS=DEFN.1SG sister=POSS=ART play-outside.DR-going.to

'My child went with his sister to go play.' (**B**, Bob Mundy)

(289) *ʔuupaałitweʔin t̓aṅeʔisukqas łuučm̓uupukʔi pisat̓asw̓it̓as.

ʔuupaał=(m)it=weˑʔin t̓aṅa=ʔis=uk=qaˑs łuučm̓uup=uk=ʔiˑ pisat-!as-w̓it̓as

with=PST=HRSY.3 child=DIM=POSS=DEFN.1SG sister=POSS=ART play-outside.DR-going.to

Intended: 'My child went with his sister to go play.' (**B**, Bob Mundy)

(290) ʔuupaałḥintʔiš mamuuk ƛ̓iisƛ̓iisaʔapt̓.

ʔuupaałḥ=int=ʔiˑš mamuuk ƛ̓iisƛ̓iisaʔapt̓

with=PST=STRG.3 work.DR Adam

'I worked with Adam.' (**T**, Fidelia Haiyupis)

(291) *ʔuupaałintʔiš mamuuk ƛ̓iisƛ̓iisaʔapt̓.

ʔuupaał=int=ʔiˑš mamuuk ƛ̓iisƛ̓iisaʔapt̓

with=PST=STRG.3 work.DR Adam

Intended: 'I worked with Adam.' (**T**, Fidelia Haiyupis)

5.2.3.5 ʔukʷink

ʔukʷink 'with' freely accepts the linker without a change in meaning (292–295).

(292) ʔucačiƛ̓w̓it̓asaḥ nučiiʔi ʔukʷink ʔeʔiič̓imʔakqas.

ʔu-ca-čiƛ̓-w̓it̓as=(m)aˑḥ nučii=ʔiˑ ʔukʷink ʔeʔiič̓im=ʔak=qaˑs

X-go-MO-going.to=REAL.1SG mountain=ART with parent.PL=POSS=DEFN.1SG

'I'm going to the mountains with my parents.' (**B**, Bob Mundy, Marjorie Touchie)

(293) ʔucačiƛẇiṭasaḥ nučiiʔi ʔukʷinkḥ ʔeʔiič̓imʔakqas.

ʔu-ca-čiƛ-ẇiṭas=(m)aˑḥ nučii=ʔiˑ ʔukʷink-(q)ḥ ʔeʔiič̓im=ʔak=qaˑs

X-go-MO-going.to=REAL.1SG mountain=ART with-LINK parent.PL=POSS=DEFN.1SG

'I'm going to the mountains with my parents.' (**B**, Bob Mundy, Marjorie Touchie)

(294) ʔukʷinkints ƛiisƛiisaʔapṭ ʔucačiƛ yuułuʔiłʔatḥ.

ʔukʷink=int=s ƛiisƛiisaʔapṭ ʔu-ca-čiƛ yuułuʔiłʔatḥ

with=PST=STRG.1 Adam X-go-MO Ucluelet

'I went with Adam to Ucluelet.' (**T**, Fidelia Haiyupis)

(295) ʔukʷinkḥints ƛiisƛiisaʔapṭ ʔucačiƛ yuułuʔiłʔatḥ.

ʔukʷink-(q)ḥ=int=s ƛiisƛiisaʔapṭ ʔu-ca-čiƛ yuułuʔiłʔatḥ

with-LINK=PST=STRG.1 Adam X-go-MO Ucluelet

'I went with Adam to Ucluelet.' (**T**, Fidelia Haiyupis)

5.2.3.6 ʔuukʷił

Unlike the fully predicative verbs above, *ʔuukʷił* 'do to' does not accept the linker.

(296) hałiiłintʔiš ʔiiḥatisʔatḥ ʔuukʷił ċišaaʔatḥ čiicṭałẇiṭas.

hałiił=int=ʔiˑš ʔiiḥatisʔatḥ ʔu-L.(č)ił ċišaaʔatḥ čiicṭał-ẇiṭas

ask=PST=STRG.3 Ehattisaht DO.TO Tseshaht do.tug.of.war-going.to

'The Ehattesahts invited the Tseshahts to play tug of war.' (**T**, Fidelia Haiyupis)

(297) *hałiiłintʔiš ʔiiḥatisʔatḥ ʔuukʷiłḥ ċišaaʔatḥ čiicṭałẇiṭas.

hałiił=int=ʔiˑš ʔiiḥatisʔatḥ ʔu-L.(č)ił-(q)ḥ ċišaaʔatḥ čiicṭał-ẇiṭas

ask=PST=STRG.3 Ehattisaht DO.TO-LINK Tseshaht do.tug.of.war-going.to

Intended: 'The Ehattesahts invited the Tseshahts to play tug of war.' (**T**, Fidelia Haiyupis)

5.2.3.6.1 ***ʔuḥtaa*** Like the more common object marker *ʔuukʷiɬ*, the marker *ʔuḥtaa* does not appear to accept the linker. *ʔuḥtaa* is an archaic word in modern Nuuchahnulth. The only consultant who recognized it was Julia Lucas, when listening to a recording of her older sister, who used the word fluently in natural speech. She recognized the word without the linker, but rejected rephrases with the linker attached.

5.2.4 Summary of the linker and class-ambiguous words

Data about the attachment of the predicate linker can help shed light on the syntactic category of words whose categoricity is unclear. *ʔuunuuƛ*, *ʔunẇiiƛ*, and *ʔuusaaḥi* 'because' all behave like verbs, and the free attachment of the predicate linker helps determine their argument structure. *ʔuyi* does not accept the linker, and is in the process of transitioning to an adposition. The adposition-like words that can accept the linker seem to be clearly verbal. However, the argument-marking words *ʔuukʷiɬ* and *ʔuḥtaa* do not accept the linker, as is expected if they belong to a non-predicative and functional category, whether they are called little-*v* within Minimalism (Woo, 2007a), or perhaps adpositions in other frameworks.

5.3 HPSG analysis and implementation

In this section I will go over my implementation for the linker morpheme (§5.3.1), the becausatives (§5.3.2), and *ʔuyi* (§5.3.3). The implementation of adposition-like verbs has already been given (§4.3.1), where they are treated as verbs. I have in this section given corroborating evidence of their inherently verbal qualities. The special adpositions/little-*v* elements *ʔuukʷiɬ* and *ʔuḥtaa* are not addressed here.

5.3.1 The predicate linker lexeme(s)

The predicate linker attaches either directly to the predicate it is coordinating, or to a preceding modifier of that predicate (§5.1.2). Its syntactic position is in this way very much in line with that of second-position suffixes (§3.1.4), and so I will use the same analysis I developed for auxiliary predicate second-position suffixes like *-ẇiẗas* and *-maḥsa* in §3.2.3.2. That is, I reuse the preparatory lexical rules for auxiliary predicate suffixes, *pred-incorporation-lex-rule* (78) and *adv-incorporation-lex-rule* (79), the output of which can then be the daughter of the rule which adds the predicate linker. The reason for the

two-step process is to accommodate attachment to different parts of speech without having multiple lexical rules for adding the suffix itself. My modeling of the linker morpheme thus treats it as morphologically as an auxiliary predicate suffix, although it will have some different semantic and syntactic properties.

There are two main ways that the predicate linker differs from other suffixes in this morphological category. The first is that it adds more syntactic information: for example, it adds a complement (the coordinated predicate[16]), and requires matching subjects between the two coordinated predicates. The second way it differs is that there are two positions the linker can be in: on the initial coordinand, with the second-position enclitics, or on a later one without the enclitics. Notionally, the predicate linker is simply an "and" coordination and falls on one of the coordinands. However, I am going to need two versions of the suffix, one for attaching to the first coordinand and one for attaching to the second coordinand. In the case where the linker falls on the first coordinand along with the second-position enclitics, it needs to select for its later complement (the other coordinated predicate) that still has a non-cancelled subject on its valence list and is nonfinite. In the case where the linker falls on the second coordinand and without the second-position enclitics, it needs to select for an earlier complement (the other predicate) that is governed by a second-position enclitic complex, is finite, and is not looking for a subject.

I create a predicate linker supertype *2p-linker-verb-lex-rule-super* for both of these subtypes (linker-first and linker-last). As with the other second-position suffixes, this supertype is part of a type hierarchy that includes types such as *2p-suffix-pred-verb-lex-rule* (80). I present in (298) a version of the rule that shows its inherited properties.

[16]The normal means of coordination is through syntactic features LCOORD and RCOORD (see §4.3.3). In (298), coordination is taking place through the COMPS list instead, which allows the predicate linker rules to inherit from lexical supertypes for second-position suffixes that do not involve coordination.

(298)

$$\begin{bmatrix} \textit{2p-linker-verb-lex-rule-super} & \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{S} \rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{LOCAL} & \begin{bmatrix} \text{CAT.VAL.COMPS} & \langle\ \rangle \\ \text{CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{2} \\ \text{XARG} & \boxed{3} \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle \oplus \boxed{C} \end{bmatrix} \end{bmatrix} \\ \text{CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{1} \\ \text{XARG} & \boxed{3} \end{bmatrix} \end{bmatrix} \\ \text{C-CONT} & \left\langle \begin{bmatrix} \text{PRED} & \textit{AND} \\ \text{C-ARG} & e\ \boxed{0} \begin{bmatrix} \text{MOOD} & \boxed{4} \\ \text{TENSE} & \boxed{5} \end{bmatrix} \\ \text{L-INDEX} & e\ \boxed{1} \begin{bmatrix} \text{MOOD} & \boxed{4} \\ \text{TENSE} & \boxed{5} \end{bmatrix} \\ \text{R-INDEX} & e\ \boxed{2} \begin{bmatrix} \text{MOOD} & \boxed{4} \\ \text{TENSE} & \boxed{5} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{DAUGHTER} & \begin{bmatrix} \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD.PRD} & + \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{S} \rangle \\ \text{COMPS} & \boxed{C} \end{bmatrix} \end{bmatrix} \\ \text{CONT.HOOK} & \begin{bmatrix} \text{INDEX} & \boxed{1} \\ \text{XARG} & \boxed{3} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

This rule states that the linker, when added through incorporation, adds the relation AND which coordinates two events (an L-INDEX and an R-INDEX). All these events share the same mood, tense, and sentential force (not shown), semantic properties constrained through the second-position enclitics. The first event (the L-INDEX) is identified with the daughter, so the element that the linker has been put on, and the R-INDEX is identified with the index of a new item on the COMPS list, that is, the to-be-linked element. This new element is placed first on the COMPS, before the complements of the original verb.[17]

[17]This is a constraint imposed by the limitations of the DELPH-IN formalism. It is possible that the daughter is intransitive, in which case the daughter's complements list is null. I cannot append a contentful list to the end of a null list, so I must first add the element that is known to be non-null (the other coordinand) followed by the possibly-null element. This does not cause any problems with constructing a string, since the second complement can be realized first through a *head-comp-2*

Finally, the subjects of both coordinands are identified with each other by identifying their XARGs with each other. The two linker rules are given below and inherit from (298) above.

(299)
$$\begin{bmatrix} \textit{2p-linker-first-lex-rule} & \\ \text{SYNSEM.LOCAL.CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{AUX} & - \\ \text{FORM} & \textit{nonfinite} \end{bmatrix} \\ \text{VAL.COMPS} & \left\langle \begin{bmatrix} \text{LOCAL.CAT} & \begin{bmatrix} \text{VAL.SUBJ} & \textit{cons} \\ \text{POSTHEAD} & + \end{bmatrix} \end{bmatrix}, \ldots \right\rangle \end{bmatrix} \end{bmatrix}$$

(300)
$$\begin{bmatrix} \textit{2p-linker-last-lex-rule} & \\ \text{SYNSEM.LOCAL.CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{AUX} & + \\ \text{FORM} & \textit{finite} \end{bmatrix} \\ \text{VAL.COMPS} & \left\langle \begin{bmatrix} \text{LOCAL.CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{AUX} & + \\ \text{FORM} & \textit{finite} \end{bmatrix} \\ \text{POSTHEAD} & - \end{bmatrix} \end{bmatrix}, \ldots \right\rangle \end{bmatrix} \end{bmatrix}$$

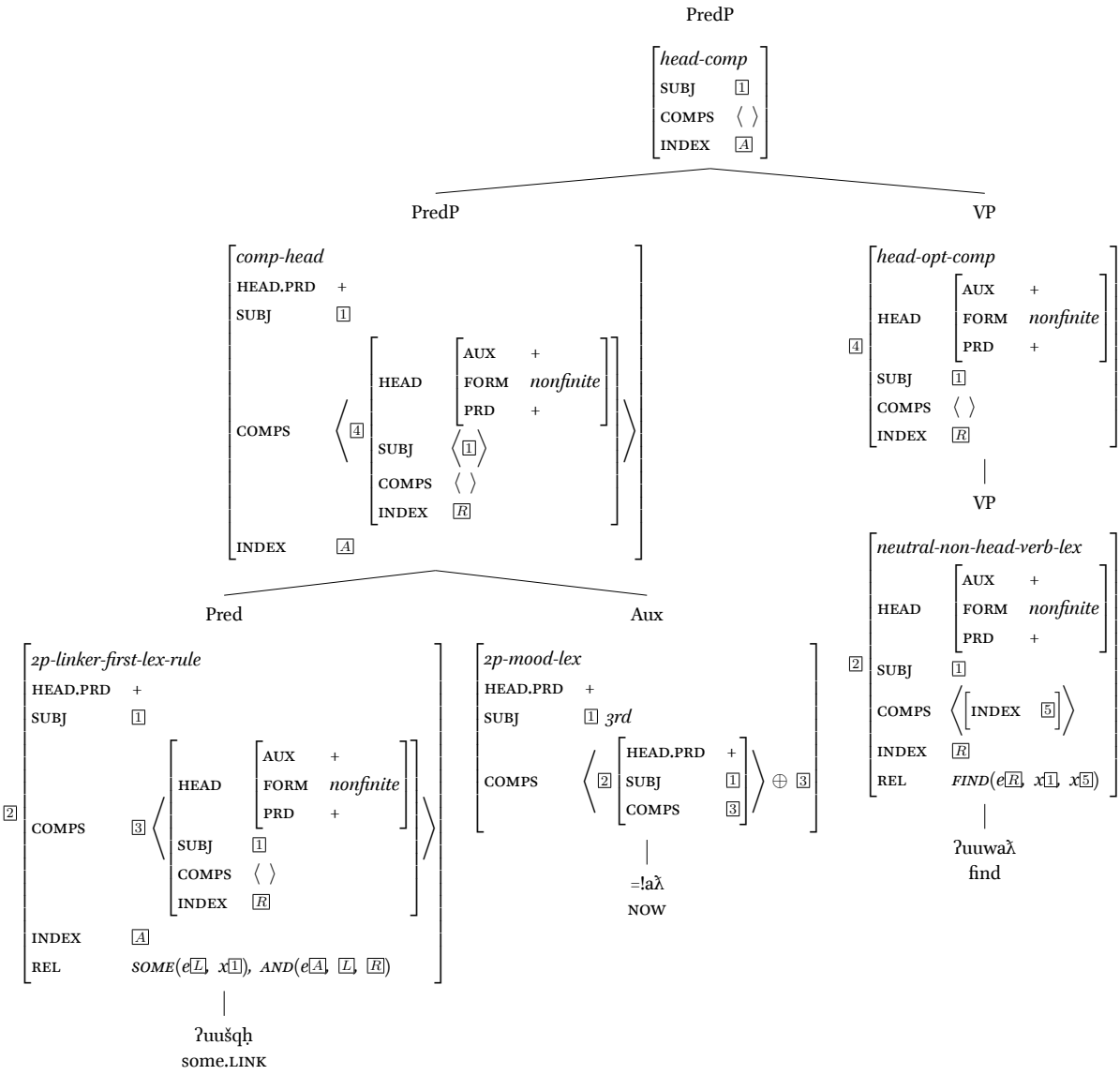
When the linker attaches to the first coordinand (299), the complement needs to still be looking for its subject, be nonfinite, and occur after the linker. The mother node is nonfinite and not an auxiliary so that it can be the complement of the second-position enclitic complex (§3.2.2).

When the linker attaches last (300), it is looking for a complement with the second-position enclitics attached (a finite auxiliary) and which will be to the left of the linker. The linker will be the head in this construction, so I constrain it to be a finite auxiliary in order to head the sentence. (301) below is a tree structure for the sentence in (218) and shows the linker attaching to the first coordinand, and (302) is a tree for (207), showing the linker attaching to the second coordinand.

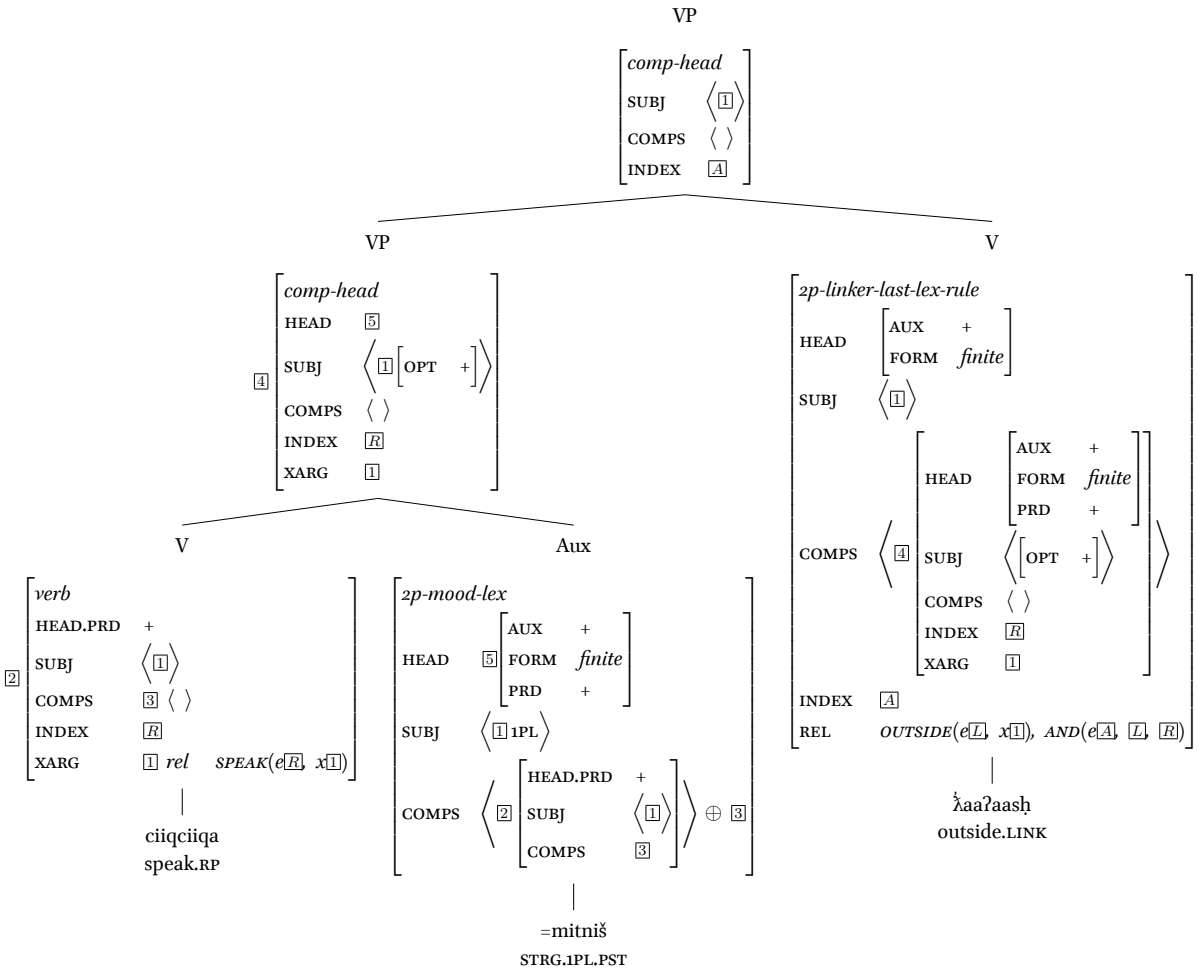
---

rule.

(301)


PredP
head-comp
SUBJ 1
COMPS ⟨ ⟩
INDEX A
PredP
VP
comp-head
HEAD.PRD +
SUBJ 1
COMPS ⟨ 4 [HEAD [AUX + FORM nonfinite PRD +] SUBJ ⟨ 1 ⟩ COMPS ⟨ ⟩ INDEX R] ⟩
INDEX A
head-opt-comp
4 HEAD [AUX + FORM nonfinite PRD +]
SUBJ 1
COMPS ⟨ ⟩
INDEX R
VP
neutral-non-head-verb-lex
2 HEAD [AUX + FORM nonfinite PRD +]
SUBJ 1
COMPS ⟨ [INDEX 5] ⟩
INDEX R
REL FIND(eR, x1, x5)
ʔuuwaƛ̓
find
Pred
Aux
2p-linker-first-lex-rule
HEAD.PRD +
SUBJ 1
2 COMPS 3 ⟨ [HEAD [AUX + FORM nonfinite PRD +] SUBJ 1 COMPS ⟨ ⟩ INDEX R] ⟩
INDEX A
REL SOME(eL, x1), AND(eA, L, R)
ʔuušqḥ
some.LINK
2p-mood-lex
HEAD.PRD +
SUBJ 1 3rd
COMPS ⟨ 2 [HEAD.PRD + SUBJ 1 COMPS 3] ⟩ ⊕ 3
=!aƛ̓
NOW

(302)



5.3.2 *The becausative lexemes*

The because words, as defined in §5.2.1, can be treated simply as adposition-like verbs. *ʔuusaaḥi* is a plain transitive verb that takes a nominal complement,[18] and *ʔuunuuƛ* is a verb that takes a clausal complement that is not a main clause. These verbs can then take a linker like any other verb, or enter into adposition-like SVCs. Simplified and expanded type definitions for these verbs are given below.

[18]The analysis presented here does not account for the syntactic changes *ʔuusaaḥi* undergoes when the linker attaches, or when its complement is introduced by a complementizer (§5.2.1, p.163).

(303)

$$\begin{bmatrix} \textit{ʔuusaaḥi} & \\ \text{PHON} & \textit{“ʔuusaaḥi”} \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{HTYPE} & \textit{adpositive} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \begin{bmatrix} \ldots\text{INDEX} & \boxed{1} \end{bmatrix} \right\rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{noun} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \\ \text{POSTHEAD} & + \end{bmatrix} \\ \ldots\text{INDEX} & \boxed{2} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \text{HOOK.INDEX} & \boxed{0} \\ \text{RELS} & \left\langle \begin{bmatrix} \text{PRED} & \textit{CAUSE} \\ \text{ARG0} & e\boxed{0} \\ \text{ARG1} & x\boxed{1} \\ \text{ARG2} & x\boxed{2} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

(304)

$$\begin{bmatrix} \textit{ʔuunuuƛ} & \\ \text{PHON} & \textit{“ʔuunuuƛ”} \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{HTYPE} & \textit{adpositive} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \begin{bmatrix} \ldots\text{INDEX} & \boxed{1} \end{bmatrix} \right\rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{AUX} & + \\ \text{FORM} & \textit{finite} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \\ \text{POSTHEAD} & + \\ \text{MC} & - \end{bmatrix} \\ \ldots\text{INDEX} & \boxed{2} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \text{HOOK.INDEX} & \boxed{0} \\ \text{RELS} & \left\langle \begin{bmatrix} \text{PRED} & \textit{CAUSE} \\ \text{ARG0} & e\boxed{0} \\ \text{ARG1} & x\boxed{1} \\ \text{ARG2} & e\boxed{2} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

5.3.3 The ʔuyi lexeme(s)

I have claimed that *ʔuyi* is a word in transition: It is an historic verb that has lost some of its predicativeness and is undergoing a change to an adposition. It is possible for the word appear twice, once in an SVC-like construction, and once again following its object.

The way my grammar has been constructed, if I simply constrain *ʔuyi* to be [PRD –], the second-position enclitics will not be able to attach to it, since they select for a [PRD +] complement (§3.2.2). And yet I still want to have the second-position enclitics attaching, but I want to prevent incorporation with elements like the linker. So my analysis will have to have more moving parts than just a [PRD –] constraint.

To model *ʔuyi* I constrain it not just to be [PRD –] but also [HEAD *adposition*]. This lexical entry will not yet be able to form a clause (it cannot be a complement of a second-position enclitic), but it will be able to go through lexical incorporation, which will allow second-position suffixes like *-ẇiṫas* 'going to' (§3.2.3) to apply. While it can acquire these second-position suffixes, the [PRD –] constraint will block the application of the linker rule (298), which is desired. The lexical type for *ʔuyi* then looks like (305) below.

(305)
$$\begin{bmatrix} \textit{ʔuyi} & \\ \text{PHON} & \textit{“ʔuyi”} \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{adposition} & \\ \text{HTYPE} & \textit{adpositive} \\ \text{PRD} & - \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \begin{bmatrix} \ldots\text{INDEX} & \boxed{1} \end{bmatrix} \right\rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{LOCAL.CAT.HEAD} & \textit{noun} \\ \text{OPT} & - \\ \ldots\text{INDEX} & \boxed{2} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \text{HOOK.INDEX} & \boxed{0} \\ \text{RELS} & \left\langle \begin{bmatrix} \text{PRED} & \textit{AT-A-TIME} \\ \text{ARG0} & e\boxed{0} \\ \text{ARG1} & x\boxed{1} \\ \text{ARG2} & x\boxed{2} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

This lexical specification assumes a nominal complement. However, *ʔuyi* can take a clause in the possible or definite mood. I know of no way to underspecify between a noun (with a semantic individual) and a clause (with a semantic event), so I have to define a separate version of *ʔuyi* that takes this kind of complement. I give this version of the lexeme in (306), only giving the parts that differ from (305).

(306)
$$\begin{bmatrix} \textit{ʔuyi-clausal-comp} & \\ \text{PHON} & \textit{“ʔuyi”} \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT.VAL.COMPS} & \left\langle \begin{bmatrix} \text{LOCAL.CAT} & \begin{bmatrix} \text{HEAD.PRD} & + \\ \text{CONT.HOOK.INDEX} & \boxed{2} \end{bmatrix} \\ \text{OPT} & - \end{bmatrix} \right\rangle \\ \text{CONT} & \begin{bmatrix} \text{HOOK.INDEX} & \boxed{0} \\ \text{RELS} & \left\langle \begin{bmatrix} \text{PRED} & \textit{AT-A-TIME} \\ \text{ARG0} & e\boxed{0} \\ \text{ARG1} & x\boxed{1} \\ \text{ARG2} & e\boxed{2}\begin{bmatrix} \text{MOOD} & \textit{possible-or-definite} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

While (305) and (306) can go through the unary lexical incorporation rules that add second-position suffixes (see §3.2.3), as [PRD –] lexical items they cannot yet be the complement of a second-position enclitic. To address this, I create a lexical rule *adp-to-pred-verb-lex-rule* (307) that turns a [PRD –] adposition or adpositive verb[19] into a [PRD +] verb. Once this rule applies, the word will be blocked from acquiring further second-position suffixes because it will no longer inherit from any morphological type that can be a daughter to these rules (*predicate-lex*, *common-noun-lex*, and so on). But it will be able to be the complement of the auxiliary second-position enclitics, since it is now [PRD +].

(307)
$$\begin{bmatrix} \textit{adp-to-pred-verb-lex-rule} & \\ \text{SYNSEM} & \begin{bmatrix} \text{LOCAL.CAT.HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{PRD} & + \\ \text{HTYPE} & \textit{adpositive} \end{bmatrix} \end{bmatrix} \\ \text{DAUGHTER} & \begin{bmatrix} \text{SYNSEM.LOCAL.CAT.HEAD} & \begin{bmatrix} \textit{verb-or-adposition} & \\ \text{PRD} & - \\ \text{HTYPE} & \textit{adpositive} \end{bmatrix} \\ \text{INFLECTED} & \textit{infl-satisfied} \end{bmatrix} \end{bmatrix}$$

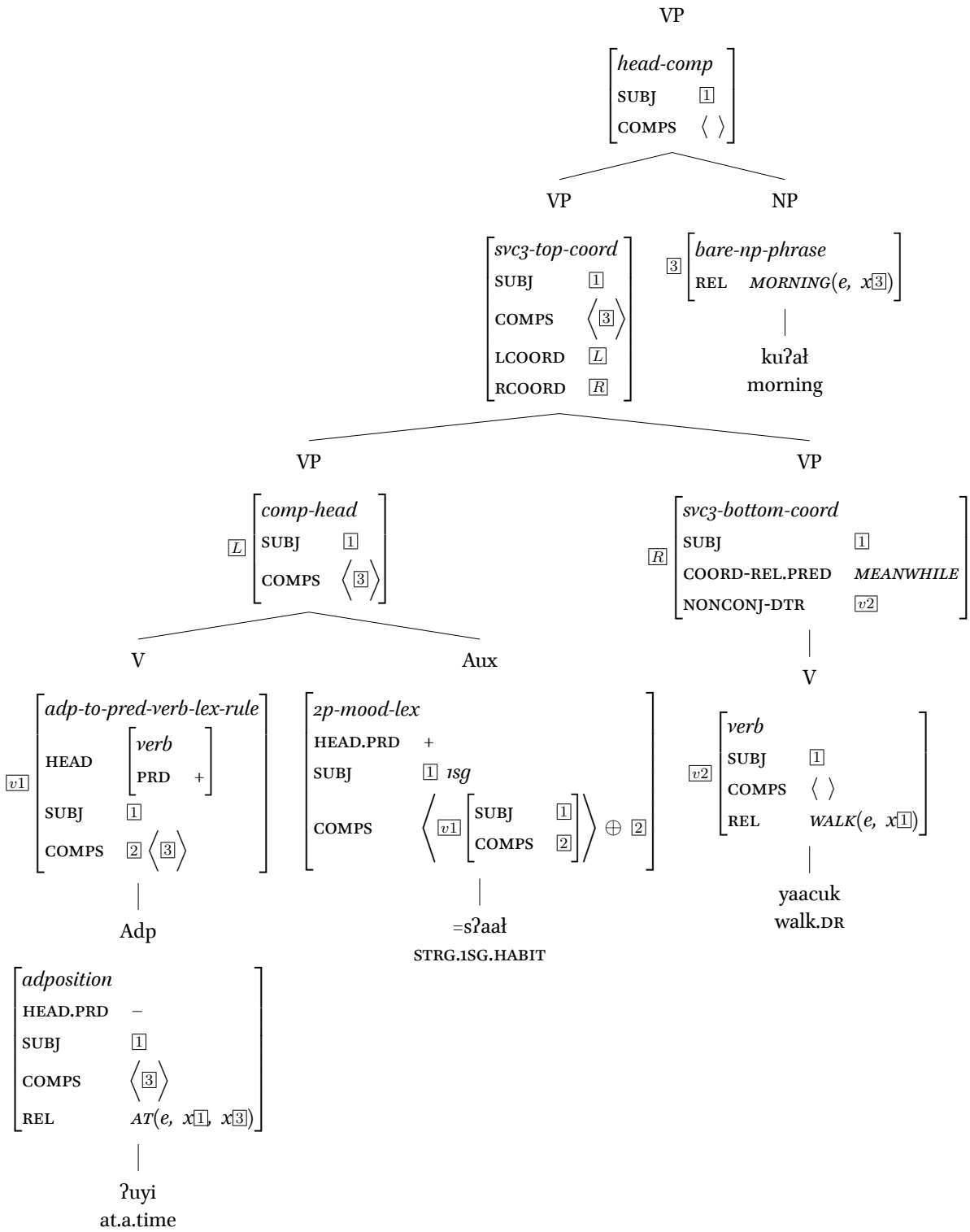
[19]Once a lexical entry for *ʔuyi* goes through the incorporation rules to acquire a second-position suffix, it will become a [PRD –] verb, but stay [HTYPE adpositive].

These rules are sufficient to model cases where *ʔʉyi* does not double (that is, appear twice with a single complement as in (273, 274)). To accommodate doubling I will need a second form of *ʔʉyi*. This version of the word (308) will be a raising verb which does not supply any semantic content and selects specifically for an adposition version of *ʔʉyi*. This lexical entry is also defined as [PRD –] to the linker from attaching, and must go through the *adp-to-pred-verb-lex-rule* (307) in order to be used in the syntax. This version of *ʔʉyi* can be involved in an SVC, however it must have a complement headed by the adposition form of itself. It will only appear in sentences with a double *ʔʉyi*, and as the initial instance of the word.

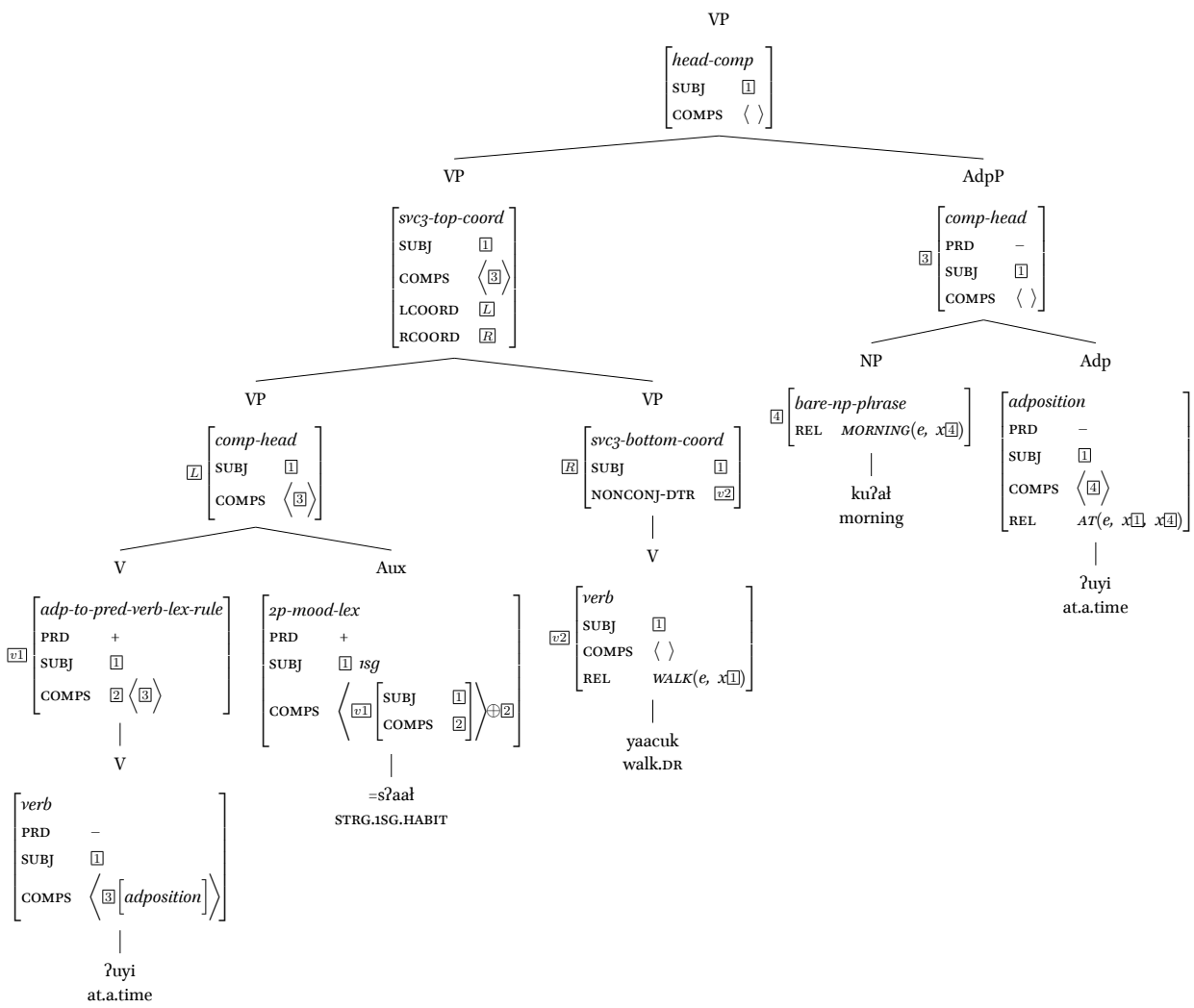
(308)
$$\begin{bmatrix} \textit{ʔʉyi-2} & \\ \text{PHON} & \textit{“ʔʉyi”} \\ \text{SYNSEM.LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{AUX} & - \\ \text{HTYPE} & \textit{adpositive} \\ \text{PRD} & - \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \left\langle \begin{bmatrix} \ldots\text{INDEX} & \boxed{2} \end{bmatrix} \right\rangle \\ \text{COMPS} & \left\langle \begin{bmatrix} \text{LOCAL.CAT.HEAD} & \begin{bmatrix} \textit{adposition} & \\ \text{HTYPE} & \textit{adpositive} \\ \text{PRD} & - \end{bmatrix} \\ \text{OPT} & - \\ \ldots\text{INDEX} & \boxed{1} \\ \ldots\text{XARG} & \boxed{2} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \text{HOOK.INDEX} & \boxed{1} \\ \text{RELS} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Example trees of *ʔʉyi* without doubling (309) and with doubling (310) are given below (sentences taken from (275) and (274) respectively).

(309)


VP
head-comp
SUBJ 1
COMPS ⟨ ⟩
VP
NP
svc3-top-coord
SUBJ 1
COMPS ⟨3⟩
LCOORD L
RCOORD R
3 bare-np-phrase
REL MORNING(e, x3)
kuʔał
morning
VP
VP
L comp-head
SUBJ 1
COMPS ⟨3⟩
R svc3-bottom-coord
SUBJ 1
COORD-REL.PRED MEANWHILE
NONCONJ-DTR v2
V
Aux
V
v1 adp-to-pred-verb-lex-rule
HEAD verb
PRD +
SUBJ 1
COMPS 2 ⟨3⟩
2p-mood-lex
HEAD.PRD +
SUBJ 1 1sg
COMPS ⟨v1 [SUBJ 1, COMPS 2]⟩ ⊕ 2
v2 verb
SUBJ 1
COMPS ⟨ ⟩
REL WALK(e, x1)
Adp
=sʔaał
STRG.1SG.HABIT
yaacuk
walk.DR
adposition
HEAD.PRD –
SUBJ 1
COMPS ⟨3⟩
REL AT(e, x1, x3)
ʔuyi
at.a.time

(310)



5.3.4 *Summary*

The analysis of the linker (§5.3.1) requires two versions of the morpheme: One for the case where the linker appears on the initial coordinand and accepts the second-position enclitics, and one for the case where the linker appears on the later coordinand. In both cases, the predicate with the linker attached is the head of the clause, which is necessary so that coordinands are associated with the AND relation the linker introduces. When the linker appears on the first coordinand, it selects for a complement that does not have the second-position enclitics and is lacking a subject. When the linker appears on the second

coordinand, it selects for a complement that has already picked up the clausal enclitics (is headed by a finite auxiliary). Both versions of the linker are applied as the last step of a lexical incorporation process as first defined in §3.2.2. This incorporation process allows the linker to attach either to a predicate or to a preceding modifying adverb.

The because words (§5.3.2) do not require any special rules. I simply constrain them to be complement-taking verbs with [HTYPE adpositive], which ensures that they enter into the appropriate serial verb construction.

Finally, *ʔuyi* is defined in three flavors (5.3.3): two that are non-predicative ([PRD –]) adpositions, one selecting for a nominal complement and another for clausal complements, and another that is a non-predicative verb that selects for a phrase headed by an adpositive flavor. The [PRD –] definition shared by all versions allows them to pass through the incorporation rules of the language, but blocks linker attachment. In order to be used as a predicate in the syntax (for example, as the target of second-position enclitics), *ʔuyi* must go through a rule that converts it into a verbal predicate, the application of which means it is no longer able to be the target of incorporation. The adpositional versions of *ʔuyi* introduce the relation AT-A-TIME that provides the semantics of the word. The verbal version of *ʔuyi* introduces no semantics, and only occurs in clauses where there is doubling.

Chapter 6

IMPLEMENTED GRAMMAR RESULTS

To test my grammatical analyses and implementation, I created three test suites against which I ran my grammar using the `[incr tsdb()]` framework (Oepen, 2001) and the LKB parser (Copestake, 2002b). The test databases were broken into three groups, following the three data chapters of this dissertation: One for the basic clause (Chapter 3), one for serial verb constructions (Chapter 4), and one for linker constructions (Chapter 5).

All of the test sentences are pre-segmented. I did not create a morphophonemic analyzer as part of this work, so the parser assumes strings are segmented correctly. A finite state transducer that segments Nuuchahnulth strings remains an area for future work.

Parses produced by this grammar are always associated with a semantic representation in Minimal Recursion Semantics (Copestake et al., 2005). I validated semantic representations manually, which means that each parse is not simply grammatical but is associated with a precise and correct semantic representation which can be of use in downstream tasks.

6.1 Basic clause test suite

I composed this test suite by hand to illustrate basic features of the Nuuchahnulth clause structure, as described in Chapter 3. This set of sentences was mostly created by me and not vetted by native speakers. These are all simple sentences and I have a high degree of certainty that my judgments about their grammaticality are correct because they conform to patterns I have observed in my data and are described in the literature. The point of test suites with simple sentences is to illustrate grammatical phenomena in isolation, so that the grammar engineer can focus on one or a few specific phenomena at a time. For instance, (311) tests that the grammar correctly separates the second-position enclitic location from the second-position suffix verb location. (312) on the other hand is a test asserting that adjectives

that modify the objects of suffix verbs can't appear as a word to the left of the suffix verb.

(311) ẏuuqʷaamaḥ ʔunaak ʕiniiƛ.

ẏuuqʷaa=(m)aˑḥ ʔu-naˑk ʕiniiƛ

also=REAL.1SG x-have.DR dog

'I also have a dog.'

(312) *ʔaƛas nuuknaak.

ʔaƛa=s nuuk-naˑk

two=STRG.1SG song-have

Intended: 'I have two songs.'

This test suite overall has 246 sentences, 167 of which are grammatical examples and 79 of which are ungrammatical. Coverage of the grammatical sentences at the time of this publication was at 84.4%, and overgeneration (parsing of ungrammatical sentences) at 1.3%. The results are summarized in Section 6.1.

Table 6.1: Performance on basic clause structure

	Total	Parsed	Unparsed	Avg parses per sentence
Grammatical sentences	167	141	26	1.12
Ungrammatical sentences	79	1	78	2

The unparsed grammatical sentences represent grammatical phenomena I have not covered. The two largest categories are: perfective morphology on non-verbs,[1] and variants of morphemes that I did not model (the generic interpretation of the passive, the bare plural marker indicating the plurality of an object). The lone ungrammatical sentence I parsed was intended to be an example of a sentence with an incorrectly positioned verb, and parsed as a serial verb construction. On reflection, I believe the sentence is possibly grammatical, but has extremely odd semantics.

[1] I believe this turns nouns and adjectives into verbs (e.g. "become a person"), and there may be yet another example of second-position phenomena with perfective morphology optionally moving to a preceding adverb.

6.2 Serial verb construction test suite

Unlike the test suite for the basic clause, all sentences in this test suite came from native speakers, either from interview sessions or from running texts. This test suite had 309 sentences, the vast majority of them grammatical examples. Coverage is 11.3% as of the publication of this document. The majority of cases I did not cover are due to grammatical phenomena I have not implemented: wh-words (especially wh-word incorporation), certain deictic demonstratives, cleft constructions, and so on. Overgeneration is at 16%, which I will address below. A summary of the results is given in Table 6.2.

Table 6.2: Performance on serial verb constructions

	Total	Parsed	Unparsed	Avg parses per sentence
Grammatical sentences	284	32	252	5.78
Ungrammatical sentences	25	4	21	2.75

The 4 cases of overgeneration break into two categories. As I detail in §4.2.1.1, there is an historic preference for perfectivity matching in Type I SVCs, which speakers inconsistently apply when giving grammaticality judgments. I have two types of rules to model this: one set of which requires perfectivity matching for Type I SVCs, and models Type III SVCs as separate (§4.3.3.1), and one of which collapses this distinction between Types I and III and does not require perfectivity matching (§4.3.3.3). When I run broad-coverage parsing, I use the latter rule, since it parses more sentences, including sentences that speakers use. But this necessarily means that those examples of perfectivity mismatching that speakers did not like are happily parsed. This covers 3 of the overgeneration cases.

The last case of overgeneration is (313) below, which is an example showing the ungrammaticality of cross-serial dependencies (mentioned in §4.2.1.5).

(313) *naʔaataḥʔatmaʔaała ṅaacsa nunuukʔi huyaałʔi.

naʔaataḥ=!at=maˈ=ʔaała ṅaacsa nunuuk=ʔiˈ huyaał=ʔiˈ

listen=PASS=REAL.3=HABIT see.CV sing=ART dance.DR=ART

Intended: ‘One listens to the singing and watches the dancing.’ (**B**, Marjorie Touchie)

My grammar happily parses this but not with the cross-serial branching structure. This yields the nonsense meaning "One listens to the dancing and watches the singing." This parse is dispreferred on semantic grounds, which I am not modeling. I believe it is a legitimate syntactic sentence, just with unintelligible semantics. My "overgeneration" problem then comes down to not modeling semantic strangeness, and not modeling a change in progress in the language's grammar.

The average number of parses for these sentences is relatively high because they tend to be long (which increases parse ambiguity), and in many cases there is no way to distinguish between Type I "meanwhile" SVCs and Type IV "and then" SVCs. In such cases, my grammar generates both possible parses.

6.3 Linker test suite

Like the SVC test suite, the linker test suite only includes sentences from native speakers or vetted by native speakers. For the same reasons as before, coverage is relatively low, as speakers use grammatical constructions I have not yet modeled. This test suite consisted of 205 sentences, 177 grammatical and 28 ungrammatical. Coverage as of this publication is 12.4% and overgeneration is 7.1%. Results are summarized in Table 6.3.

Table 6.3: Performance on linker constructions

	Total	Parsed	Unparsed	Avg parses per sentence
Grammatical sentences	177	22	155	2
Ungrammatical sentences	28	2	26	2

One of the two cases of overgeneration is example (236), which is intended to show that the linker requires subject matching, so that "I read rain-link" has an anomalous semantics of "I read and am raining." My grammar however happily parses the sentence and applies this anomalous semantics to it. This is another case of a legitimate syntactic construction, but one that is semantically strange. The other case is shown in (314). I cannot explain why this example was judged as ungrammatical, and only noticed the oddness of it upon running my grammar against this test suite. Perhaps *ʔuutaq* does not permit linker attachment.

(314) *mamuuk̓aƛniš ʔuutaqḥ maʔasukqs.

mamuuk=!aƛ=niˑš ʔuutaq-(q)ḥ maʔas=uk=qs

work.DR=NOW=STRG.1PL fix-LINK house=POSS=DEFN.1SG

Intended: 'We are working to fix my house.' (**T**, Fidelia Haiyupis)

6.4 Value of implementation and testing

The test suites I used to evaluate my grammar both drove grammar development and validated the formal adequacy of my analyses for describing the multi-predicate constructions I investigated. I attained high coverage over my simple examples for the basic clause, and precise syntactic and semantic analyses for the sentences my grammar parsed in my SVC and linker test suites. The latter two test suites show that my grammar is able to correctly parse and generate the appropriate semantics for naturally occurring Nuuchahnulth sentences that contain multi-predicate constructions. Sentences in these test suites my grammar did not parse represent linguistic phenomena beyond the scope of this work, and opportunities for future investigation and modeling of other components of Nuuchahnulth grammar.

Chapter 7

CONCLUSION

In this work, I have collected data on and analyzed multi-predicate constructions in Nuuchahnulth and provided descriptions of the syntactic properties of clauses under these forms of coordination. I have also given a formal analysis of these phenomena within the HPSG formalism. Though there have been a flurry of syntactic studies on Nuuchahnulth in the past 20 years (Nakayama, 2001; Davidson, 2002; Waldie, 2004; Wojdak, 2005; Woo, 2007a; Waldie, 2012), none of them have gone into this level of detail on the properties of these particular types of constructions.

7.1 Summary of findings

The two multi-predicate constructions I have described are serial verb constructions and predicate linker constructions. Serial verb constructions come historically in four types, which split on semantic interpretation (required simultaneity versus possible sequentiality) and verb type (locations, adpositive verbs, and others). The modern system appears to be losing a requirement for one type of serialization to have verbs match in perfectivity, in which case the number of constructions is simplifying from four down to three.

The predicate linker coordinates any two elements that are predicates. This provides significant supporting evidence that Nuuchahnulth has a broad category of syntactic predicate which encompasses verbs, adjectives, and common nouns. All of these lexical categories introduce events in the syntax and have subjects.

Both strategies share certain properties. With the exception of sequential-type serial verb constructions, both serial verb and linker constructions permit complement separation, that is, a structure like *Verb1 Verb2 Object1*. Both constructions show the causative and passive scoping narrowly over each coordinated predicate, being positioned within what I've termed the *maximal predicate phrase*—the largest

constituent consisting of a predicate, its complements, and modifiers. Maximal predicate phrases are the units coordinated in linker constructions and SVCs (in which case they must be verbal predicates), and exclude subject, tense, and mood information, which appears at the syntactic domain of the clause and scopes over both coordinands.

This work directly poses other questions about Nuuchahnulth grammar. In particular, if the causative and passive morphemes scope narrowly over the maximal predicate phrase, what about the other elements of the "second-position enclitic complex"? The variable domain properties of these enclitics has been noted before (most directly in Davidson 2002, p. 106–109,253–255), but I believe this work is the first to describe the precise syntactic domain of one of them. What are the domain properties the possessive, which is also valence-increasing, and the "now" morpheme *=!aƛ*, which frequently "copies" or "spreads" across a clause? Perhaps these morphemes also have a syntactic domain smaller than the full clause, a feature which can be investigated by looking at multi-predicate clauses.

For typologists, this dissertation provides a descriptive resource for coordination structures in Nuuchahnulth and can be used for comparative work with serialization and coordination. I am myself interested in whether certain properties common to these coordination strategies—especially verb-object interruption by an intervening coordinand and coordinating across different (predicative) syntactic categories—are more widespread within the Pacific Northwest and across the world.

7.2 Summary of HPSG analysis

Although I have presented the HPSG analysis and the more theory-neutral facts separately, this work was actually heavily intertwined. Without the work of implementing a grammar, there are several descriptive facts in this dissertation that I would not have noticed. This is how I became convinced of the basic eventiveness of nouns, adjectives, and verbs (§3.1.1) and how I noticed that suffix verbs have different semantic relationships with their stem depending on its lexical category (§3.1.4). It is also how I first noticed that even when collocated with the rest of the second-position enclitics, the causative and passive morpheme still scope narrowly over a single predicate (§4.2.2, §5.1.6) and it drove the shape of my analysis for the grammaticalization process I claim generates doubled *ʔuyi* (§5.2.2). Despite the organization of this dissertation, my description and grammar implementation were interdependent processes

that informed one another.

The analyses I have presented generalize over related syntactic phenomena by creating abstract supertypes that cover all common traits. I have developed several components that may be of broader interest to those working within the formalism. The first is my analysis of second-position suffixes as a type of lexical incorporation which proceeds in two steps, the first of which prepares a word for suffixing and the second of which adds the syntactic and semantic properties of the suffix. This process requires the creative use of some valence lists and semantic pointers. This strategy may be useful for other phenomena that resemble category-flexible lexical incorporation.

My analyses also depend on defining new head properties or using existing ones in new ways, such as PRD for predicative types, and HTYPE for keeping track of verbal types. These categories function in and of themselves for the analyses presented, but further evidence of their utility within Nuuchahnulth would support their utility as conceptual categories within the language (especially HTYPE).

My analysis of serial verbs as a kind of coordination opens up questions about modeling serialization more generally. Are serial verbs modelable as coordination in other languages as well, or is there some property of serial verbs in Nuuchahnulth that make them more amenable to this analysis? I made some modifications to the coordination structures present in Drellishak and Bender (2005) to accommodate the properties of Nuuchahnulth serialization: in specific, the capacity for the first verb to be separated from its complement by the intervening verb phrase. It may be useful for other researchers to add this to their typological accounts of coordination.

7.3 Contributions and future directions

The main contributions coming out of this work for Nuuchahnulth and South Wakashan studies are: a fuller account of the syntax of serial verb constructions (Chapter 4); an account of the syntax and morphological properties of the linker morpheme (Chapter 5); strong evidence for a targetable phrase below the level of the clause, which I call the maximal predicate phrase and which is the element involved in these coordination strategies (§4.2.2, §5.1.6); and new morphological tests for determining syntactic category using the linker (§5.2). I have also added to the body of evidence showing that nouns, adjectives, and verbs all introduce semantic events (§3.1.1) and are (in my terminology) predicative. This is an anal-

ysis strongly supported by the behavior of the linker morpheme, which freely coordinates elements from these categories. My account of the lexical properties of suffix verb attachment (§3.1.4) and linker attachment (§5.1.2, §5.2) should enable further investigation into the subtle distinctions of lexical categories within South Wakashan.

My implemented grammar uses several novel analyses, sometimes by using features in new ways and sometimes by developing new strategies, and I have documented those analyses both here in prose and in my implemented grammar which is publicly available.[1] By approaching multi-predicate constructions in Nuuchahnulth from within the particular syntactic framework of head-driven phrase structure grammar (HPSG) and using a computer-readable implementation in the DELPH-IN architecture, I have made contributions both to the understanding of Nuuchahnulth grammatical structures and to particular methods for linguistic modeling.

[1]The full grammar can be downloaded by visiting `http://bitbucket.org/davinman/nuuchahnulth-grammar/`

BIBLIOGRAPHY

Aikhenvald, Alexandra Y., and R. M. W. Dixon. 2006. *Serial verb constructions: A cross-linguistic typology*. Oxford University Press.

Bender, Emily M. 2010. Reweaving a grammar for Wambaya. *Linguistic Issues in Language Technology* 3.

Bender, Emily M., Scott Drellishak, Antske Fokkens, Laurie Poulson, and Safiyyah Saleem. 2010. Grammar customization. *Research on Language & Computation* 8:23–72. URL `http://dx.doi.org/10.1007/s11168-010-9070-1`, 10.1007/s11168-010-9070-1.

Bender, Emily M, Dan Flickinger, and Stephan Oepen. 2002. The grammar matrix: An open-source starter-kit for the rapid development of cross-linguistically consistent broad-coverage precision grammars. In *Proceedings of the 2002 workshop on Grammar engineering and evaluation-Volume 15*, 1–7. Association for Computational Linguistics.

Boas, Franz. 1900. Sketch of the Kwakiutl Language. *American Anthropologist, New Series* 2:708–721.

Braithwaite, Ben. 2003. Syntactic approaches to possessive constructions in Nuuchahnulth. In *Papers for the 38th International Conference on Salish and Neighbouring Languages. UBCWPL*, volume 11, 7–22.

Butt, Miriam. 1995. *The structure of complex predicates in Urdu*. Center for the Study of Language (CSLI).

Campbell, Lyle. 1997. *American indian languages : The historical linguistics of native america*. Oxford University Press.

Carlson, Barry F, John H Esling, and Katie Fraser. 2001. Nuuchahnulth. *Journal of the International Phonetic Association* 31:275–279.

Chafe, Wallace L. 1968. Idiomaticity as an anomaly in the Chomskyan paradigm. *Foundations of language* 109–127.

Comrie, Bernard, Martin Haspelmath, and Balthasar Bickel. 2008. The Leipzig Glossing Rules: Conventions for interlinear morpheme by morpheme glosses. *Department of Linguistics of the*

Max Planck Institute for Evolutionary Anthropology & the Department of Linguistics of the University of Leipzig .

Copestake, Ann. 2002a. Definitions of typed feature structures. In *Collaborative language engineering*, ed. Stephan Oepen, Dan Flickinger, Jun-ichi Tsujii, and Hans Uszkoreit, 227–230. Stanford, CA: CSLI Publications.

Copestake, Ann. 2002b. *Implementing typed feature structure grammars*. CSLI publications Stanford.

Copestake, Ann, Dan Flickinger, Carl J. Pollard, and Ivan A. Sag. 2005. Minimal Recursion Semantics: An Introduction. *Research on Language and Computation* 3:281–332. URL `http://lingo.stanford.edu/sag/papers/copestake.pdf`.

Davidson, Donald. 1967. The logical form of action sentences. In *The logic of decision and action*, ed. Nicholas Rescher. University of Pittsburgh Press.

Davidson, Matthew. 2002. Studies in Southern Wakashan (Nootkan) grammar. Doctoral Dissertation, University of New York at Buffalo.

Drellishak, Scott, and Emily M. Bender. 2005. A coordination module for a crosslinguistic grammar resource. In *The Proceedings of the 12th International Conference on Head-Driven Phrase Structure Grammar, Department of Informatics, University of Lisbon*, ed. Stefan Müller, 108–128. Stanford: CSLI Publications. URL `http://cslipublications.stanford.edu/HPSG/6/`.

Esling, John H, Katherine E Fraser, and Jimmy G Harris. 2005. Glottal stop, glottalized resonants, and pharyngeals: A reinterpretation with evidence from a laryngoscopic study of Nuuchahnulth (Nootka). *Journal of Phonetics* 33:383–410.

Flickinger, Dan, and Emily M. Bender. 2003. Compositional semantics in a multilingual grammar resource. In *Proceedings of the Workshop on Ideas and Strategies for Multilingual Grammar Development, ESSLLI 2003*, ed. Emily M. Bender, Dan Flickinger, Frederik Fouvry, and Melanie Siegel, 33–42. Vienna, Austria.

Goodman, Michael Wayne. 2013. Generation of machine-readable morphological rules with human readable input. *UW Working Papers in Linguistics* 30.

Inman, David. 2018. The representation of predicates at the syntactic-semantic boundary in Nuuchahnulth. In *Papers for the 53rd International Conference on Salish and Neighbouring Languages*, 25–40.

Inman, David, and Adam Werle. 2016a. Westcoast (South Wakashan) glossing conventions. Presentation at the International Conference on Salish and Neighbouring Languages 51.

Inman, David, and Adam Werle. 2016b. Word categories in Westcoast. Presentation at the International Conference on Salish and Neighbouring Languages 51.

Jaccobsen, William H. 1973. The pattern of Makah pronouns. In *Papers for the 31st International Conference on Salish and Neighbouring Languages*.

Jaccobsen, William H. 1986. The heterogeneity of evidentials in Makah. 3–28. Ablex Publishing Corporation.

Jaccobsen, William H. 1993. Subordination and cosubordination in Nootka: Clause combining in a polysynthetic verb-initial language. In *Advances in role and reference grammar*, ed. Van Valin and Jr. Robert D., 235–235. Amsterdam: John Benjamins Publishing.

Jacobsen, William H. 1979. Noun and verb in Nootkan. In *The Victoria conference on Northwestern Languages*, 83–155.

Kammler, Henry, and Harald Vajkonny. 1996–2014. Quuquuʔaca: A teaching grammar for use in the Nuu-chah-nulth communities. Port Alberni, Hitacu, Frankfurt, and Munich: Working Group on Nuučaan̓ułʼ, Ḥaaḥuupay̓ak Elementary School, Yuułuʔiłʔatḥ First Nation and Huʔaciy̓ukʼwap Ciqy̓ak (Central Region Language Initiative, Ucluelet), and Huu-ay-aht First Nations Language Team.

Lambrecht, Knud. 1996. *Information structure and sentence form: Topic, focus, and the mental representations of discourse referents*, volume 71. Cambridge University Press.

Nakayama, Toshihide. 2001. *Nuuchahnulth* (*Nootka*) *morphosyntax*. University of California Press.

Nunberg, Geoffrey, Ivan A Sag, and Thomas Wasow. 1994. Idioms. *Language* 70:491–538.

Oepen, Stephan. 2001. [incr tsdb()] — competence and performance laboratory. User manual. Technical report, Computational Linguistics, Saarland University, Saarbrücken, Germany.

Parsons, Terence. 1990. *Events in the semantics of english*, volume 5. Cambridge, Ma: MIT Press.

Pollard, Carl, and Ivan A Sag. 1994. *Head-driven phrase structure grammar*. University of Chicago Press.

Reape, Mike. 1993. A formal theory of word order. Doctoral Dissertation, University of Edinburgh.

Rose, Suzanne. 1981. Kyuquot grammar. Doctoral Dissertation, University of Victoria.

Sapir, Edward. 1911. Some aspects of Nootka language and culture. *American Anthropologist* 13:15–28.

Sapir, Edward. 1924. The rival whalers, a Nitinat story (Nootka text with translation and grammatical analysis). *International Journal of American Linguistics* 3:76–102.

Sapir, Edward, Terry Klokeid, Eugene Arima, and Katherine Robinson. 2000. *The whaling Indians: West coast legends and stories: Tales of extraordinary experience*. Canadian Museum of Civilization.

Sapir, Edward, and Morris Swadesh. 1939. *Nootka texts: Tales and ethnological narratives, with grammatical notes and lexical materials*. Linguistic society of America, University of Pennsylvania.

Sapir, Edward, and Morris Swadesh. 1955. *Native accounts of Nootka ethnography*. Indiana University, Research Center in Anthropology, Folklore, and Linguistics.

Sapir, Edward, Morris Swadesh, Hamilton George, Alexander Thomas, Frank Williams, Katie Fraser, Eugene Arima, Henry Kammler, Terry Klokeid, and Katherine Robinson, ed. 2004. *The whaling Indians: Legendary hunters*. Canadian Museum of Civilization.

Sapir, Edward, Morris Swadesh, Hamilton George, Alexander Thomas, Frank Williams, Katie Fraser, Eugene Arima, Henry Kammler, Terry Klokeid, and Katherine Robinson, ed. 2009. *Family origin histories: The whaling Indians: West coast legends and stories*. Canadian Museum of Civilization.

Sapir, Edward, Morris Swadesh, Alexander Thomas, John Thomas, Frank Williams, Eugene Arima, Terry Klokeid, and Katherine Robinson, ed. 2007. *The origin of the wolf ritual: The whaling indians west coast legends and stories*. Canadian Museum of Civilization.

Shank, Scott, and Ian Wilson. 2000. Acoustic evidence for ʕ as a glottalized pharyngeal glide in Nuu-chah-nulth. In *Papers for the 35th International Conference on Salish and Neighbouring Languages*, 185–197. University of British Columbia Working Papers in Linguistics.

Swadesh, Morris. 1938. Nootka internal syntax. *International Journal of American Linguistics* 9:77–102.

Waldie, Ryan James. 2004. Nuu-chah-nulth denominal verbs. Master's thesis, University of Victoria.

Waldie, Ryan James. 2012. Evidentiality in Nuu-chah-nulth. Doctoral Dissertation, University of British Columbia.

Werle, Adam. 2007. Second-position clitics and second-position suffixes in southern wakashan. Society for the Study of the Indigenous Languages of the Americas.

Werle, Adam. 2010. The phonology of wakashan languages. *Manuscript, University of Victoria* .

Werle, Adam. 2013. A comparison of moods in four Nuu-chah-nulth dialects. *Manuscript, University of Victoria* .

Werle, Adam. 2015. Nuuchahnulth grammar reference for LC language notes. Quuquuatsa Language Society.

Werle, Adam. 2015–2019. Dialect codes for Westcoast (South Wakashan) languages. Manuscript, University of Victoria.

Werle, Adam. 2016–2019. Westcoast (south wakashan) grammatical terms list. Manuscript, University of Victoria.

Wojdak, Rachel. 2001. An argument for category neutrality? In *Proceedings of the West Coast Conference on Formal Linguistics*, ed. Karine Megerdoomian and Leora Anne Bar-el, volume 20, 621–634.

Wojdak, Rachel. 2003. Predicative lexical suffixes in Nuu-chah-nulth. *University of British Columbia Working Papers in Linguistics* 11:275–289.

Wojdak, Rachel. 2005. The linearization of affixes: Evidence from Nuu-chah-nulth. Doctoral Dissertation, The University of British Columbia.

Wojdak, Rachel. 2007. *The linearization of affixes: Evidence from Nuu-chah-nulth*. Springer.

Woo, Florence. 2007a. Prepositional predicates in Nuuchahnulth. Doctoral Dissertation, University of California, Santa Cruz.

Woo, Florence. 2007b. What to do to 'do-to...': Notes on an object marker in Nuu-chah-nulth. *The Canadian Journal of Linguistics/La revue canadienne de linguistique* 52:131–166.

Appendix A

ORTHOGRAPHY

Nuuchahnulth orthography is phonemically transparent. The writing system is fairly recent, introduced in Sapir and Swadesh (1939), informed in part by Sapir's work Tseshaht speaker and linguist Alex Thomas. The orthography is within the Americanist phonetic alphabet (APA) tradition, and bears a resemblance to that loose set of standards. I will sketch the phonemic inventory here, none of which deviates from what is present in Carlson et al. (2001).

Nuuchahnulth has five vowel qualities, /a, e, i, o, u/ with a short/long distinction. Mid-vowels typically only occur long, although the Barkley and Central dialects have umlaut rules that derives short /e/ from /a/.[1] The consonant inventory is quite large and shown in Table A.1.

Table A.1: Nuuchahnulth consonants

plain plosives	p	t	ƛ	c	č	k	kʷ	q	qʷ		
glottalized plosives	ṗ	ṭ	ƛ̓	ċ	č̓	k̓	k̓ʷ			ʕ	ʔ
fricatives			ł	s	š	x	xʷ	x̣	x̣ʷ	ḥ	h
resonants	m	n			y	w					
glottalized resonants	ṁ	ṅ			ẏ	ẇ					

Below are the cases where the Nuuchahnulth symbols have a value other than their expected IPA interpretation:

- ł is the voiceless lateral fricative, ɬ
- ƛ is the voiceless lateral affricate, t͡ɬ

[1]The Barkley Sound rule is regressive, /aʔi/ → /eʔi/, and it applies consistently across the whole language. The Central rule is progressive, /iʔa/ → /iʔe/, and applies more irregularly, although it appears to occur most in frequent morpheme combinations.

- ƛ̓ is the corresponding ejective, t͡ɬ’
- c is the voiceless alveolar sibilant affricate, t͡s
- ċ is the corresponding ejective, t͡s’
- š is the voiceless postalveolar sibilant ʃ
- č is the voiceless postalveolar sibilant affricate t͡ʃ
- č̓ is the corresponding ejective, t͡ʃ’
- x̣ is the voiceless uvular fricative, χ
- x̣ʷ is the corresponding labialized fricative, χʷ
- ḥ is the voiceless pharyngeal fricative, ħ
- y is the voiced palatal glide, j
- ṁ, ṅ, ẏ, ẇ, are preglottalized: ʔm, ʔn, ʔy, ʔw
- ʕ is the so-called pharyngeal stop, which has been claimed to be a pre-glottalized pharyngeal [ʔʕ] (Shank and Wilson, 2000), or in the most complete study, an epiglottal stop with a pharyngeal off-glide [ʡˤ] (Esling et al., 2005). To my ears it has multiple realizations, and it is difficult for me to distinguish from ʔ before /a/. It patterns in the phonology with the ejective series,[2] thus its placement in the chart.

[2]In places where the grammar would generate q̓ or q̓ʷ, ʕ is always found instead. ʕ also occurs where cognate Makah words have either q̓ or q̓ʷ.

Appendix B

SEGMENTATION AND GLOSSING CONVENTIONS

Many of the segmentation and glossing conventions I use are non-standard and adapted particularly to the challenges of Nuuchahnulth. I will first address some of the special notations in the segmentation line, and then give the grams I use. There may be some grams not present here, but I have attempted to give all non-Leipzig standard (Comrie et al., 2008) glosses here. The glossing conventions here are a version of that presented in Inman and Werle (2016a) and represent only a part of that overall glossing schema. Most of the grams are developed in Werle (2016–2019). This section is only meant to give enough of a background to make the interlinear glossed text (IGT) in this dissertation intelligible and interpretable to linguists.

B.1 Segmentation symbols

There are four parts of Nuuchahnulth phonology that require special symbols in the morpheme segmentation: two types of consonant mutations, variable-length vowels, and segments that only appear after a vowel or nasal.

Consonant mutation is triggered by certain affixes, following patterns called "hardening" and "softening" (Werle, 2010). A "hardening" suffix causes the preceding segment to become glottalized, resulting in an ejective in the case of stops and affricates, and otherwise inserts a glottal stop. The hardening pattern for fricatives differs between hardening suffixes and hardening clitics. Suffix hardening typically converts the fricative into a glottalized glide, whereas clitic hardening inserts a glottal stop. There is a special morphophonemic rule that the *ƛ* of the momentaneous aspect (§3.1.5) under hardening always becomes *ʔ* instead of *ƛ̓*.

A "softening" suffix causes the preceding segment to weaken, which converts fricatives to glides and otherwise inserts a glottal stop. Nuuchahnulth only has suffix (and not clitic) softening.

Following Werle (2010), I use ! to represent hardening, and ° to represent softening, across both clitics and suffixes. The ! notation was first introduced by Boas (1900), and ° by Jaccobsen (1973). Like Werle, I abandon Sapir's use of ' and ' for mutations, and use the same symbols for both suffix and clitic mutations. Examples of all three types of suffix and clitic hardening and softening are shown in (315–317).

(315) wiinapasʔaṗi.

wiinapi-!as=!ap=!iˑ

stop-outside.DR=CAUS=CMMD.2SG

'Stop (the car or driver of the car).' (**C**, *tupaat* Julia Lucas)

(316) ċiẏiiƛ̓

ċis-!iˑƛ̓

line-outside.MO

'line up outside' (**T**, Fidelia Haiyupis)

(317) hišumyiłʔaqƛ̓niš hawiiʔaƛ̓qu ʔapẇin ṅaas.

hišumł-°ił=ʔaqƛ̓=niˑš	hawiiƛ̓=!aƛ̓=quˑ	ʔapẇin	ṅaas
gather.together-indoors.DR=FUT=STRG.1PL	finish.MO=NOW=PSSB.3	half	day

'Let's get together at midday.' (**T**, Fidelia Haiyupis)

Nuuchahnulth also has vowels that may be long or short depending on where they fall in the word. These vowels are long in the first two syllables of a word, and short in the third syllable or later. It is hard to say what their "underlying length" property may be: they are a third length category. Following the established system in Wakashan studies, I represent these syllables in the morpheme line as the vowel followed by a ˑ.[1] Both long and short realizations of variable-length vowels are shown for the ending =*maˑ* in (318, 319).

[1]This innovation is thanks to Rose (1981), who amended Sapir and Swadesh (1939)'s more cumbersome ˘

(318) ʔaƛiičiʔaƛma ṭašii.

ʔaƛa-iˑčiƛ=!aƛ=maˑ ṭašii

two-IN=NOW=REAL.3 road

'There are two roads (now).' (**B**, Bob Mundy)

(319) ƛułmaa ċušukʔi.

ƛuł=maˑ ċušuk=ʔiˑ

good=REAL.3 new=ART

'The new one is nice.' (**B**, Bob Mundy)

Many affixes in Nuuchahnulth have a leading consonant that regularly disappears under certain phonological conditions, typically when preceded by a non-nasal consonant. Again, following the established literature in South Wakashan and first introduced by Sapir, I write these disappearing consonants in parentheses. Both realizations for the suffix *-L.(č)ił* are shown in (320, 321).

(320) ʔaaqičiłk ṅaacsa.

ʔaqi-L.(č)ił=k ṅaacsa

what-DO.TO=QUES.2SG see.CV

'What are you watching?' (**C**, *tupaat* Julia Lucas)

(321) ʕuʔikʷiƛs suutił.

ʕuʔikʷiƛ[3]=s sut-L.(č)ił

give.medicine.MO=STRG.1SG 2SG-do.to

'I'm giving you medicine.' (**C**, *tupaat* Julia Lucas)

Some of these disappearing consonants change based on their environment. A *č* regularly becomes a *k* after a *u*. This correspondence is not shown. Which consonants of an affix are disappearing also

[3]The momentaneous ending is typically *-kʷiƛ* after *u*, *-čiƛ* after other vowels and nasals, and *-šiƛ* after other consonants. This is a rare instance of *-kʷiƛ* occurring after something other than a *u*, and might be an indication that there was a *u* here in an earlier stage of the language.

changes from dialect to dialect. I have attempted to segment disappearing consonants as appropriate for each dialect.[4]

B.2 Template notation

Nuuchahnulth has a set of vowel length and reduplication templates, typically triggered by a suffix containing segmental phonology. These templates specify reduplication and vowel length of up to the first two syllables of the word. I gloss these templates with the symbols *L*, *S*, *R*, and *R2*, attached to the suffix which triggers the template.

In my notation, *L* and *S* indicate *L*ong and *S*hort vowels, and are ordered with respect to their occurrence: LS for a long first vowel and a short second vowel, SS for two short vowels, and so on. *R* indicates an onset-nucleus reduplication pattern, and *R2* a pattern that is onset-nucleus for polysyllabic roots, and full reduplication for monosyllabic roots. R2 is a pattern that only occurs with the iterative and repetitive aspects, and a limited number of plurals. In this notation, vowel length is always specified prior to reduplication: LR means a long reduplicant (followed by a vowel whose length is unaltered), and RL means a reduplicant followed by a lengthened base. If multiple templates apply, the vowel length specifications of the final morpheme win out, and reduplication remains.

There are two cases where a template is not attached to segmental morphology, yet I always gloss the template as though it were a prefix or suffix. The first is certain templatic patterns for plurals, such as R2 or LR, which I segment as if they were prefixes. Non-segmental morphology doesn't naturally have a place, so it is a little arbitrary. However there is one reason to prefer an analysis of plural templates as prefixal: Some of these plural templates include an infix <t> which always inserts after the first vowel (so a left-peripheral infix, closer to prefix than suffix). The one other case is the graduative aspect, which is simply realized as the template LS. I segment this as a suffix occurring after other aspect forms. The graduative only occurs following other aspect marking, and after the graduative applies, other aspect suffixes may follow. Segmenting this template as though it were a suffix preserves the morphological ordering of the aspect system.

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[4]Notably, my consultant Julia Lucas fairly consistently pronounces the /q/ in the linker suffix -(*q*)*ḥ*. I still transcribe the suffix in the segmentation line with the parentheses, as she sometimes fails to produce the /q/ when attached to quantifiers.

Table B.1 gives a list of most types of templates found in the language, including an example of the two patterns for the R2 template.

Table B.1: List of Lexical Suffix Templates

template	gloss	surface form
L	ču-L.ʔatu dive-sink.into.water	čuuʔatu dive down into water
LS	hašił-LS.sa have.news-AUG1	haašiłsa interesting
SS	ʔaya-iˑčiƛ-SS.(q)aq many-IN-AUG2	ʔayičiƛaq became very many
R	ƛuc-R.!iiḥ sea.urchin-go.after.food	ƛuƛuċiiḥ getting sea urchins
LR	kuḥʷ-LR.inqił hole-at.ribs	kuukuḥinqił hole at the ribs
LRS	qʷi-LRS.itẏak what-fear	qʷiiqʷitẏak whatever one fears
RL	ʔu-RL.čiẏał x-pursue	ʔuʔuukʷiẏał pursue it
R2	R2-nuuk PL-song	nuuknuuk songs
LR2L	ƛapat-LR2L.a think-RP	ƛaaƛaapata consider
LR2L	huuł-LR2L.a dance-RP	huułhuuła dance

B.3 Grams

B.3.1 Aspect

In my glosses, I use the older and more traditional categorization of aspect, although there is a reanalysis of the system that I accept (§3.1.5). The table below is adapted from a system I helped Adam Werle devise. I use his grams for the conservative names of the aspects. There is a straightforward collapse from the conservative aspect system to the (hypothesized) revised aspect system, which I include in the table. By using the most conservative glossing I avoid losing information. Although not properly aspect, I include in the table the resultative morpheme, which, when used, occurs in lieu of aspect morphemes.

Table B.2: Aspects and Resultative in Nuuchahnulth

revised analysis	conservative analysis	gram	forms
perfective	momentaneous	MO	-čiƛ, -šiƛ, -kʷiƛ, -uƛ
	inceptive	IN	-°ačiƛ, -iˑčiƛ
durative	durative	DR	-(ʔ)ak, -(ʔ)uk, -L.ḥiˑ
continuative	continuative	CV	-(y)aˑ
graduative	graduative	GR	-LS
repetitive	repetitive	RP	-LR2L.a
iterative	iterative	IT	-R2.č, -R2.š
resultative	resultative	RS	-yuˑ, -čuˑ

As discussed in §3.1.5, these aspects can be divided into perfective and imperfective categories. Verbs ending in momentaneous or inceptive aspect are perfective, while the rest are imperfective. The durative and continuative aspect are weakly differentiated, and plausibly there is a supertype, continuous, that subsumes both. In Werle's notation, this is CT. To avoid confusion between "continuous" and "continuative," I have assigned every morpheme either continuative or durative aspect, and avoided the underspecified continuous.

B.3.2 Mood

The category traditionally called "Mood" in Nuuchahnulth is not the same as "mood" as usually used by linguists, which stands in opposition to aspect and tense. Instead, Nuuchahnulth "mood" is a mor-

phological category that fuses mood and evidential information with subject person and number, as well as containing other propositional information such as interrogative and imperative marking (Jacobsen, 1986). The fullest accounting of the semantics and syntax of these particles is given in Waldie (2012, Chapter 4), and this section is merely a small sketch. These moods can be split into matrix clause moods, dependent clause moods, and commands. Commands are special matrix clause moods that contain object agreement, when all other moods only contain subject agreement. Table B.3 gives a list of the moods, their abbreviations, and their third person forms. I use a mix of the "practical names" and "technical names" given in Werle (2015) for the mood complex, selecting the name that most closely correlates with the gram. For commands, I list second person singular forms without an object, or a third person object, as third person agreement is null.

The meanings of these moods are mostly but not entirely consistent across dialects. The strong mood and real mood have the same meaning: a strong claim to reality, with the real mood used in the Barkley Sound dialect and the strong mood used in the Central and Northern dialects. The strong mood is in free variation in the Kyuquot-Checleseht dialect with the weak mood, which has come to be used as a matrix clause mood.

Typically a clause can have only one mood ending, although there are some exceptions: the possible mood in the third person can be followed by the hearsay, yielding a matrix mood meaning something like 'what is typically done, so I hear', and the hearsay mood can be followed by the dubitative.

Table B.3: Mood Enclitics

name	gram	third person
Matrix Moods		
real	REAL	=*maˑ*
strong	STRG	=*ʔiˑš*
neutral	NEUT	=∅[5]
question	QUES	=*ḥaˑ*
hearsay	HRSY	=*weˑʔin*, =*waˑʔiš*
inferential	INFR	=*čʼaˑʕaš*
dubitative	DUBT	=*qaˑčʼa*
Dependent Moods		
weak	WEAK	=(*y*)*ii*
definite	DEFN	=*ʔiˑtq*
possible	PSSB	=*quu*
dubitative formative	UNK1	=(*w*)*uus*
dubitative relative	UNK2	=(*w*)*uusi*
embedded	EMBD	=*qaˑ*
purposive	PURP	=*!eeʔita*, =*!aaḥi*
article[6]	ARTL	=*ʔiˑ*
hearsay article	ARTH	=*čʼa*
Command Moods		
command	CMMD	=*!iˑ*
'go' command	CMGO	=*čiˑ*
'come' command	CMCM	=*!iˑk*
future command	CMFU	=*!im*

B.3.3 Other clause-bound morphemes

Other clause-bound morphemes that occur in the second-position enclitic complex (3.1.3) include tense (and some related notions) and valence-changing morphemes, given in Table B.4.

[5]Although the third person neutral is null-marked, the first and second person neutral mood forms are non-null. In the IGT, I do not actually gloss third-person neutral with a ∅, out of an aversion to inserting unpronounced items into an analysis, and due to the fact that my implemented grammar does not make use of null-marked elements in the gloss line.

[6]The article in Nuuchahnulth is also part of the mood complex, occupying the same morphological position and complementary with the other moods. More on this can be found in Inman (2018).

Table B.4: Tense, Valence-Changing, and Other Clause-Bound Morphemes

meaning	gram	morph
now	NOW	=*!aƛ̓*
future	FUT	=*ʔaaqƛ̓*, =*!aaqƛ̓*
past	PST	=*mit*
habitual	HAB	=*ʔaała*
plural[7]	PL	=*ʔał*
causative	CAUS	=*!ap*
passive[8]	PASS	=*!at*
possessive	POSS	=*ʔak*, =*uk*

The "now" morpheme (NOW) should not be understood as a simple present, as it is often used in conjunction with the past and future tense, and can occur in a sentence that takes place at any time. It indicates that an event is occurring next in a sequence, and that the current clause is the next in some progression.

B.3.4 Other predicative morphemes

There are other elements that modify predicates in some way: the linker, and the root-maker or stem formative. The linker is described in detail in Chapter 5. The stem formative -*q* (STEM) is used to create a bound root from a free word so that certain affixes can attach. Examples are *saantiquwił* 'church', from the word *saantii* 'Sunday' + -*uwił* 'indoor room'. There is also *ḥimwiċaqẏak* 'myth', from *ḥimwiċa* 'myth telling' + -*ẏak* 'instrument, device for'. Although it is restricted to verbs (unlike the linker and the stem formative), I include reciprocal -(*c*)*sẗał* in this list.

[7]This plural is separate from the plural that occurs as part of the mood portmanteaus, and may refer to the plurality of the subject or object of the verb. It is the only way to express the plurality of a dropped third person subject.

[8]The passive morpheme is also used for inalienable possession and generic statements. I do not gloss it differently according to its use.

Table B.5: Predicate-Bound Morphemes

meaning	gram	morph
linker	LINK	*-(q)ḥ*
root-maker	STEM	*-q*
reflexive	RECP	*-ś̓ał*

B.3.5 Augmentative and diminutive

Nuuchahnulth has two augmentatives and at least two diminutives. The *-SS.(q)aq* augmentative straightforwardly means 'big' while the *-LS.sa* augmentative has a broader augmentative meaning, including 'real', 'true', and 'very'. I give the more common *-sa* the AUG1 label. The diminutives have no appreciable difference in meaning, so I gloss both as DIM.

Table B.6: Augmentative and Diminutive

meaning	gram	morph
augmentative ("real")	AUG1	*-LS.sa*
augmentative ("big")	AUG2	*-SS.(q)aq*
diminutive	DIM	⟨*čk*⟩, *-ʔis*

B.3.6 Semantically empty roots

Many suffixes in Nuuchahnulth contain complex semantic content, and often attach to semantically light or meaningless roots. Two semantically contentless roots are used in such cases: *hita-*/*hina-* and *ʔu-*.

The root *ʔu-* is used in place of an object for transitive suffixes to attach to. Many transitive verbs in Nuuchahnulth are suffixes that may attach to the first syntactic word of their direct object (§3.1.4.1). In lieu of attaching to their object, these suffixes may attach to semantically empty *ʔu-* instead. After attaching to *ʔu-*, the direct object of the verb may be expressed as a separate word, or dropped altogether. Because of its nature as a "placeholder" for a syntactic object, I use X as the gloss for this morpheme.

(322) *ʕumtnaak*

ʕumt-naˑk

name-have

'having a name'

(323) *ʔunaak ʕumt-ii*

ʔu-naˑk ʕumt-iˑ

x-have name-NMLZ

'having a name'

The roots *hita-*/*hina-*[9] are more unpredictable in their distribution. They tend to be a place of attachment for location suffixes (§3.1.4.3), although occasionally other suffixes can attach to them.[10] To distinguish these grams from *ʔu-* x, I gloss this root as EMPTY, as can be seen in (324, 325).

(324) *hitaqsiƛ*

hita-qsiƛ

EMPTY-in.a.vessel.MO

'enter into a vessel'

(325) *hinułta*

hina-ułta

EMPTY-out.of.canoe

'get out of the canoe'

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[9]There appears to be no way to predict whether *hita-* or *hina-* is used for a particular word, although there is a clear phonological resemblance.

[10]An example is *hiniic* 'carry', *hina-iic*.

Table B.7: Semantically Empty Roots

meaning	gram	morph
—	EMPTY	*hita*, *hina*
—	X	*ʔu*

B.3.7 Deictics

Nuuchahnulth dialects each have a set of demonstrative deictics. In the Central, Northern, and Kyuquot-Checleseht dialects there are six: four locative deictics and two non-locative deictics. The Barkley dialect only has one non-locative deictic: the topical deictic, and so has five altogether. For the locative deictics I use a numbering scheme 1-4, with 1 being the closest and 4 the furthest away. For the shared topical deictic I use DTOP, and DDYN for the topical 'this.' This distinction among deictics originates from Adam Werle and is present in his grammar reference. I use the Central deictics to demonstrate the glossing schema below.

Table B.8: Deictics, Central Dialect

meaning	gram	morph
this	D1	*ʔaḥkuu*
that by you	D2	*ʔaḥṅii*
that	D3	*ḥaaẏaḥi*
that (far)	D4	*ḥuuẏaḥi*
this (dynamic)	DDYN	*ḥiẏaḥi*
that (topical)	DTOP	*ʔaḥʔaa*