

UNIVERSITY OF CALGARY

Dene Sų́liné Non-Segmental Morphology:
Implications for Morphological Theory

by

Kody Tufts

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF ARTS

GRADUATE PROGRAM IN LINGUISTICS

CALGARY, ALBERTA

JUNE, 2023

© Kody Tufts 2023

ABSTRACT

In this thesis, I undertake an analysis of the verbal morphology of Dene Sų́liné (Na-Dene, North-Central Canada) with a specific focus on two inflectional phenomena implementing non-segmental features of tone and nasality to mark distinctions of aspect and agreement. I critique existing accounts of these phenomena, which attempt to reduce both to affixal morphology, and investigate an alternative treatment as processes of non-concatenative morphology.

Non-concatenative morphology holds theoretical interest as one of a variety of phenomena provided as evidence for an autonomous Morphology. In light of this interest, I develop and evaluate analyses of Dene Sų́liné's non-segmental exponents, applying two theoretical frameworks exemplifying a major divide in thinking on morphological theory: Paradigm Function Morphology (PFM) and Distributed Morphology (DM). PFM recognizes an autonomous Morphology, an essential theoretical role for paradigms, and distinctly morphological Rules of Exponence. Conversely, DM posits a basic equivalence of syntax and morphology, recognizes no theoretical status for the paradigm and attempts to restrict morphological exponence to affixation. I test applications of PFM and DM to Dene Sų́liné's non-segmental exponents, basing analyses on existing data and novel elicitations of Wollaston Lake Dene Sų́liné.

Theoretical applications reveal characteristics of these non-segmental exponents challenging accounts in both frameworks. In particular, I identify a noteworthy “look-ahead” problem pertaining to the selection of the tonal exponent. This look-ahead problem seems best characterized as the sensitivity of a less-peripheral exponent to the phonology of a more-peripherally-applying exponent, a situation I argue both frameworks are challenged to address. Novel data from the Wollaston Lake dialect further complicates the account of this exponent's

selection, while also revealing a decreased role for affixation in the verbal morphology, suggesting an increase in the informational load assumed by non-concatenative processes. In addition to the challenges presented to the DM account by the tonal exponent's formal quality, I present arguments against DM theorists' claims that Dene surface morphotactics can be reasonably taken to derive from assumed universals of syntactic structure. I ultimately find that the formal and distributional characteristics of these exponents recommend a distinctly morphological account, not a reductionist, "syntacticocentric" one.

PREFACE

This thesis is original, unpublished, independent work by the author, Kody Tufts. The elicitation fieldwork reported in Chapter 6 was covered by Ethics Certificate number REB21-0087, issued by the University of Calgary Conjoint Faculties Research Ethics Board for the project “Form-Meaning Correspondence in Dëne Suliné Verb Morphology” on July 12, 2021.

ACKNOWLEDGEMENTS

I am indebted to no small number of individuals who have, in different capacities, helped me see my way to the completion of this research project. I hope in the following to have thanked each and all accordingly and as deserved. If I have left anyone out, rest assured this is not deliberate, only a consequence of my own forgetfulness.

I would first like to give warm thanks to the speakers of Dene Sų́líné who graciously shared with me their knowledge of their beautiful, fascinating, and important language. A very special thanks goes to Florence St. Pierre, who has provided many hours of her time patiently describing my (childishly-drawn) elicitation materials, recounting in Dene Sų́líné stories from her past, and digging deep into her rich fund of implicit linguistic knowledge to answer the types of (surely bizarre-seeming) questions that could only occur to a student of linguistics. Thank you so much, Florence, for your time, for your kindness and patience, and for sharing with me your great passion for your language, culture, and people.

Though our time together was comparatively brief, I must also thank Ms. Melanie St. Pierre, Florence's mother, for her kindness and patience in agreeing to participate in similar elicitation activities. I will, in fact, extend thanks to the St. Pierre family generally, for the times I have occupied their mother (grandmother and great-grandmother!), for allowing me (with my own daughter in tow) to crash a family trip to Edmonton, as well as for several impromptu contributions by various relations over the course of our Zoom meetings. Thank you!

On the academic side of things, I offer emphatic thanks to my supervisor, Dr. Amanda Pounder, and co-supervisor, Dr. Darin Flynn. Dr. Pounder, thank you for the countless hours of thought-provoking and insightful discussion, for sharing with me your great wealth of knowledge

of morphology (and historical linguistics, and horticulture, and...), for your keen eye for detail, your careful appraisal of argumentation, and for your patience with my creative use of punctuation. And thank you for all your encouragement along the way, I certainly could not have made it here without you. Thank you, Dr. Flynn, for your own insightful contributions to our weekly meetings, for providing your phonological expertise to the endeavour, and your thoughtful and compassionate understanding of Indigenous linguistics and language reclamation. Thank you as well for your unfailing warmth and kindness, and for your careful balancing of these qualities, with well-honed, astute criticism.

Thank you to the remaining members of my examination committee: Dr. Betsy Ritter and Dr. Gregory Stump. Given the subject of my thesis I would be hard-pressed to imagine a more fitting pair of scholars to serve as my examiners. Dr. Ritter, thank you for your careful and fair consideration of the arguments put forward in this thesis and for your suggestions for revision and improvement. I will also observe, with thanks, that the knowledge of syntactic theory I have brought to bear on my analysis is owed in a large part to your warm and enthusiastic instruction over the years. To Dr. Stump, I extend special thanks. It was an unexpected privilege to have your involvement in my examination. Thank you for your many astute comments and suggestions. My treatment in these (relatively) short pages of the fruits of your decades-long academic labour must seem deficient in many respects; I hope, however, that I have effectively distilled many of the key principles of Paradigm Function Morphology and have done the framework proper justice in my application.

I must also thank the many faculty, students and staff in the University of Calgary's School of Languages, Linguistics, Literatures and Cultures. Thank you each and all for your contributions to a community of mutual support, respect, encouragement, and healthy debate.

Thank you all for your many questions, observations, suggestions, and insights, in classes, presentations (and rehearsals), and abstract/application review-sessions. I hope that in some shape or form this valuable input has found its way into this thesis.

I would also like to acknowledge, with gratitude, that this research project benefited greatly from the generous support of a Social Sciences and Humanities Research Council Canada Graduate Scholarship, two Curtin Family Graduate Scholarships, a Faculty of Graduate Studies Master's Scholarship, and a Carl O. Nickle Graduate Scholarship.

Lastly, but not leastly, I would like to thank my loving and supportive family. Thank you to my wife, Sarah, for her endless patience and encouragement, for putting up with my neuroticism, for playing audience to uninvited soliloquys (sometimes rants) on this and that topic of linguistics, and for...well, for everything. Where would I be without you? Thank you as well to my two lovely, energetic children, Iris and Jude, both of whom were born during my career as student of linguistics and have known no other sort of dad. Hopefully I have been mostly tolerable. You both mean the world to me and have offered the sweetest forms of diversion during times of stress. And thank you to my own parents, Tim and Leslie Tufts; you may not have had a direct hand in the creation of this thesis (nor borne direct witness to the madness involved in the writing), but you made me, and raised me, and I would not have made any progress on any sort of thesis without all that you have done for me. Thank you!

TABLE OF CONTENTS

ABSTRACT.....	ii
PREFACE.....	iv
ACKNOWLEDGEMENTS.....	v
TABLE OF CONTENTS.....	viii
LIST OF TABLES.....	xi
LIST OF FIGURES.....	xii
CHAPTER 1. INTRODUCTION.....	1
1.1 INTRODUCTION.....	1
1.2 DENE SUŁINÉ PEOPLE AND LANGUAGE.....	3
1.3 LINGUISTIC CHARACTERISTICS.....	3
1.4 EXISTING RESEARCH ON DENE SUŁINÉ.....	5
1.5 THE DENE SUŁINÉ VERB.....	6
1.6 NON-SEGMENTAL EXPONENCE: TONE (H) AND NASALITY (N).....	12
CHAPTER 2. EXISTING ACCOUNTS OF H AND N.....	17
2.1 THE DERIVATIONAL APPROACH.....	18
2.1.1 THE DERIVATIONAL APPROACH AND H.....	18
2.1.2 THE DERIVATIONAL APPROACH AND N.....	27
2.2 THE CHUNKING APPROACH.....	32
2.2.1 THE CHUNKING APPROACH AND H.....	35
2.2.2 THE CHUNKING APPROACH AND N.....	36
CHAPTER 3. RESEARCH QUESTION AND METHODOLOGY.....	40
3.1 RESEARCH QUESTION.....	40

3.2 METHODOLOGY	41
CHAPTER 4. THEORETICAL INTEREST OF H AND N: THE LEXICAL-INFERENTIAL DICHOTOMY	44
4.1 A TAXONOMY OF MORPHOLOGICAL THEORY	44
4.2 PARADIGM FUNCTION MORPHOLOGY	48
4.2.1 THE PARADIGM	49
4.2.2 RULES OF EXPONENCE, RULE BLOCKS, AND RULE COMPETITION	53
4.3 DISTRIBUTED MORPHOLOGY	60
4.3.1 CLAUSE STRUCTURE AND FUNCTIONAL HEADS	60
4.3.2 THE DM ACCOUNT OF MORPHOTACTICS	62
4.3.3 VOCABULARY INSERTION	66
4.3.4 NON-CONCATENATIVE MORPHOLOGY AS READJUSTMENT	68
CHAPTER 5. PFM AND DM APPLICATIONS TO H AND N	70
5.1 MORPHOSYNTACTIC FEATURES	70
5.2 INFLECTION-CLASS FEATURES	71
5.3 APPLICATION OF PARADIGM FUNCTION MORPHOLOGY	76
5.3.1 PFM AND N	76
5.3.2 PFM AND H	93
5.3.3 INTERIM SUMMARY - PFM	104
5.4 APPLICATION OF DISTRIBUTED MORPHOLOGY	105
5.4.1 THE EXTENDED PROJECTION OF V	105
5.4.2. SYNTACTIC MOVEMENT AND MORPHOTACTICS	107
5.4.3 DM AND N	114
5.4.4 DM AND H	122

5.4.4.1 H IN SIMPLEX VERBS	122
5.4.4.2 H IN DISCONTINUOUS-DISJUNCT VERBS	133
5.4.4.3 H IN DISCONTINUOUS-CONJUNCT VERBS	137
5.4.5 INTERIM SUMMARY - DM	139
CHAPTER 6. WOLLASTON LAKE DENE SUŁINÉ	141
6.1 DIALECTAL DIFFERENCES	142
6.1.1 H IN INCEPTIVE-PERFECTIVES	142
6.1.2 ABSENCE OF THE- AND GHE- IN COMPLEX VERBS	150
6.2 INTERGENERATIONAL DIFFERENCES	158
6.2.1 LOSS OF [ə] / [ʏ] CONTRAST	158
6.2.2 “N” IN SECOND-PERSON VERB-FORMS	161
CHAPTER 7. DISCUSSION	164
7.1 N AND THE LEXICAL-INFERENTIAL DICHOTOMY	164
7.2 H AND THE LEXICAL-INFERENTIAL DICHOTOMY	168
7.3 MORPHOTACTICS, RESTRICTIVENESS, PARSIMONY AND LINGUISTIC UNIVERSALS	174
CHAPTER 8. CONCLUSION	183
REFERENCES	186
APPENDIX A: ELICITATION MATERIAL EXAMPLES	191

LIST OF TABLES

Table 1: An inflectional paradigm of SHÉ_Tİ ‘eat’	50
Table 2: PFM representation of the inflectional paradigm for SHÉ_Tİ ‘eat’	51
Table 3: A partial paradigm of TSAGH ‘cry’	53
Table 4: Relevant morphosyntactic categories and features	71
Table 5: Preliminary definition of Dene Sų́líné verbal inflection classes	73
Table 6: Further differentiation of Dene Sų́líné verbal inflection classes	74

LIST OF FIGURES

Figure 1: Dene Sų́liné verbal template	7
--	---

CHAPTER 1. INTRODUCTION

1.1 INTRODUCTION

The Dene languages have held enduring interest for linguists interested in morphology, owing, in particular, to these languages' complex verbal morphology. Research on Dene verbal morphology has often focused on questions of general verbal structure, considering inflectional morphotactics, for example (e.g. Speas 1991; Harley 2011), or a noteworthy inversion of the canonical arrangement of derivational and inflectional morphology (e.g. Hale 2001; Ackerman 2003). In the present study, I turn my attention to features of Dene Słłiné verbal exponence, specifically, to two ostensibly non-segmental, non-concatenative processes marking inflectional distinctions of aspect and agreement, one employing high tone (H) and the other nasality (N). I argue that existing accounts of these exponents, which have attempted to capture both in terms of affixation, ultimately fail to provide a compelling account of their distribution or function, and I suggest the availability of a more satisfactory account of both as instances of non-concatenative morphological processes. In light of the theoretical interest of non-concatenative morphology to questions of morphological theory, I consider the comparative strengths and weaknesses of two theoretical frameworks (Paradigm Function Morphology and Distributed Morphology) in facilitating a formal account of these exponents and elucidating their role in Dene Słłiné's system of verbal morphology. In developing my theoretical applications, I draw on Dene Słłiné data from existing sources (primarily Cook (2004) and Elford and Elford (1998)), as well as examples of recorded speech collected through interviews with two Dene Słłiné speakers conducted over the past three years.

Based on my theoretical applications, I find that, while affixal analyses are not inconceivable, for one at these exponents at least, the tonal exponent (H), a non-concatenative

analysis is preferable, a fact that, I argue, weighs in favour of an inferential approach to morphology. In other respects, however, particularly considerations of the distribution of H, I find that both frameworks encounter significant challenges in providing a satisfactory account of these exponents' behaviour.

In Chapter 1, I introduce the Dene Sųlíné people and language, provide pertinent linguistic details, with particular attention to the verbal morphology, and summarize existing research on the Dene languages. In Chapter 2, I introduce the non-segmental exponents that are the focus of this study, the tonal exponent (H) and nasal exponent (N), and provide a critique of two existing analyses both attempting to capture these phenomena in terms of affixation. In Chapter 3, I reiterate my research goals and describe methodology. In Chapter 4, I motivate the theoretical interest of H and N with reference to Stump's (2001: 1) lexical-inferential dichotomy of theoretical approaches to morphology, and introduce the two theoretical frameworks considered in this study: Paradigm Function Morphology (Stump 2001, Stump 2016) representing the inferential type and Distributed Morphology (Halle & Marantz 1993, Harley & Noyer 1999) representing the lexical type. In chapter 5, I develop applications of both frameworks to analyses of H and N, highlighting and discussing challenges and other points of interest. In Chapter 6, I address the empirical component of my study, reporting observations and results of my linguistic "fieldwork" (conducted via Zoom). Finally, I discuss and summarize key findings of my study in Chapter 7.

1.2 DENE SŪLINÉ PEOPLE AND LANGUAGE

The Dene Sūliné people live in communities of northwest and north-central Canada in a range spanning the Northwest Territories and northern regions of the provinces of Alberta, Saskatchewan, and Manitoba. Dene Sūliné is employed as both an ethnonym, meaning ‘original people’, and as a language name. The language has approximately 10-15,000 speakers distributed throughout these communities. It has been described as a dialect continuum extending across the above-described geographical region, with some descriptions (e.g. Elford & Elford 1998: vi; Holden 2013: 18) describing a high degree of mutual intelligibility between dialects and others emphasizing dialectal differences (Cook 2004: 58). Dene Sūliné belongs to the Na-Dene language family, which includes the diverse Dene¹ languages, and the more distantly related Tlingit language. The Dene languages proper comprise around 50 languages belonging to three sub-groups: a northern group, a Pacific coast group and a southern group (Jaker et al. 2019) with Dene Sūliné belonging to the northern group, alongside languages such as Slave, Gwich’in, and Tsuut’ina.

1.3 LINGUISTIC CHARACTERISTICS

The Dene languages exhibit an SOV basic word order, exemplified by (1). Verbs bear agreement morphology and argument noun phrases may be dropped, resulting in complementary constructions such as those embodied by the pair of sentences in (1) - (2).

¹It is not uncommon for speakers of Dene Sūliné to use *Dene* to refer to both their community and language. This latter term has also been employed to refer to the broader community of culturally- and linguistically-related peoples dispersed across the North American continent. In discussion to follow I will use the name Dene Sūliné to refer to the language that is the topic of my thesis. I use the term Dene to refer to the broader linguistic family.

- (1) *Marie eghéze det'éth*
 Marie eghéze de-Ø-t'éth
 Marie egg REFL-3.SBJ-cook.IPFV
 'Marie is cooking herself an egg'

(Florence St. Pierre, 2021)

- (2) *yelt'éth*
 ye-l-t'éth
 4.OBJ-CL-cook.IPFV
 '(s/he) is cooking it'

(Melanie St. Pierre, 2022)

While a sentence may have independent subject and object arguments, such as that in (1), a sentence such as (2) is more natural when the identity of arguments is clear from context.

Notable phonological features include contrastive series of plain, aspirated, and ejective stops and affricates (e.g. Dene Sų́liné [t], [tʰ], and [tʰ]), and the use of contrastive tone. Many languages of the family, including Dene Sų́liné, contrast a single marked tone with an unmarked tone (Kingston 2005), though others, like Tsuut'ina (southern Alberta), employ a three-way tonal contrast (Cook 1984). Dene Sų́liné's system of lexical tone is demonstrated by minimal pairs such as *ya* 'sky' vs. *yá* 'lice' and *tha* 'marten' vs. *thá* 'long time' (Cook 2004: 6), with high tone marked orthographically by the acute diacritic. The marked high tone is also employed in nominal and verbal inflection, as, for example, in the pair of nouns *ke* 'shoe' and *seké* 'my shoe' wherein high tone is one indicator of possession (Cook 2004: 117) or in a pair of verbs like *nalge* 'it will go back' and *nálgé* 'it started back' (Elford & Elford: 180) wherein high tone expresses perfective aspect. Additionally, some of the Dene languages, including Dene Sų́liné, employ

contrastive oral and nasal vowels. The focus of my research is Dene Sų́líné's morphological implementation of these non-segmental features of tone and nasality.

1.4 EXISTING RESEARCH ON DENE Sų́LÍNÉ

Some of the earliest academic work on Dene Sų́líné dates from the early to mid-20th century (e.g. Goddard 1912; Li 1933; Li 1946). These works are generally descriptive in nature, though comprehensive, touching on a broad range of grammatical topics. Much of the work on languages of the Dene language family has focused on aspects of the languages' verbal morphology, to the extent that some have lamented a supposed neglect of other aspects of these languages (e.g. Rice 2006). Despite this, the majority of existing work on the Dene Sų́líné language has in fact concerned non-morphological topics including: phonetics and phonology (e.g. Cook 1989; Gessner 2005; Cook 2006; McDonough & Tucker 2012), lexical semantics (e.g. Wilhelm 2008; Holden 2010; Rice 2014; Thiering & Schiefenhövel 2016) and language change (Rice 1978; Scollon 1979b; Scollon 1979a; Henry 1980; Jehn 1980; Krauss 1982; Cook 1995). Other works are lexicographical (e.g. Elford & Elford 1998; Kaulbeck et al. 2012), or address the important topics of language education and reclamation (e.g. Wiens 2014; Jung et al. 2018; Holden 2020). Worthy of special note is Cook's (2004) comprehensive grammar, the most thorough linguistic description of the language to date.

There are published works with a focus on verbal morphology, though they are not as numerous as those addressing other aspects of the language. Mary-Jane Kasyon, a Dene Sų́líné speaker and community linguist, provides an overview of Dene Sų́líné's set of "classificatory verbs", verbs of handling or position which have lexicalized physical attributes (e.g. weight, texture, shape) of verbal arguments (Kasyon 1997). Bortolin (1998) and Wilhelm (2003a;

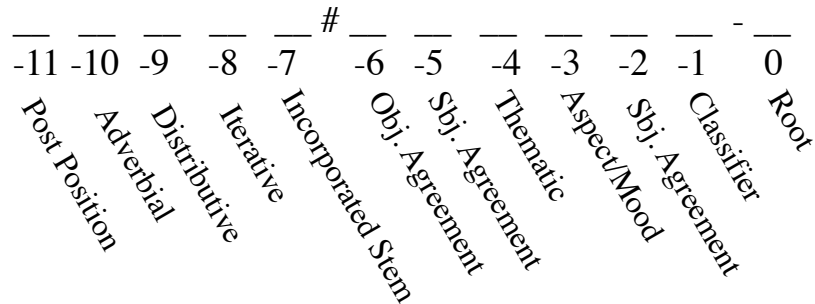
2003b) provide analyses of the distribution of viewpoint aspect prefixes, proposing a link between prefix selection and lexical semantics. Rice, Libben and Derwing (2002) undertook an experimental study designed to ascertain the degree to which Dene Sų́liné speakers exhibit awareness of morphological structure, with interesting findings suggesting relatively fine-grained structural awareness. In his grammar, Cook (2004) devotes more than 100 pages to discussion and analysis of various aspects of the language's verbal morphology. Holden (2007) provides a brief account of Dene Sų́liné's morphological expression of aspect, mood and subject agreement, and in more recent work (Holden 2013) dedicates a chapter to morphological analysis alongside a selection of transcribed personal narratives. More recently, Jaker (2020) proposes a phonological analysis of formal variability in the language's exponents of optative mood. While existing works have examined various aspects of Dene Sų́liné verbal morphology, interesting questions remain surrounding the language's implementation of tone and nasality as inflectional exponents.

1.5 THE DENE Sų́LINÉ VERB

Before introducing the specific inflectional phenomena that are the topic of this thesis, it is useful to describe the basic structure and morphophonological behaviour of the Dene Sų́liné verb. The typical Dene Sų́liné verb consists of a monosyllabic root, preceded by inflectional and derivational prefixes (as in the examples in (1) and (2)). A schematic often employed by researchers of the language family is a template depicting the affix positions and larger structural divisions of the verb. Though the theoretical status of this type of template has been a matter of debate (e.g. McDonough 2000; Ackerman 2003), it is nevertheless useful for descriptive

purposes and for illustrating the verb's basic structure. I provide a template for the Dene Sų́liné verb in Figure 1.

Figure 1: Dene Sų́liné verbal template



Proceeding from the right, the slot labeled 0 is occupied by the verb root. Verb roots often belong to sets exhibiting formal alternations corresponding to aspectual distinctions. The pair of verbs in (3) illustrates the use of alternation in root-vowel nasality marking an aspectual distinction

(3)

- a. *bér* *nareʔa*
 bér *na-de-Ø-Ø-ʔa*
 meat REV-TH-IPFV-3.SBJ-**handle.round.object**.IPFV
 ‘s/he flips the meat’
- b. *bér* *naréʔa*
 bér *na-de-H-Ø-ʔa*
 meat REV-THE-PFV-3.SBJ-**handle.round.object**.PFV
 ‘s/he flipped the meat’

(Florence St. Pierre, 2021)

Though it is not the sole exponent of perfectivity in (3b), the nasal vowel in the verb root $-ʔq$ distinguishes the perfective verb from its imperfective counterpart in (3a). Other root alternations affect vowel height, tone, or coda voicing to mark aspectual distinction.

The position to the immediate left of the root is occupied by what Dene language researchers term a “classifier”. In some verb-forms these prefixes exhibit a correlation with voice or valency, for example, marking a contrast in intransitivity as in the pair of verbs in (4).

- | | | | | |
|-----|----|--|----|--|
| (4) | a. | hebes | b. | nelbes |
| | | he- \emptyset - \emptyset - \emptyset -bes | | \emptyset - \emptyset -ne- l -bes |
| | | PEG-IPFV-3.SBJ-CL-boil | | 3.OBJ-IPFV-2.SG.SBJ-CL-boil |
| | | ‘It is boiling’ | | ‘You boil (it)’ |

(Elford & Elford 1998: 92–93)

The presence of the *l*- classifier in (4a) marks this verb as transitive in contrast with the intransitive form (4b) with no overt classifier. These types of correlation are imperfect, however, and in many verbs the classifier may be best treated as a fossilized part of the stem (Cook 2004: 148).

To the left of the classifier are two positions occupied by exponents of subject agreement (person and number) and mood/aspect, slots -2 and -3, respectively. There is a degree of inconsistency in the labeling of these prefixes in literature on the Dene languages. In some cases the aspect prefixes have been labeled “mode” (e.g. Rice & Hargus 1989) or tense (Speas 1991; Hargus & Tuttle 1997). I follow Wilhelm (2003) and Cook (2004) in describing these as aspect prefixes; this label more accurately reflects their function as markers of viewpoint aspect (imperfective and perfective). Aspectual prefixes exhibit complementary distribution with a non-

aspectual prefix marking optative mood and may be considered to occupy the same template position, hence the “aspect/mood” label in Figure 1. Some take subject agreement and aspect/mood to be expressed by distinct forms occupying separate positions in the verbal template (e.g. Cook 2004: 143-144). This is the treatment represented in Figure 1. On this account the verb in (5) expresses perfective aspect and first-person-singular subject agreement with two separate prefixes, *ghe-* marking perfective and *s-* marking agreement with a singular first-person subject.

- (5) *ghesjen*
 ghe-s-d-yen
 PFV-1.SG.SBJ-CL-sing
 ‘I sang’

(Elford & Elford 1998: 281)

Some analyses of Dene languages, however, have proposed cumulative exponence of these inflectional categories with unanalyzable portmanteau morphemes (e.g. Holden 2007). Chapter 2 examines this distinction in greater detail.

Position -4 is occupied by so-called “thematic prefixes” (glossed throughout with TH). Some prefixes occupying this position (e.g. *ne-* and *de-*) have been identified as reflexes of historical gender markers, and still exhibit an imperfect correlation with characteristics of the object argument (Cook 2004: 175). In many cases, however, these prefixes seem best to be treated as semantically opaque components of a discontinuous lexical stem. This is the case in the forms in (6).

- | | | | | |
|-----|----|--|----|---|
| (6) | a. | yalti
ya-∅-∅-l-ti
TH-IPFV-3.SBJ-CL-talk
‘s/he talks’ | b. | yaghilti
ya-ghe-N-l-ti
TH-PFV-3.SBJ-CL-talk
‘s/he talked’ |
|-----|----|--|----|---|

(Elford & Elford 1998: 311–312)

In both (6a) and (6b), the lexical meaning ‘talk’ is expressed through the combination of the verb stem *-lti* (itself analyzable as the combination of the classifier *l-* and root *-ti*) and the semantically opaque thematic prefix *ya-*. In the perfective form in (6b), the inflectional exponents of aspect and agreement appear between the thematic prefix and the rest of the verb stem. This form illustrates the discontinuous stem and interleaving of derivational/lexical and inflectional material that has been an enduring point of interest in studies of the Dene languages.

Positions -5 and -6 host agreement prefixes. Position -5 hosts a second set of subject-marking prefixes known as “deictic subjects”. These include a third-person dual prefix *he-*, an “areal” subject prefix *ho-*, and what Cook (2004: 182) terms a default subject-marking prefix, *ts’e-*. The latter two prefixes require some explanation. The areal prefix *ho-* agrees with a subject or object referring to a place or event. The default subject prefix *ts’e-* is used when the subject is clear from the surrounding discourse, and seems therefore to be closely related to information structure, perhaps serving to “background” old information. Slot -6 hosts object-marking prefixes.

The pound sign # in Figure 1 represents a prosodic boundary dividing the “conjunct zone” and the “disjunct zone” to its left. This boundary, known as the disjunct boundary, is relevant to the definition of a number of morphophonological processes. The presence of a

conjunct zone prefix to the “left” of the aspect and agreement markers conditions the appearance of alternative morphological expression of these values. The verb-forms in (7) illustrate this alternation as it affects the expression of second-person-singular subject agreement.

- | | | |
|-----|--|--|
| (7) | <p>a. <i>neda</i></p> <p> \emptyset-ne-da</p> <p> IPFV-2.SG.SBJ-drink</p> <p> ‘You are drinking’</p> | <p>b. <i>ghida</i></p> <p> ghe-ne-da</p> <p> PFV-2.SG.SBJ-drink</p> <p> ‘You drank’</p> |
|-----|--|--|
- (Elford & Elford 1998: 147)

In verbs with no preceding conjunct prefix, as in (7a), second-person-singular subject agreement is expressed with the form *ne-*. When preceded by a conjunct prefix, as by the perfective prefix *ghe-* in (7b), agreement appears as a high nasal vowel, <ɨ>. The gloss in (7b) represents Cook’s analysis, which takes this vowel to be a surface manifestation of an underlying *ghe-ne-* sequence (2004: 149). If the preceding prefix is disjunct, however, as in (8), agreement is expressed with *ne-* in the same manner as in a form like (7a) with no leading prefix.

- (8) *tuenanedher*
- tue-ná# \emptyset -ne-dher
- water-ITER#IPFV-2.SG.SBJ-stay
- ‘You bathe/swim’

The form in (8) also illustrates some of the distinct elements found in the disjunct zone, including incorporated stems (e.g. *tue* ‘water’) and prefixes marking lexical aspect (e.g. *ná-* ‘iterative’ and *da-* ‘distributive’). Other elements found in disjunct zone positions include

prefixes with adverbial meanings (e.g. *na-* ‘down’) and incorporated postpositions (e.g. *k’e-* ‘on’).

The focus of my thesis is inflectional phenomena of the conjunct zone, specifically, the expression of agreement and aspect. Alternations conditioned by preceding conjunct prefixes of the type described above are also of relevance to the analysis of one of the foci of my research, tonal exponence of aspect. In section 1.6, I introduce this tonal phenomenon alongside a second pattern of non-segmental morphological exponence involving an alternation in vowel nasality.

1.6 NON-SEGMENTAL EXPONENCE: TONE (H) AND NASALITY (N)

As described in 1.3, the Dene Sųłiné verb inflects for subject agreement and aspect, and a verb-form is composed minimally of a stem preceded by agreement and aspect prefixes, as in (9).

- | | | |
|-----|---|--|
| (9) | <p>a. <i>ghesjen</i>
 ghe-s-d-yen
 PFV-1.SG.SBJ-CL-sing
 ‘I sang’</p> | <p>b. <i>ghejen</i>
 ghe-Ø-d-yen
 PFV-3.SBJ-CL-sing
 ‘s/he sang’</p> |
|-----|---|--|

(Elford & Elford 1998: 281)

In both verbs in (9), the prefix *ghe-* ([ʏɛ]) marks perfective aspect. The verbs differ in terms of subject Person: in (9a), first-person-singular subject agreement is realized by the prefix *s-*, while in (9b), third-person² subject agreement is signaled by the absence of a formal exponent, an

² The number distinction is neutralized in the case of third-person subjects.

instance of “significant absence” (Stump 1997: 219). A second possible affixal exponent of perfectivity is the prefix *the-* ([θɛ]), exemplified by (10).

- (10) *deneyuaze theʔáɫ*
deneyu-aze the-Ø-Ø-ʔáɫ
man-DIM PFV-3.SBJ-CL-bite.PFV
‘(he) bit the boy’

(Elford & Elford 1998: 89)

The examples provided in (9) and (10) illustrate Dene Sų́liné’s two primary affixal exponents of perfective aspect, *ghe-* and *the-*. In addition to these affixal exponents of perfectivity, however, one also observes the occurrence of what are ostensibly non-segmental exponents occurring in third-person perfective verb-forms. These are exemplified in (11).

- | | |
|---|---|
| <p>(11) a. <i>yéłtsi</i>
 ye-H-Ø-ł-tsi³
 4.OBJ-PFV-3.SBJ-CL-make.PFV
 ‘s/he made it’
 (Cook 2004: 157)</p> | <p>b. <i>ghı́dá</i>
 ghe-N-Ø-dá
 PFV-PFV-3.SBJ-sit.PFV
 ‘s/he was seated’
 (Cook 2004: 155)</p> |
|---|---|

In a verb like (11a), we observe a high tone on the prefix *ye-*. The *ye-* prefix is a “fourth-person” object marker occurring in verb-forms agreeing with two third-person arguments. The high tone in (11a) is not an inherent feature of the *ye-* prefix, however, a fact confirmed through comparison with the corresponding imperfective form *yéłtsi* ‘s/he makes it’. Here we find the

³ Note that my use of H- or N- in glosses does not represent a commitment to an analysis of these exponents as a type of non-segmental affix. I merely mean to indicate the possibility of an analysis of these features as morphological exponents separable from whichever affix happens to host them in a particular word-form, in the case of (11a), the fourth-person object marker *ye-*.

same *ye-* object marker without high tone. Based on this comparison of perfective and imperfective forms it seems reasonable to analyze this high tone as one exponent of perfectivity in the form in (11a) alongside nasalization of the verb root. In (11b), the feature of interest is the nasality of the syllable *ghi*. For the moment, I follow Cook in glossing this feature of third-person perfective verbs using N-. Like the high tone in (11a), this nasality is a non-segmental feature unique to third-person perfective forms in many paradigms.

Comparison with the non-third-person forms in (12) illustrates that these non-segmental features are not present in all perfective verb-forms, only those agreeing with third-person subjects.

(12)	a.	thiltsi	b.	ghidá
		the-i-Ø-l-tsɿ		ghe-Ø-i-dá
		PFV-1.SG.SBJ-CL-make.PFV		PFV-1.SG.SBJ-sit.PFV
		‘I made it’		‘I was seated’
		(Cook 2004: 157)		(Cook 2004: 155)

In (12a), perfective aspect is expressed with the affixal exponent *the-*; we do not find the high tone observed in the corresponding third-person form in (11a). Likewise, in (12b), we do not observe the nasal feature present in the third-person form in (11b). Both forms in (12) also differ from those in (11) by their subject-agreement morphology; where the (11) forms have been analyzed (following Cook (2004)) as expressing third-person agreement by the absence of a formal marker, both forms in (11) express first-person subject agreement by the presence of the prefix *i-*⁴.

⁴ The prefix *i-* (as distinct from the previously described *s-* prefix marking first-person-singular subject agreement) occurs in a subset of first-person perfective verb-forms, those with a *l-* or *Ø* classifier. In this respect, its distribution is similar to that of the nasality found in an example like (3b); this nasality too is found only in perfective verb-forms with *l-* or *Ø* classifiers.

The appearance of high tone in a form like (11a) is similar to the conditioned alternations affecting agreement markers described in Section 1.5 and illustrated by the verbs in (7), where a verb like (7b) with a preceding conjunct prefix (*ghe-*) exhibits the high nasal vowel <ɪ̃> rather than the prefix *ne-*. Similarly, the tonal exponent (henceforth H) in a form like (11a) is in complementary distribution with the affixal exponent *the-*, H appearing in third-person forms with a preceding conjunct prefix and *the-* appearing in forms with no preceding conjunct prefix. This alternation is illustrated by a comparison of the form presented in (10) (*theʔál* ‘s/he bit (it)’) with the related form in (13).

- (13) *yéʔál*
 ye-H-Ø-ʔál
 4.OBJ-PFV-3.SBJ-bite
 ‘s/he bit it’

When a free object NP (e.g. *deneyuaze* ‘boy’) is absent, an agreement prefix (here *ye-*) is affixed to the verb. This conjunct prefix conditions the appearance of H where we otherwise find *the-*. Likewise, the distribution of nasality (henceforth N) associated with third-person perfective forms is also associated with an affixal exponent of perfectivity, *ghe-*, in that N is only found in verbal paradigms taking the *ghe-* ‘perfective’ prefix, not in those taking *the-*. However, unlike *the-* and H, which are mutually exclusive, *ghe-* and N co-occur in third-person verb-forms, as illustrated by (11).

Though their distribution and behaviour are not precisely alike, both H and N, exemplified in forms like (11a) and (11b), are similar in that both are distinct non-segmental morphological features unique to third-person perfective verb-forms. Owing to their

distributional complexities and their apparently non-segmental and non-concatenative nature, H and N present a challenge for morphological analysis, particularly for strict morpheme-based accounts seeking to treat complex word-forms as concatenations of discrete, segmentable morphemes. In Chapter 2, I summarize existing treatments of these non-segmental morphological patterns, highlighting challenges for each.

CHAPTER 2. EXISTING ACCOUNTS OF H AND N

The non-segmental, non-concatenative characteristics of Dene Sų́líné’s morphological implementation of tone (H) and nasality (N) have relevance for the investigation of theoretical approaches to morphology. Non-concatenative morphology has figured prominently in arguments for theoretical frameworks based on paradigmatic relationships and morphological rules or processes, such as Paradigm Function Morphology (Stump 2001; 2016). Conversely, non-concatenative morphology poses a challenge for frameworks such as Distributed Morphology (Halle & Marantz 1993; Harley & Noyer 1999), aiming to reduce morphology to the syntactic arrangement of affixal morphemes. While affixal morphology is prominent cross-linguistically, the existence of regular form-meaning correspondences for which the formal correspondent is either suprasegmental (e.g. tonal) or sub-segmental (e.g. nasality) is not simple to account for in terms of affixation. This has not dissuaded attempts at reconciling these phenomena with morpheme-based, affixal analyses. In the present chapter, I describe and evaluate two proposed treatments of H and N as affixal morphemes. In the first, which I will call the DERIVATIONAL APPROACH, both H and N are treated as phonologically-derived manifestations of underlying affixes. In the second, the CHUNKING APPROACH, independent exponence of agreement and aspect is abandoned in favour of portmanteau morphemes — formally-unsegmentable affixal “chunks”. Though the two approaches differ in their particulars, both seek to limit the morphological analysis to concatenative processes of affixation. In the derivational approach, the morphological analysis is limited to affixation by treating H and N as derived products of phonological processes affecting underlying affixal morphemes. In the chunking approach, a restriction to affixation is attempted by subsuming the non-segmental features of tone and nasality within portmanteau morphemes — affixes argued not to permit further

segmentation into primitive morphological units or processes. The question examined in this thesis is whether Dene Sų́liné’s exponents H and N can be reasonably accommodated within an affixal analysis, or whether it is preferable to treat them as non-concatenative morphological processes. In the following chapters, I consider how this question of analysis is informed by (and informs) theoretical distinctions central to debates on the theoretical treatment of morphological phenomena.

2.1 THE DERIVATIONAL APPROACH

In illustrating and evaluating the derivational approach to H and N, I look primarily to the analysis developed by Eung-Do Cook in his grammar of Dene Sų́liné (Cook 2004), though I also briefly consider a similar account of genetically-related languages (Rice & Hargus 1989).

2.1.1 THE DERIVATIONAL APPROACH AND H

Before introducing the derivational approach to H, I here briefly reiterate and expand on the basic descriptive facts of H introduced in section 1.6. Certain perfective verb-forms exhibit a high tone on their penultimate syllable, resulting in a meaningful contrast with a corresponding imperfective verb-form, in which the high tone in question is absent. The verbs in (14) are illustrative.

- | | | |
|------|---|---|
| (14) | a. danedá
da#ne-Ø-Ø-da
on#TH-IPFV-3-sit.IPFV
‘s/he sits down on (it)’
(Elford & Elford 1998: 282) | b. danéda
da#ne-H-Ø-da
on#TH-PFV-3-sit.PFV
‘s/he sat down on (it)’
(Florence St. Pierre 2021) |
|------|---|---|

The high tone on the penult of the verb in (14b) is an instance of H, establishing a contrast between this perfective form and imperfective form in (14a). The tonal alternation exhibited by the verbs' roots, *dá* vs. *da*, is an instance of the aspectual stem alternations discussed in section 1.5. Comparison with the corresponding first-person perfective verb-form in (15) illustrates that this H is not a uniform exponent of perfectivity throughout the paradigm; it is limited to verb-forms agreeing with a third-person subject.

- (15) *danida*
 da#ne-i-da
 on#TH-1.PFV-sit.PFV
 'I sat on (it)'
 (Florence St. Pierre, 2021)

Like (14b), the form in (15) is perfective, though in this form we do not observe the penult high tone. Though H arguably functions to establish a contrast of aspect, it does so only in verb-forms agreeing with a third-person subject.

The facts described in the preceding paragraph address one of the relevant factors conditioning the appearance of H, namely agreement with a third-person subject. It should be relatively uncontroversial to treat this conditioning factor as fundamentally morphosyntactic, i.e. one conditioned by a "contentful", or meaningful verbal characteristic, as opposed to a formal/phonological one. There are two additional relevant conditioning factors, however. The first is one of word class. To illustrate, the perfective verb *ghejen* 's/he sang' (Elford & Elford 1998: 281) meets the morphosyntactic requirement of a third-person subject, but we do not observe a high-toned penultimate syllable. Thus, it is insufficient to state that H is restricted to

third-person perfective verb-forms. H must be further limited to verbs of a particular class, those in which *the-* is the segmental affix which marks perfective aspect in qualifying verb-forms of the paradigm. The verb *ghejen* ‘s/he sang’ belongs to a separate class and does not inflect with H. This second conditioning factor may potentially be considered purely morphological, one of inflectional class (cf. Bortolin 1998 and Wilhelm 2003 for accounts of class distinctions based on lexical semantics). Adequate description must also refer to a final, less-obviously classified conditioning factor, illustrated by the set of verbs in (16).

- | | | | | | | | |
|------|----|------------------|----|-----------------------|----------------|----|------------------------|
| (16) | a. | yéltsj | b. | t’así | the tsj | c. | eledát the kár |
| | | ye-H-Ø-ltsj | | t’así | the-Ø-ltsj | | ele-dá#the-Ø-kár |
| | | 4-PFV-3-make.PFV | | something | PFV-3-make.PFV | | RECIP-DISTR#PFV-3-clap |
| | | ‘s/he made it’ | | ‘s/he made something’ | | | ‘they clapped’ |
- (Elford & Elford 1998: 221; 115)

Among the verbs in (16), only (16a), *yéltsi* ‘s/he made it’, exhibits H, though all three verbs meet the conditioning factors referring to morphosyntactic and class features. The absence of H in (16b) and (16c), and its presence in (16a) follows from the final conditioning factor: the presence of a preceding conjunct prefix. In (16a), we observe a disyllabic word with a high tone, H, on its penult, the segmental content of which is provided by *ye-*, the “fourth-person” object marker. Comparison of (16a) with the corresponding imperfective verb-form, *yełtsi* ‘s/he makes it’, suggests a morphological function for H; the presence of H in (16a) may be considered one formal feature (alongside root-alternation) signaling perfective aspect. In (16b), by comparison, we observe a distinct verb-form instantiating the same lexeme, TSI ‘make’ and the same relevant morphosyntactic features, [3.sbj], [3.obj] and [pfv]. This disyllabic verb, however, does not

exhibit H and the prefix *the-* marks perfective aspect instead. Comparing (16a) and (16b), we might state that H only occurs in verb-forms in which the verb stem hosts some additional prefix, *ye-* in this particular example. In the absence of such a prefix, we observe the affix *the-*. However, this condition is also proven deficient by an example like (16c). In this last third-person perfective verb we observe *the-*, not H, despite the presence of additional prefixes, *ele-* ‘reciprocal object’ and *dá-* ‘distributive’. This final example illustrates the relevance of the “disjunct boundary” described in section 1.5. Both *ele-* and *dá-* are what have been described as disjunct prefixes and as such do not condition the appearance of H (Cook 2004: 129, 143). Thus, we can further refine the final conditioning factor, and finalize the complete list of factors as follows: 1. agreement with a third-person subject; 2. membership to the *the-* class of verbs; and 3. the presence of a preceding conjunct prefix⁵. Only a perfective verb meeting each of these requirements exhibits H. With this more detailed account of H, its function, and the factors conditioning its appearance, I now turn to the derivational account of this inflectional tone developed by Cook (2004).

Cook (2004) develops the “Derivational Approach” introduced in the opening paragraphs of this chapter. On this approach, it is not necessary to provide an account of H as an independent, non-segmental process signifying an aspectual distinction; instead, H is argued to be a phonological derivative. The pair of verbs in (17) illustrates Cook’s analysis.

⁵ I have followed Cook in describing this condition in terms of a preceding conjunct “prefix” and will continue to use this label. However, it may be more precise to describe the condition in terms of a preceding conjunct “syllable” (which is only incidentally a prefix).

- | | | |
|------|--|--|
| (17) | <p>a. <i>nedá</i></p> <p>ne-Ø-Ø-dá</p> <p>TH-IPFV-3.SBJ-sit.down.IPFV</p> <p>‘s/he sits/will sit down’</p> | <p>b. <i>néda</i></p> <p>ne-the-Ø-da</p> <p>TH-PFV-3.SBJ-sit.down.PFV</p> <p>‘s/he sat down’</p> |
|------|--|--|
- (Cook 2004: 159)

The verbs in (17) are a third-person imperfective and third-person perfective form instantiating the lexeme NE_DA⁶ ‘to sit down’. The third-person perfective form in (17b) exhibits H on its penult. Cook’s derivational approach proposes that H is not in itself an exponent of perfectivity, but is derived from an underlying aspect prefix, *the-*, as is reflected in the morphemic gloss in (17b). Specifically, Cook proposes that H arises when the vowel of *the-* deletes, “imparting” a high tone on the preceding syllable (p. 159). The remaining segmental content of *the-*, the consonant [θ], is supposed also to be lost to weakening or deletion.

The derivation of H proposed by Cook for a word like *néda* ‘s/he sat down’ may be represented as in (18).

- | | |
|------|---|
| (18) | <p>Proposed phonological derivation of H from <i>the-</i> ‘perfective’ (Cook 2004)</p>
<p>Input: ne-the-da</p> <p>Vowel deletion and tone: né-the-da</p> <p>Further weakening/loss: né-(h)-da</p> <p>Output: néda</p> <p style="text-align: right;">‘he/she sat down’</p> |
|------|---|

⁶ I use the notation here, NE_DA, to represent a lexical item with a discontinuous stem. The prefix *ne-* in these forms is an example of a thematic prefix (see section 1.3), though its function is less opaque than other instances of thematic prefixes; it exhibits a fairly regular correspondence with verbs expressing momentaneous actions, as in the present case, the act of sitting down (Cook 2004: 128). The construction *ne_da*, therefore, can be thought of as a discontinuous stem meaning ‘sit down’ within which inflectional material is interpolated (e.g. *nesdá* ‘I sit down’). I continue throughout to use this notation to represent discontinuous stems.

In the derivation in (18), the morphological exponent of perfectivity in a verb like *néda* ‘s/he sat down’ is argued to be the underlying prefix *the-* (Input). This prefix is deleted by a phonological rule triggered by affixation of a preceding conjunct prefix (here *ne-* ‘momentaneous’) and for this reason is absent in the surface representation (Output). Cook takes H to be a concomitant of the rule deleting *the-*, and thus a phonological derivative, not a meaningful morphological exponent. More specifically, Cook proposes that the appearance of high tone on the word’s first syllable is linked to the deletion of the prefix vowel, not the entire prefix. In support of this specific claim Cook points to attested historical forms wherein the prefix consonant remains in some form, whether [θ] or a reduced form [h], alongside the high tone in question (e.g. *néthda*); it is for this reason that Cook links the appearance of high tone specifically to the deletion of the following prefix vowel (Cook 2004: 129). To briefly summarize, on Cook’s derivational account, H is derived through a phonological process effecting the deletion of *the-* (all or in part) and is, therefore, not in itself a morphological exponent, perfective aspect being morphologically expressed by the underlying *the-* prefix.

In his account, Cook identifies useful generalizations for accounting for the distribution of H, such as the presence of a preceding conjunct prefix. In the present section, I argue that Cook’s account of H as a derivative of underlying *the-* is not the most satisfying account of this suprasegmental feature. One might argue that such an analysis of H is appealing precisely because it permits a strictly affixal account of Dene Sųliné verbal morphology, obviating the need for non-concatenative morphology. This, however, begs the very question central to my thesis, which is whether or not it is empirically sufficient or theoretically appealing to treat all morphological processes as affixation; as such, I set aside further consideration of this point for subsequent sections. A second argument in favour of treating H as derived from *the-* lies in the

mutual exclusivity of these two formatives; *the-* and *H-* do not co-occur in any given verb-form. Mutual exclusivity might be taken as evidence of an “allomorphic” relationship of the sort observed in the English plural suffix *-z/[s]*, *[z]*. I suggest that this is not compelling evidence either, as mutual exclusivity need not entail derivation, as for example the mutual exclusivity of English plural suffixes *-s/-en*, or the mutual exclusivity of regular past tense *-ed* and the stem vowel alternations exhibited by strong verbs, like *SING*. The mutual exclusivity of such morphological operations does not (presumably) inspire attempts to derive *-en* from *-s*, for example. A final argument for the derivational approach may be a perceived appeal in preserving a higher degree of uniformity in the morphological representation, i.e. supposing there is a single uniform exponent of perfectivity, *the-*, occurring in all perfective verb-forms (of the *the-* class) and attributing apparent exceptions to the obscuring effect of phonological process(es). This analysis may result in a more “regular” or uniform morphological system, but the complexity is simply shifted to the Phonology. The result is a net zero with respect to the complexity of the grammatical representation taken as a whole. Furthermore, as I argue below, there is evidence that the complexity attributed by Cook to the Phonology does not readily lend itself to a phonological analysis.

A significant challenge for Cook’s phonological derivation is the lack of a specific explanation, in terms of a phonologically natural causal relationship, tying the loss of the prefix vowel to the appearance of a high tone on the preceding syllable. A useful criterion for gauging the naturalness of a phonological process is whether an observed effect and the relevant qualities of the conditioning environment belong to one and the same phonological/phonetic dimension (Mielke et al. 2011: 190). Returning to the example of English plural allomorphy, here we observe a natural phonological rule; the occurrence of a particular allomorph, voiceless *-[s]* or

voiced [-z], is predictable based on the presence or absence of a [voice] feature on the stem-final segment (i.e. [k^hats], but [dogz]). Appearance of the [-voice] or [+voice] allomorph is conditioned by qualities of a neighbouring segment belonging to the same voicing dimension. In Cook's proposed derivation H, we do not observe a similar relationship between effect and conditioning environment. Cook attributes the appearance of H to the deletion of the vowel from the following syllable, thus, what is proposed is, in effect, the addition of a suprasegmental feature of tone conditioned by the absence of a non-contiguous vocalic segment. Unlike the example of English plural allomorphy, there is no natural phonological relationship between cause and effect.

An additional challenge for Cook's derivational account of H is the failure of the proposed phonological rules to hold more generally throughout the language. Cook suggests that it is through the loss of *the-* that H arises in a verb like *néda*, by the operation of phonological rules on underlying representations. However, the proposed rule of deletion and that "imparting" high tone do not hold in non-third-person verbs, though phonological conditions are nearly identical. Thus, we observe a corresponding first-person form *nida* 'I sat down' in which Cook's posited underlying *the-* is likewise absent, but in which we do not observe H. We would expect a high tone here were Cook's rules deriving H general phonological processes. Any attempt to treat the occurrence of H as a result of phonological derivation requires a stipulation limiting the operation of the relevant phonological rules to third-person forms. This is, in fact, how Cook proposes to account for this limitation, positing two distinct rules of *e*-deletion, one applying in non-third-person verb-forms such as *nida* with no tonal effect, and a second rule occurring in third-person verb-forms which imparts high tone (Cook 2004: 159), without any natural phonological explanation for why the two rules should differ as such. As I have alluded in a

preceding paragraph, the requirement of this type of stipulative or morphologically-conditioned rule definition introduces unnecessary complication into the phonological analysis that outweighs any advantages ascribed to the treatment of underlying *the-* as the sole signifier of perfective aspect in qualifying verb-forms.

While I find the derivational account of H unsatisfactory as a synchronic analysis, I briefly entertain a possible diachronic explanation for this derivation as a process of tonogenesis. Though Cook does not consider the possibility, on first consideration, it does not seem entirely implausible that a causal link between *e*-deletion and the appearance of H might be found in resultant changes in syllabic structure and the place of the segment /θ/ within this structure. Looking again to the example of *néda* ‘s/he sat down’, if we reconsider Cook’s proposed derivation, we find an input form with a syllabic structure as follows: [nɛ.θɛ.da]. With the deletion of /ɛ/, presumably the syllables would be restructured as follows, [nɛθ.da], with /θ/ filling the coda position of the preceding syllable. In this restructuring there may be an explanation for the occurrence of elevated pitch (and ultimately high tone) on the penultimate syllable nucleus. Spread-glottis segments like /θ/ (or /h/) have been proposed as a source of elevated F₀ on neighbouring vowels and, by this effect, as a diachronic source of tone (Kingston 2011: 2305-2307). It does not seem entirely implausible that the deletion of /ɛ/ and shift of spread-glottis /θ/ to the coda of /nɛθ/ might have a phonetic effect on the F₀ of /ɛ/, which over time may have been phonologized as a contrast of tone. Even this account of the derivation has its challenges, however. Firstly, there already exists an influential account of tonogenesis in the Dene languages, whereby high tone is argued to have arisen from glottalized (i.e. constricted glottis) segments (Kingston 2005). Positing an additional tonogenetic source in an entirely opposite laryngeal configuration is therefore questionable. Positing spread glottis [θ] or [h] as

sources of high tone on tautosyllabic preceding vowels is also problematic in that there are counterexamples elsewhere in the language, as for example in the words *yath* [yaθ] ‘snow’ and *ʔah* [ʔah] ‘snowshoe’, in which we find spread-glottis segments following non-high-toned vowels. Ultimately, however, even if this were a plausible diachronic account linking *e*-deletion and high-tone, it does not constitute a satisfying synchronic account of H. In Chapters 4 and 5, I explore a treatment of H as a non-concatenative morphological exponent and the implications of such a process for the theoretical understanding of morphological phenomena.

2.1.2 THE DERIVATIONAL APPROACH AND N

In 2.1.1, I described and critiqued the derivational approach to Dene Sų́líné’s morphological high-tone, H. In the present section, I consider the derivational account of the nasal feature, N, being the second focus of my thesis. Like H, N exhibits a correspondence with perfectivity and third-person subject agreement. In this regard, N is similar to H; however, N also differs from H in notable ways.

Before discussing the derivational approach to N, I briefly reiterate and expand on the introduction to N provided in section 1.5. The verbs in (19) illustrate that the presence or absence of nasality on the vowel of a verb’s penult exhibits a correspondence with morphological meaning.

- | | | |
|------|---|--|
| (19) | <p>a. <i>ghı́dá</i>
 ghe-N-Ø-dá
 PFV-PFV-3.SBJ-sıt.PFV
 ‘s/he was seated’</p> | <p>b. <i>ghidá</i>
 ghe-Ø-i-dá
 PFV-1.SG.SBJ-sıt.PFV
 ‘I was seated’</p> |
|------|---|--|

(Elford & Elford 1998: 282)

Example (19a) is a third-person perfective verb in the class of verbs taking *ghe-* as an affixal exponent of perfectivity. Both (19a) and the first-person form in (19b) share a number of formal features: the verbs share the same root *-dá*, meaning approximately ‘be seated’, and the string *gh-* which corresponds to the meaning ‘perfective’. The only formal difference between the two verbs in (19) is the presence of a nasal feature on the penult of (19a) contrasting with the oral vowel <i> in (19b). This difference in form correlates with the verbs’ sole difference in meaning, agreement with a third-person subject in the former and with a first-person subject in the latter. Thus, a preliminary generalization is that the presence of nasality in a verb’s penult signals a distinction in subject agreement, more specifically, agreement with a third-person subject in the perfective. This is a regular correspondence of form and meaning observable in many verb-forms.

As with H, however, it is too general to state that N occurs in all third-person perfective verb-forms. Numerous exceptions exist, as exemplified by the verbs in (20).

- | | | | |
|------|-----------------------|--------------------|------------------|
| (20) | a. <i>yok’ε hét’a</i> | b. <i>gheldogh</i> | c. <i>ghejen</i> |
| | ‘s/he swept’ | ‘s/he cramped up’ | ‘s/he sang’ |

(Elford & Elford 1998: 306, 127, 281)

N is absent from all three verbs (20), despite each being a third-person perfective verb-form. Accounting for (20a) is relatively straightforward with reference to inflectional class; like H, N occurs only in verbs belonging to a particular class, that taking *ghe-*. It is for this reason that nasality is absent from the verb in (20a) where in fact we observe H on the penult, as expected of

a *the*-class verb⁷. The verbs in (20b) and (20c) require further explanation, as each clearly belongs to the class of verbs taking *ghe*-. It has been observed that the presence or absence of N in *ghe*- class verbs correlates with the identity of a verb's "classifier" (Cook 2004: 157). As was mentioned in section 1.3, the classifiers are a set of prefixes affixing directly to a verb root and exhibiting a correlation with voice/valency. Cook (2004: 145) proposes an inventory of four distinct classifiers, three of which are phonologically overt, *l*-, *l*- and *d*- and one which is phonologically null, \emptyset - (i.e., the absence of an overt classifier). N is observed to co-occur with two of these classifiers, *l*- and \emptyset -, but not *l*- or *d*-. This observation does not explain the distribution of N, but it suffices at present for a basic description.

I can now provide a preliminary account of the factors relevant to N's distribution. As with H, there are three relevant conditioning factors; however, they are not identical to those for H. N only occurs if each of the following three conditions is met: 1. a verb is perfective and agrees with a third-person subject; 2. a verb belongs to the "*ghe*- class"; and 3. a verb takes the *l*- classifier, or lacks an overt classifier. The conditioning factors of morphosyntactic and class features are like those relevant for an account of H. However, the remaining conditions distinguish these two patterns. H is not sensitive to the form of the classifier, and appears in verb-forms exhibiting any classifier provided its three conditions are met (e.g. *naréht'q* {na-de-the-d-ʔa} 'he turned it over' (Cook 2004: 147). Although H only occurs in verb-forms with a preceding conjunct prefix to host it, N requires no similar condition; as a verb like (19a) *ghida* 's/he was seated' illustrates, N occurs in verb-forms in which the aspectual prefix *ghe*- is the sole prefix. This second point also sets N and H apart in that H is observed to be mutually exclusive with the affixal exponent of perfectivity *the*-, while N may co-occur with *ghe*-.

⁷ Notably this verb-form exhibits H despite apparently failing to satisfy the preceding-conjunct-prefix condition. Apparent exceptions to this condition are discussed in greater detail in Chapters 6-7.

With his proposed account of H, Cook is explicit in his explanation of the source for this high tone, deriving H from the underlying affix *the-* (Cook 2004: 159). With N too, Cook assumes an underlying segmental source, but does not propose an explicit derivational account as he has done for H. Cook provides the basic facts of N's distribution described above, but observes throughout that a precise synchronic account of N remains uncertain (e.g. 2004: 141). When he does refer to N, Cook's wording implies a commitment to an affixal or morpheme-based account: "To cite another example, *yeghĩnēs* 'he plucked it', is analyzed as {*ye-ghe-N-t-nēs*}, where N is [+nasal]. In this representation, no decision is made as to the morphemic status of N." (p. xv). Cook seems to assume the existence of an underlying morpheme from which the surface nasality is derived, but for which it is difficult (perhaps impossible) to determine an underlying representation.⁸

Further exemplifying his commitment to a "derivational account", Cook proposes that the source of the [+nasal] feature in third-person verb-forms like *ghida* 'I sat' may be reasonably assumed to exist underlyingly throughout the verbal paradigm, i.e. in non-third-person verb-forms as well, despite the absence of any surface manifestation (2004: 165). Cook is not alone in proposing this type of analysis: in their account of the related Dene languages of Slave and Chilcotin, Rice and Hargus (1989: 293) propose the existence of a synchronic perfective prefix *n-* underlying all perfective verb-forms and only surfacing as a nasal feature in third-person verb-forms. Rice and Hargus go even further than Cook, however, in proposing that this *n-* prefix

⁸ Cook proposes a diachronic source for this nasal feature, linking it to a reconstructed segment of Proto-Athabaskan, **n* (p. 168). In this palatal nasal Cook proposes a source for both N and a morphological complexity exhibited by first-person perfective verb-forms such as *ghida* 'I sat' exhibiting a high vowel, rather than the mid vowel [ɛ] and lacking the *s-* prefix observed elsewhere (e.g. *ghesjen* 'I sang'). A challenge for Cook's proposed diachronic source of N and *i-* in first-person perfective forms like *ghida* is the fact that this high vowel of first-person perfective forms is also found in *the-* class verbs (e.g. *thilt'e* 'I cooked'), paradigms in which we do not observe N. It would remain to be explained, therefore, why **n* has a [+nasal] reflex in *ghe-* class verbs, but not in those of the *the-* class.

exists underlyingly in verbs of the *the*- class as well, despite the total absence of a surface trace in any verbs of this class. It seems implausible that language-learners would arrive at underlying representations exhibiting such a marked divergence from the forms speakers are observed to produce. Rather than proposing an abstract *n*- (or some other nasal segment) as an underlying ‘perfective’ prefix, the more obvious generalization is that N signals agreement with a third-person subject in perfective verb-forms of the relevant class. Straightforward support for this generalization is provided by comparing surface forms of a relevant paradigm; consider the partial paradigm in (21).

(21) Partial paradigm of TSAGH ‘cry’

Sbj. Agr.	Aspect	Imperfective	Perfective
1 sg		hestsagh	ghitsagh
1 pl		hítsagh	ghítsagh
3		hetsagh	ghītsagh

(Elford & Elford 1998: 130)

A learner exposed to these forms should presumably arrive at a number of straightforward generalizations of form-meaning correspondence. We observe a lexical meaning ‘cry’ shared by every form in the paradigm and a corresponding shared unit of form, the root *-tsagh*. Each verb in the rightmost column shares the inflectional meaning ‘perfective’ and a corresponding unit of form *gh(e)-*, setting these forms apart from the corresponding forms in the imperfective column. Finally, the verbs in each row exhibit a difference in agreement and corresponding differences in

form. In the perfective column, the formal difference corresponding to the three values of subject agreement can be described with reference to non-segmental features: the presence of a nasal feature, N, in the third-person form, *ghitsagh* ‘s/he cried’, the presence of a high-tone in the first-person plural form *ghitsagh* ‘we cried’ and the absence of either feature in the first-person-singular form *ghitsagh* ‘I cried’. Given these correspondences of sound and meaning, it is simpler and more appealing to consider N as a primary exponent of third-person subject agreement rather than as the sole surface manifestation of an abstract underlying perfective affix.

To summarize, the derivational approach treats the observable surface features, H and N, as derivatives of underlying affixes rather than inflectional exponents in and of themselves. In the case of H, I have argued that attempting to derive high tone from underlying *the-* requires unnatural phonological rules lacking grounding in any synchronic phonetic or phonological characteristics of their environments. Furthermore, such rules must refer to particular morphological, rather than phonological, contexts. In the case of N, there is no readily available evidence, for linguist or language-learner, to recommend an underlying nasal affix. Treating N as a surface manifestation of an underlying perfective prefix results in underlying representations of excessive abstraction, and misses a more obvious generalization in the correspondence of N and third-person subject agreement. The derivational approach does not, therefore, provide a compelling account of these features and their role within Dene Sų́líné’s inflectional morphology.

2.2 THE CHUNKING APPROACH

Like the derivational approach, the chunking approach attempts to limit the morphological analysis to affixation. However, while the derivational approach does so by deriving H and N

from abstract underlying affixes, the chunking approach attempts this restriction by drastically limiting the abstraction of morphological representations. Advocates of a chunking approach have explicitly presented it as an alternative to the derivational approach, identifying excessive abstraction as a weakness of the latter (e.g. McDonough 2000; Arppe et al. 2017). These approaches do not attempt to derive features like H or N from underlying formatives, nor do they recognize them as independent, meaningful morphological formatives or processes. Instead, they are treated as phonological features of portmanteau morphemes, prefixes expressing combined meanings of aspect and agreement. In this case, a string such as *ghì* in a verb like *ghìtsagh* ‘s/he cried’ is understood as a single affix expressing the complex meaning ‘third-person perfective’. This *ghì*- affix would contrast with affixes such as *ghi*- ‘first-person-singular perfective’ and *ghíd*-⁹ ‘first-person plural perfective’. Chunking approaches have been proposed for various languages of the Dene family, including Navajo (McDonough 2000a), Tsuut’ina (Arppe et al. 2017), and Dene Słliné (Holden 2007). Each analysis proposes a single “chunk” of morphological material, a portmanteau expressing a combination of agreement and aspect, though each analysis differs somewhat in its particulars.

Holden (2007) proposes a Dene Słliné inflectional domain characterized by “highly fusional cumulative morphs” expressing combinations of subject agreement, aspect, and mood. He contends that “subject agreement markers are difficult to divide from aspect and optative morphs without many abstract rules and can be considered weak megamorphs with aspect and mood inflections” (2007:180). Holden’s analysis (couched in the framework of Meaning-Text

⁹ This formal representation is a simplification. Cook (2004: 118) represents the first-plural subject prefix as *id*-. The proposed alveolar segment <d> [t] rarely if ever surfaces as such. It is proposed to exist underlyingly, based on alternations observed in the stem-initial consonants, where verbs agreeing with a first-person plural subject may exhibit a [+coronal] feature absent in corresponding verb-forms agreeing with other combinations of person and number: e.g. *ghes?ì* [ʔesʔì] ‘I see/saw’ vs. *ghít’ì* [ʔit’ì] ‘we see/saw’ (Elford & Elford 1998: 271).

Theory (e.g. Mel'čuk 1981)) employs “Deep Morphological Rules (DMorph Rules)” transforming discrete units of aspectual and agreement semantics into cumulative morphemes.¹⁰

(22) DMorph Rule 1:

$$'1_{\text{subj}}', 'sg_{\text{subj}}', 'ipfv', 'ind' \Leftrightarrow \{1.SG.SUBJ.IPFV.IND\}$$

(Holden 2007: 181)

The DMorph Rule in (22) is proposed to account for the mismatch in form and meaning inherent in cumulative exponence. Discrete units of meaning, represented on the left side of the rule, are combined into a single unit of morphological content, represented on the right. The resultant cumulative morpheme expresses a combination of agreement, aspect and modal semantics. Holden does not provide details on the phonological realization of such a cumulative morph, but presumably, following the application of this Dmorph Rule, the proposed morph in (22) would be mapped onto a phonological form. The analysis must still account for one-to-many meaning-form mappings, as any of the forms *hes-*, *s-*, *thi-* or *i-* has potential to realize this bundle of content, depending on factors of inflectional class or stem-phonology.

McDonough (2000) proposes a “Bipartite” model of the Navajo verb. Like Holden, she proposes portmanteau morphemes combining expression of aspect and agreement, motivating this choice for its obviation of the “often highly abstract morphophonemic rules needed to adjust underlying morpheme concatenations to the existing surface forms” (p. 149). The “Bipartite” of McDonough’s title refers to her treatment of the Dene verb as a

¹⁰ “Morphemes” here are construed as a unit of content, not necessarily associated with a particular form.

compound structure comprising a lexical stem and an I(nflectional)-stem. The I-stem is a portmanteau morpheme expressing aspect and agreement. To illustrate, McDonough provides the Navajo verb-form *yischa* ‘I cry’ (cognate with Dene Sų́liné *hestsagh*) dividing the form into two parts, the I-stem <yish> and the verb stem <cha>, where the I-stem is taken to be a “single entity”, i.e. non-compositional (p. 149). Applying McDonough’s analysis to Dene Sų́liné results in “chunks” resembling those proposed by Holden: *ghı* ‘perfective third-person subject’, *ghes*- ‘perfective first-person subject’, and so on.

The central claim of the chunking approach to Dene might be summarized as follows: decomposition of complex word-forms into concatenations of discrete affixes is impossible, or requires morphophonemic derivations of excessive abstractness and complexity, therefore consideration of independent exponents of aspect and agreement should be abandoned in favour of indivisible portmanteau morphemes.

2.2.1 THE CHUNKING APPROACH AND H

Instances of H like those in (23) present a challenge for the chunking approaches introduced in 2.2.

- | | | |
|------|---|--|
| (23) | <p>a. <i>yéłtsı</i>
 ye-H-Ø-l-tsi
 4.OBJ-PFV-3.SBJ-Cl-make.pfv
 ‘s/he made it’
 (Elford & Elford 1998: 221)</p> | <p>b. <i>néda</i>
 ne-H-Ø-da
 TH-PFV-3.SBJ-sit.PFV
 ‘s/he sat down’
 (Elford & Elford 1998: 282)</p> |
|------|---|--|

c. *nayeréʔq*

na#ye-**de-H**-Ø-ʔa

ITER-4.OBJ-**TH-PFV**-3.SBJ-handle.round.obj.PFV

‘s/he turned it over’

(Elford & Elford 1998: 330)

Both Holden and McDonough propose portmanteau affixes occupying an “inflectional domain” to the immediate left of the verb stem. The phonological manifestation of H places it external to the proposed chunks; though H does appear to the immediate left of the verb stem, it appears on the syllable nuclei of various morphemes outside of the proposed inflectional domain. In the case of (23a) *yéltsj*, H occurs on an object-marking prefix, representing content excluded from the chunks proposed by Holden and McDonough, both of whom limit chunks to exponence of subject agreement and aspect. In the cases of (23b) *néda* ‘s/he sat down’ and (23c) *nayeréʔq* ‘s/he turned it over’, the prefixes *ne-* and *de-* are thematic, forming part of the discontinuous verbal stem. To accommodate H within the chunking approach, an inventory of chunks would have to be expanded to include a wider variety of content including object agreement, situation aspect and semantically opaque thematic prefixes, at which point the number of potential chunks becomes unwieldy, or H itself would have to be defined as a segmentally-vacuous cumulative affix, comprising only a floating tone feature and some manner of stipulation on the syllable to which the tone applies.

2.2.2. THE CHUNKING APPROACH AND N

In the chunking approach, N in a verb like *ghida* ‘s/he sat’ is not taken as the formal manifestation of an independent morphological process marking third-person subject agreement.

Instead, this nasal feature is just one of a set of phonological features comprising the unsegmentable prefix (or I-stem) *ghj-*. In a form like *ghida*, N does not present the same kind of challenge to the chunking approach that H does; in this form the nasal feature manifests within the proposed inflectional domain, interior here to the [ɣ] corresponding with a meaning of perfective aspect. Even so, as with H there are verb-forms in which N might be argued to represent the operation of an oral/nasal alternation on a syllable outside of this domain. The verb-forms in (24) are such cases, paralleling those in (23).

- (24)
- | | | | |
|----|--|----|--|
| a. | <i>náyit'áth</i>
<i>ná#ye-N-Ø-t'áth</i>
ITER#4.OBJ-PFV.3.SBJ-cut
's/he cut it' | b. | <i>ts'iyíya</i>
<i>ts'i-yé#N-ya</i>
boat-in#pfv.3.sbj-go.pfv
's/he got in a boat' |
| c. | <i>háriʔa</i>
<i>há#de-N-ʔa</i>
out#TH-PFV.3.SBJ-handle.round.object.PFV
'it was emitted' | | |

(Florence St. Pierre: 2022)

In (24a), the oral vowel [ĩ] replaces the mid vowel [ɛ] which otherwise forms the nucleus of the fourth-person object marker *ye-*, just as H manifests on *ye-* in (23a). In (24c) we find a form paralleling that of (23c); here the nasal vowel replaces the oral vowel of a thematic prefix *de-*, just as *de-* hosts H in (23c). Lastly, the form in (24b) is particularly interesting, in that the nasal vowel [ĩ] replaces the oral nucleus of prefixed postposition *yé-* 'in', a prefix which Cook locates

in position 10 of his template, well outside of the disjunct boundary (Cook 2004: 208-209). The forms in (24) pose a similar challenge to the chunking approach as H in (23).

The chunking approach has been proposed to obviate the need for “abstract morphophonemic rules”, but the forms in (24) show that even the proposed portmanteau morphemes are not exempt from such processes. If adhering to a chunking approach, we either have to assume that the underlying chunk *ghi-* has been obscured by this type of process or expand the inventory of chunks to include all such possibilities: a *yɨ-* ‘in.PFV.3.SBJ’, *yɨ-* ‘4.OBJ.PFV.3.SBJ’, and so on. Either approach misses simpler generalizations about morphological form-meaning correspondences.

I suggest that the chunking approach overemphasizes the “highly fusional” nature of the inflectional domain. In many cases, the proposed portmanteaux exhibit additional regularities in form-meaning correspondence that may be “factored out”, giving separate exponents of agreement and aspect that do not represent an unreasonable degree of abstraction; in some cases, in fact, they can be straightforwardly segmented into discrete segmental affixes. This is just the case if we return to the partial paradigm of TSAGH ‘cry’ introduced in section 2.1.2 in (21). Here, the chunking approach would propose three aspect-agreement portmanteaux applied to the verb root *tsagh* to derive the perfective verb-forms in the rightmost column. These three portmanteaux would be, therefore, *ghi-* ‘1SG.SBJ.PFV’ *ghí-* ‘1PL.SBJ.PFV’ and *ghí-* ‘3.SBJ.PFV’. It is problematic to treat this set of prefixes as resistant to further decomposition into more primitive correspondences of sound and meaning. As I have discussed in section 2.1.2., there are form-meaning correspondences in this paradigm, within and between the proposed chunks, which presumably would not be lost on a language-learner. We observe a regular correspondence between ‘perfective’ and *gh(e)-* and correspondences between form and agreement, in this case

manifested as differences in tone and vowel quality, *i*, *í*, and *ĩ* in the first-person-singular, first-person plural, and third-person forms respectively. It does not seem unreasonable to expect language-learners to attend to and acquire these generalizations. This becomes even more striking if we consider the repetition of these patterns in different classes of verbs as well, as in the *the-* class verbs in forms like *thĩłtsĩ* ‘I made it’. A speaker comparing verbs like *thĩłtsĩ* with ones like *ghĩtsagh* would presumably have little difficulty acquiring the generalization that *i-* marks a first-person-singular subject agreement while *gh-* and *th-* mark perfective aspect. Similarly, comparison of verbs like *ghĩtsagh* ‘I cried’ and *ghĩłtsagh* ‘s/he cried’ should afford the learner with evidence that third-person verb-forms may be derived by the addition of a nasal feature. As with H, it appears that the chunking approach cannot provide a satisfactory account of the behaviour of N within Dene Sųłíné’s system of verbal inflection.

CHAPTER 3. RESEARCH QUESTION AND METHODOLOGY

3.1 RESEARCH QUESTION

As I have outlined in Chapter 2, Dene Sų́liné's non-segmental exponents, H and N, are challenging to account for in strictly morpheme-based, or "item-and-arrangement" models of morphology. It is adherence to a morpheme-based model, implicit in the Derivational and Chunking accounts of H and N presented in Chapter 2, that necessitates the means (complex phonological derivations and "chunking") employed to reduce these patterns to affixation. In Chapter 2, I have suggested that the perceived difficulties in accounting for this type of inflectional exponent may in fact stem from this adherence to morpheme-based analysis and have proposed a possible alternative analysis, treating H and N as instances of non-concatenative morphology. Non-concatenative morphology is of interest to questions underlying a division between "lexical" approaches to morphological theory and "inferential" approaches (Stump 2001: 1). As such, I propose that these morphological phenomena of Dene Sų́liné provide an interesting opportunity to evaluate the explanatory potential of each theory type. The questions my thesis seeks to address in this regard are the following: is there potential for a simpler account of Dene Sų́liné H and N as non-affixal, non-concatenative morphological processes?; are both types of theory equally capable of accounting for the function of H and N in Dene Sų́liné?; and if not, does one theory type have advantages over the next and what does this entail for a theoretical understanding of morphological phenomena? To address these questions, I test applications of two theoretical frameworks representing each type: Distributed Morphology (DM), representing the lexical type, and the inferential framework of Paradigm Function Morphology (PFM). I apply both frameworks to an analysis Dene Sų́liné's system of verbal inflection, focusing on the operation of H and N in this system.

3.2 METHODOLOGY

My evaluation of the Distributed Morphology and Paradigm Function Morphology frameworks proceeds from the basic descriptive facts of Dene Sų́líné verbal morphology provided by Cook (2004). As a starting point for my theoretical applications I consider the forms of Dene Sų́líné verbs provided by Cook and Elford and Elford (1998) and the regular form-meaning correspondences and contrasts in form exhibited across these sets of forms. Proceeding from these descriptive facts, applications of both frameworks consist, very generally, of definitions of morphological primitives, the basic component parts of the morphological derivation, and definitions of the processes by which complex verb-forms are derived from these basic components. Applications in Chapter 5 shed light on the quite different conceptualization of these “primitives” and “processes” in each framework. Despite their differences, applications of both frameworks entail accounting for how units of phonological form relate to units of meaning, how units of form “combine” to create the complexes of form and meaning that are inflected verb-forms, and what morphosyntactic structure is attributed to these complexes. As the correspondences of form and meaning are often non-isomorphic, with many inflectional meanings realized by multiple forms, each application must also account for distributional characteristics of these multiple formatives, such as patterns of mutual exclusivity, co-occurrence restrictions, etc.

There is a challenge in defining the synchronic grammar of Dene Sų́líné verbal morphology working from sources such as Cook (2004) and Elford and Elford (1998) arising due to both sources’ inclusion of data from multiple dialects, at times without adequate attribution of data to a particular community. As was observed in Chapter 1, Dene Sų́líné is spoken in numerous isolated communities spanning a broad geographical range, with various dialectal

differences between the language as spoken by different communities. It is potentially problematic, therefore, to define a synchronic grammar of Dene Sų́líné as a single “monolithic” language based on such data. To address this challenge and to engage with the Dene Sų́líné community, I have been privileged to work with and learn from members of the Wollaston Lake (Dene Sų́líné: Thę́łtué) Dene Sų́líné community, eliciting spoken language data with which to inform a synchronic analysis. This elicitation work simplifies efforts toward such an analysis, providing a cohesive dataset based on a single dialect. It has also provided an opportunity to study any points on which Wollaston Lake Dene Sų́líné differs from the description provided by Cook and to consider how these differences, evidence of diachronic change, might inform an understanding of Dene Sų́líné’s morphological system.

Examples of spoken Dene Sų́líné were elicited using visual stimuli (Appendix A) designed to target the relevant distinctions in aspect and subject agreement. The basic concept behind stimuli was to contrast a single image of an action or event in progress (e.g. an individual singing) with a short visual narrative placing the same image in the context of sequence of events (e.g. an individual taking the stage, singing, bowing and departing). Images depicting an event in progress (e.g. an image of a woman singing) were used to elicit descriptions employing imperfective verb-forms (e.g. *hejen* ‘she is singing’) while the same image embedded in narrative was used to elicit the perfective form (e.g. *daheya ghejen ú náya* ‘she went up, sang and left’). To elicit distinctions in person, language consultants were asked to imagine that the situations depicted in visuals had involved them personally (targeting first-person) or to myself (targeting second-person). In other cases, the language consultant was asked to recall a memory from her past, a more natural activity but one which made targeting particular lexical items more

challenging. Elicitations were conducted online using Zoom video conferencing software with audio captured using this same software.

Recordings of elicited speech were divided into separate audio-files corresponding to individual utterances and analyzed to ascertain the appropriate descriptive generalizations concerning the occurrence and function of H and N. Individual recordings were analyzed in Praat to ascertain relevant phonetic details, such as pitch contours. Verb-forms were analyzed to identify those exhibiting H and N and to identify the extent to which the distribution of these patterns agreed with existing descriptions of other Dene Sų́líné dialects, such as that provided in Cook's grammar. Distributional factors considered included the distribution of H and N with respect to agreement (i.e. the presence or absence of these patterns depending on the number of the agreeing subject), and with respect to inflection-class membership. Details of this empirical study are described in Chapter 6.

CHAPTER 4. THEORETICAL INTEREST OF H AND N: THE LEXICAL-INFERENTIAL DICHOTOMY

In the present chapter, I introduce theoretical background motivating my interest in non-concatenative morphology and Dene Sų́líné's morphological implementation of tone and nasality. I highlight the specific relevance of non-concatenative morphology to evaluations of the strengths and weaknesses of two types of theory, which, following Stump (2001), I discuss in terms of a lexical-inferential dichotomy. I then introduce the two theoretical frameworks examined in my thesis and exemplifying this dichotomy, Paradigm Function Morphology (PFM) and Distributed Morphology (DM), introducing the key features of each and illustrating these features with examples drawing on relevant Dene Sų́líné data.

4.1 A TAXONOMY OF MORPHOLOGICAL THEORY

Theories of morphology may be broadly classified according to two types: Item-and-Arrangement (IA) frameworks or Item-and-Process (IP) frameworks, terms introduced by Hockett (1954)¹¹. The two types differ in their treatment of the basic units of morphological structure and the principles underlying the derivation of complex word-forms. In IA frameworks (e.g. Jensen & Stong-Jensen 1984; Lieber 1992; Halle & Marantz 1993), the fundamental unit of linguistic structure is the morpheme¹² and morphological processes are understood to be fundamentally syntactic; complex word-forms result from the combination of morphemes into larger structures with compositional meanings.

¹¹ This classification is not exhaustive, however, as Hockett himself observed (p. 210); a third type exists in the Word-and-Paradigm model. I briefly consider one such approach (proposed by Blevins (2006)) in Chapter 7.

¹² It is important to note that the “morpheme” does not receive equivalent treatment in all frameworks, with some approaches taking it to be unit of form, others a pairing of form and meaning, and others yet strictly a unit of meaning. The DM framework adopts this last conceptualization.

In IP theories, the second broad theoretical type, the derivation of morphologically complex words is understood to result from processes which are distinctly morphological. On this account, Syntax has no role to play in the morphological structure of complex words. In IP theories, morphologically complex words are proposed to be the products of morphological rules, not the concatenation of morphemes. In PFM, for example, a morphological rule realizes the pairing of an abstract lexeme and a set of morphosyntactic features by altering the phonological form of a stem instantiating that lexeme. On this approach, the affixation of segmental material to a stem is only one possible type of operation among many, including non-concatenative morphology. While IA approaches favour isomorphic, one-to-one mappings of form and meaning in the form of lexically listed morphemes, IP theories adhere to the Separationist Hypothesis (cf. e.g. Beard & Volpe 2005: 190) which supposes only an indirect link between form and meaning and rejects any expectation of an isomorphic relationship between the semantic/functional content of complex word-forms and the phonological forms signaling this content. This separation is proposed to account for the abundance of morphological phenomena exhibiting non-isomorphism of form and meaning, such as non-concatenative morphology, cumulative exponence, multiple exponence, allomorphy, and empty morphs.

Advocates of DM, one manifestation of the IA approach, argue for an appeal in treating all linguistic phenomena, from the clause down to sub-word level, as the outcome of one fundamental operation, that of syntactic arrangement—in other words “Syntax all the way down” (Harley & Noyer 1999). The limitation to affixation inherent in such approaches has been argued to contribute to a more parsimonious and restrictive theoretical model (Siddiqi 2019: 152). For this reason, theorists advocating Item-and-Arrangement models emphasize the predominance of affixal morphology throughout the world’s languages (Siddiqi 2019: 152). IP theorists, on the

other hand, argue that the observed cross-linguistic prevalence of affixal morphology does not necessarily reflect constraints on synchronic grammar, if the relative proportions of affixal and non-affixal morphology can be attributed to the historical processes by which such morphology enters a language (cf. e.g. Stump 2001: 19). IP theorists argue that the proposed restrictiveness of IA theories is only appealing as long as it is able to account for the observed facts, something they suggest is not the case, pointing to phenomena like non-concatenative morphology in making the argument.

Based on similar considerations to those underlying the IA-IP distinction, Stump (2001) proposes a taxonomy of theoretical approaches to morphology defined in terms of two independent dichotomies. The first dichotomy characterizes frameworks as LEXICAL or INFERENTIAL, a distinction corresponding roughly to that of Arrangement versus Process. In a lexical framework, the basic unit of morphology is the morpheme, and the morphologically complex word is derived through the combination of two or more such morphemes, each contributing its semantics and form to the whole. The central claim of inferential theories, by contrast, is that many morphological structures evade definition in terms of discrete morphemes, and that languages exhibit patterns of morphological relatedness which can only be captured with reference to complete word-forms and their organization into paradigms (e.g. Aronoff 1994; Blevins 2006; Stump 2016a). Where a morphological distinction is marked by the absence of a formal exponent, for example, rather than positing a phonologically null morpheme, the meaning is proposed to be inferred (hence “inferential”) based on contrasts with paradigmatically related word-forms.

The second independent dichotomy of Stump’s taxonomy classifies theories as INCREMENTAL or REALIZATIONAL. This distinction concerns the source of the meaningful content

of complex word-forms and its relation to the pieces of phonological form signaling this content. In incremental theories, the addition of meaning and form in a complex word is understood to proceed incrementally, such that each application of form, whether conceived of as a discrete morpheme or the result of a morphological rule, entails an accompanying addition of meaning resulting in an intermediate stem comprising the forms and meanings thus combined. In realizational theories, by contrast, the complete meaning of a complex word-form (i.e., its combination of lexical and functional meanings, e.g. <EAT: {present; 1.sg.sbj}>), is understood to be given at the outset of the morphological derivation and the formal realization proceeds based on this complete set of meanings.

The independence of Stump's two dichotomies permits free combination resulting in four logical possibilities for theory types: lexical-incremental, lexical-realizational, inferential-incremental, and inferential-realizational. All four logical possibilities may be exemplified by existing theoretical frameworks: lexical-incremental theories have been developed by Lieber (1992) among others; the lexical-realizational type is exemplified by the framework of Distributed Morphology, first developed by Halle and Marantz (1993) and employed in a considerable body of subsequent research (e.g. Siddiqi 2009); an inferential-incremental framework is proposed by Steele (1995); and lastly, inferential-realizational frameworks have been argued for by Stump himself (Stump 2001) among others (e.g. Aronoff 1994; Anderson 1995).

My thesis compares the suitability of the frameworks of Distributed Morphology (lexical-realizational) and Paradigm Function Morphology (inferential-realizational) in providing a complete and compelling analysis of the morphological patterns of Dene Sų́liné H and N. The choice of these two particular frameworks is motivated by a number of considerations. Firstly,

limiting my analysis to realizational frameworks narrows the focus of my research question and simplifies comparison of theoretical approaches by focusing on one of the distinctions covered by Stump's taxonomy, the lexical-inferential distinction. It is this distinction which is of greatest interest in examining putative cases of non-concatenative morphology, given the primacy of affixal morphology in lexical frameworks like DM and for the role non-concatenative morphology has played in debates over the merits of each type (cf. e.g. Svenonius & Bye 2011; Stump 2016a). Secondly, both frameworks have undergone years of development, with the result that both have been defined with a relatively high degree of rigour and explicitness. Furthermore, both have had considerable influence, spawning significant bodies of research (e.g. Siddiqi 2009; Bond 2016; Kramer 2016; Pomino & Remberger 2019). For these reasons, the theories of DM and PFM are useful candidates for an exploration of the relative strengths of lexical and inferential theory.

I hope through the preceding discussion to have illustrated the interest of non-concatenative morphology to the ongoing development of morphological theory, and to the evaluation of the relative merits of lexical and inferential approaches. In the following sections, I summarize the key features of two frameworks exemplifying this distinction, DM and PFM, illustrating the key features of each with reference to Dene Sų́liné verbal morphology.

4.2 PARADIGM FUNCTION MORPHOLOGY

PFM is an inferential-realizational framework developed by Gregory Stump as an account of inflectional morphology as an autonomous component of the grammar. The earliest complete definition of the framework appears in the 2001 monograph *Inflectional Morphology: A Theory of Paradigm Structure* (Stump 2001). Subsequent work has continued to develop the framework

and apply it to diverse morphological phenomena (e.g. Spencer 2004; Bonami & Stump 2016). Work subsequent to Stump (2001) has culminated in an elaborated second iteration of the framework, known as PFM2, with significant innovations addressing complexities of paradigm-structure (Stump 2016a). However, because the question of the best treatment of H and N is fundamentally a question of exponence, that is, a question concerning the formal realization of morphosyntactic content within word-forms, these phenomena primarily concern the core principles and mechanisms shared by both iterations of the model. As such, my focus in this section is on these core concepts and formal mechanism of PFM as they pertain to the question of H and N and to a critical evaluation of the lexical-inferential divide in morphological theory.

4.2.1 THE PARADIGM

As is likely apparent from the name of the framework, the paradigm is of central importance to morphology as conceptualized by PFM. Pre-theoretically, inflectional paradigms are a concept no doubt familiar to anyone with experience of pedagogical or descriptive grammars. In this pre-theoretical sense, an inflectional paradigm is a list of the various word-forms instantiating a common lexical meaning in an array of grammatical contexts. By and large, such paradigms are represented in the form of tables representing the orthogonal interaction of relevant inflectional categories, such as Aspect and Agreement. Table 1 depicts such a paradigm for the Dene Sų́líné lexeme SHÉ_TI ‘eat’.

Table 1: An inflectional paradigm of SHE_Tĭ ‘eat’

	Aspect		Mood
	Imperfective	Perfective	Optative
1sg	shéstĭ	shéghestĭ	shéwastĭ
2sg	shénetĭ	shéghĭtĭ	shéwutĭ
1pl	shéhítĭ	shéghítĭ	shéwútĭ
2pl	shúhtĭ	shéghuhtĭ	shéwuhtĭ
3	shétĭ	shéghetĭ	shéwatĭ

The inflectional categories relevant to the definition of the Dene Sų́líné verbal inflectional paradigm are Aspect, Mood and Agreement. The Aspect category is represented by the inflectional values of imperfective and perfective, while Mood contrasts an unmarked indicative with a morphologically-marked optative. The two aspect values and the optative mood are frequently treated together because they are realized in the same position within the verb and their exponents are mutually exclusive of one another. The three aspect/mood values freely combine with the five person values¹³ of the agreement system, resulting in the 15-cell paradigm of Table 1.

While the display of paradigms within a pedagogical grammar serves to illustrate and facilitate memorization of inflected word-forms, PFM presents the paradigm as an essential theoretical concept in the definition of a language’s morphology. This is not to suggest that speakers have tables such as Table 1 in their heads, any more than a Generative syntactician would suggest the existence of syntactic tree diagrams in a speaker’s head. Stump’s claim (2001:

¹³A transitive verb may also inflect for agreement with an object, resulting in an expanded paradigm.

32) is that part of a speaker's linguistic knowledge is an abstract representation of the possible pairings of lexical/morphosyntactic meanings and word-forms for any given lexeme in their language. In the terminology of PFM, each such pairing occupies an individual paradigm "cell", terminology relating PFM's theoretical notion of paradigm to the tables and cells of the pedagogical grammar. Each paradigm cell relates a pairing of lexical and morphosyntactic content to a fully inflected word-form.

In the formalism of PFM a paradigm cell may be abstractly represented as follows:
 $\langle L, \sigma : w \rangle$ where L represents a Lexeme, σ the set of morphosyntactic features defining one instantiation of L for a particular grammatical context, and w the word-form realizing the given pairing of L and σ . Thus, the PFM representation of the paradigm in Table 1 may be depicted as in Table 2:

Table 2: PFM representation of the inflectional paradigm for SHÉ_Tİ 'eat'

$\langle \text{SHÉ_Tİ}, \{1.\text{SG}, \text{IPFV}\} : \text{shéstî} \rangle$	$\langle \text{SHÉ_Tİ}, \{1.\text{SG}, \text{PFV}\} : \text{shéghestî} \rangle$	$\langle \text{SHÉ_Tİ}, \{1.\text{SG}, \text{OPT}\} : \text{shéwastî} \rangle$
$\langle \text{SHÉ_Tİ}, \{2.\text{SG}, \text{IPFV}\} : \text{shénetî} \rangle$	$\langle \text{SHÉ_Tİ}, \{2.\text{SG}, \text{PFV}\} : \text{shégħitî} \rangle$	$\langle \text{SHÉ_Tİ}, \{2.\text{SG}, \text{OPT}\} : \text{shéwutî} \rangle$
$\langle \text{SHÉ_Tİ}, \{1.\text{PL}, \text{IPFV}\} : \text{shéhîitî} \rangle$	$\langle \text{SHÉ_Tİ}, \{1.\text{PL}, \text{PFV}\} : \text{shégħîitî} \rangle$	$\langle \text{SHÉ_Tİ}, \{1.\text{PL}, \text{OPT}\} : \text{shéwûitî} \rangle$
$\langle \text{SHÉ_Tİ}, \{2.\text{PL}, \text{IPFV}\} : \text{shúhtî} \rangle$	$\langle \text{SHÉ_Tİ}, \{2.\text{PL}, \text{PFV}\} : \text{shégħuhtî} \rangle$	$\langle \text{SHÉ_Tİ}, \{2.\text{PL}, \text{OPT}\} : \text{shéwuhtî} \rangle$
$\langle \text{SHÉ_Tİ}, \{3, \text{IPFV}\} : \text{shétî} \rangle$	$\langle \text{SHÉ_Tİ}, \{3, \text{PFV}\} : \text{shégħetî} \rangle$	$\langle \text{SHÉ_Tİ}, \{3, \text{OPT}\} : \text{shéwatî} \rangle$

In the top left cell in Table 2, we find each of the abstract variables of the representation

$\langle L, \sigma : w \rangle$ instantiated by content corresponding to the first-person-singular imperfective cell in Table 1. The lexemic index SHÉ_Tİ instantiates L , σ is instantiated by the set of morphosyntactic features $\{1.\text{SG}, \text{IPFV}\}$ and w is instantiated by the inflected word-form realizing the pairing of the

lexeme $SHÉ_Tl$ and the features $\{1.SG, IPFV\}$: *shésti* ‘I am eating’. Taken without comment, the differences between the “pedagogical” paradigm in Table 1 and the “PFM” paradigm in Table 2 must appear to be fairly trivial. However, the additional features of Table 2 represent theoretical assumptions of central importance to the PFM theorist. The inclusion of the index $SHÉ_Tl$ highlights the importance of the lexeme to paradigm-based models of morphology, an abstract representation of the lexical content underlying and uniting the distinct word-forms of an inflectional paradigm. The set of morphosyntactic features in σ reflects the realizational nature of PFM; that is, the inclusion of the set of morphosyntactic features within a cell reflects the assumption that this content is given at the outset of the morphological derivation, the complete content represented by L and σ precedes and determines the form of the inflected word. By contrast, in an incremental theory (e.g. Lieber 1992; Steele 1995) it is the addition or modification of form which is understood to determine meaning.

The presentation of the paradigm in Table 2 is also deceptive for the way it obscures a central feature of the PFM framework. The representation of inflected word-forms (w) in each paradigm cell may give the impression that a paradigm is a list of stored forms. Though some theorists have argued for the paradigm as listed sets of interrelated word-forms (e.g. Blevins 2006), according to PFM, to the extent that inflectional forms are predictable by the application of general rules, word-forms are taken to be derived by the operations of morphological rules on stems. In PFM each paradigm cell (i.e. $\langle L, \sigma \rangle$ pairing) is related to an inflected word-form (w) by a function, the PARADIGM FUNCTION of the framework’s name, which is represented formally as in (25):

$$(25) \quad PF(\langle L, \sigma \rangle) = w$$

If this function simply mapped the content of a paradigm cell, $\langle L, \sigma \rangle$, to a word-form, w , this would appear to be nothing more than retrieval of stored word-forms. However, the Paradigm Function is itself defined in terms of morphological rules, termed RULES OF EXPONENCE, the subject of the following section, 4.2.2.

4.2.2 RULES OF EXPONENCE, RULE BLOCKS, AND RULE COMPETITION

A PFM Rule of Exponence is a function mapping inflectional meaning to a form by which that meaning may be inferred. Rules of Exponence operate on units of form, stems, associated with a given lexeme. While in some paradigms a single stem underlies the forms in every cell, in others the choice of stem varies depending on the content of σ . I return to the example afforded by the partial paradigm of TSAGH ‘cry’ (repeated from (21)).

Table 3: A partial paradigm of TSAGH ‘cry’

Sbj. Agr.	Aspect	Imperfective	Perfective
1 sg		hestsagh	ghitsagh
1 pl		hítsagh	ghítsagh
3		hetsagh	ghítsagh

Stem selection in the case of TSAGH ‘cry’ is straightforward; the stem takes the same form $/\widehat{tsay}/$ in every member of the paradigm. Because the set of features in σ contains the complete inflectional content of a given cell, typically only a subset of σ is relevant to the definition of a

particular Rule of Exponence. Comparison of the rightmost column of perfective forms in Table 3 with the adjacent column of imperfective forms reveals a regular correspondence between the content ‘perfective’ and the form <ghe> ([yɛ]). Based on this correspondence, we might define a PFM Rule of Exponence licensed by the presence of a [pfv] feature in σ which affixes the segments [yɛ] to the left edge of the stem. In the formalism of PFM, this rule is represented using the notation in (26).

- (26) a. $X, C, \{\tau\} \rightarrow f(X)$
 b. $X, V, \{pfv\} \rightarrow y\epsilon X$

The notation in (26a) represents the most abstract definition of a Rule of Exponence, where X is a variable over stems, C a variable over lexical-class, τ is a subset of the morphosyntactic features (σ) associated with a paradigm cell, and f is an operation altering the stem’s phonology. In the less abstract rule in (26b), some of these variables are instantiated with the content giving a preliminary definition of the rule deriving perfective forms with *ghe*-. C has been replaced with the appropriate lexical-class, in this case $V(erb)$; in place of τ we now find the relevant morphosyntactic feature $\{pfv\}$; lastly, in place of the variable f we find a representation of the operation acting on the stem, “ $y\epsilon X$ ”, signifying affixation of the form [yɛ] to the stem’s left edge. I retain the variable X in (26b) to capture the fact that the operation affixing [yɛ] may apply to a wide variety of lexemes and stems (e.g. *shéghetj* ‘s/he ate’; *ghesjen* ‘s/he sang’ etc.). Stated plainly, when the semantic or syntactic context provides a given pairing of lexical meaning and perfective meaning, the morphology inflects the verb by affixing the form [yɛ]- to an appropriate stem. This is only an approximation of the rule introducing the operation *gheX*, which, at the

very least, would also need to refer to inflectional class; as described in Chapter 1 *ghe-* is only one of the primary affixal markers of perfectivity, with verbs of other classes taking *the-*. As such, a rule as in (26) which realizes all instances of ‘perfectivity’ with *ghe-* is too general. However, the rule will suffice at present to illustrate the basic workings of PFM Rules of Exponence. Though the operation considered here is fundamentally concatenative, prefixing [ʏɛ] to a stem, it is important to note that, for the PFM theorist, ʏɛ- is not a morpheme, nor is the resultant form, ʏɛX, taken to have morphological structure; ʏɛX is merely the formal output of the realization rule in (26b) from which a speaker may infer the meanings associated with corresponding paradigm cell ($\langle L, \sigma \rangle$).

Because a Rule of Exponence, such as (26b), may realize only a subset of the morphosyntactic features of a paradigm cell, it may only be one part of the complete inflectional process deriving the inflected word; several Rules of Exponence may be required to derive a fully-inflected word-form. Looking again to the paradigm for *SHÉ_TI* in table 2, we observe the familiar contrast in form between imperfective and perfective forms, with the latter taking *gh(e)-*, reflecting the operation of a Rule of Exponence like (26b). What remains to be accounted for is the forms signaling contrasts in agreement. Taking the first-person perfective form *shéghestj* ‘I ate’ as an example, what sets this form apart from perfective forms agreeing with other combinations of person and number are the sounds following [ʏɛ] and immediately preceding the stem. Thus, in *shéghestj* ‘I ate’ we find [s], in *shéghuhtj* ‘You (pl.) ate’ we find [uh], and so on. Thus, a complete PFM account of Dene Sų́líné verbal inflection requires additional Rules of Exponence realizing the appropriate agreement features with the forms observed. I give an initial approximation of these rules in (27).

- (27)
- | | |
|----------------------|-------|
| a. X, V, {1.sg} | → sX |
| b. X, V, {1.sg, pfv} | → iX |
| c. X, V, {2.sg} | → nεX |
| d. X, V, {2.sg, pfv} | → iX |
| e. X, V, {1.pl} | → iX |
| f. X, V, {2.pl} | → uhX |

The rules in (27) operate in a like manner to those in (26). When context dictates agreement with a singular first-person subject, the relevant rule (27a) applies, affixing the segment [s] to the left edge of the stem. In the case of a singular second-person subject, rule (27c) affixes [nε], and so on.

The set of rules in (27) is also useful to illustrate two further characteristics of PFM Rules of Exponence. Firstly, Rules of Exponence are organized into sets called RULE BLOCKS. A Rule Block is a set of rules applying disjunctively, competing to apply in the same relative position in the sequence of rules defining a language's morphology. Often, this disjunctivity can be semantically justified, as is the case for the rules in (27); it is natural to expect a verb not to simultaneously express agreement with more than one distinct set of agreement features for a single argument. In other cases, the mutual-exclusivity of rule application and organization of rules into blocks is not semantically motivated. The mutual exclusivity of aspect and mood in Dene Sų́líné provides an example. The rules in (28) provide an approximation of the Rule Block introducing exponents of aspect and mood in Dene Sų́líné.

- (28) a. $X, V_{ghe}, \{pfv\} \rightarrow gheX$
 b. $X, V_{the}, \{pfv\} \rightarrow theX$
 c. $X, V, \{opt\} \rightarrow waX$

Like the rules in (27), the block of rules in (28) are mutually exclusive. The point I wish to illustrate with this particular block is that mutual exclusivity of the optative mood and values of aspect does not follow from their semantics. Combinations of optative and imperfective or optative and perfective semantics are not inherently problematic (e.g. *I should be eating, I should have eaten* in English). If the mutual exclusivity of these rules does not have a semantic explanation, it would seem that this is an arbitrary restriction on co-occurrence which the Dene Sųliné-learner must acquire. For the PFM theorist, what the learner has acquired in this case is the Rule Block in (28) where application of rule (c), introducing the optative prefix *wa-*, is mutually exclusive of applications of rules (a) or (b) introducing aspect prefixes, *the-* and *ghe-*.¹⁴

The pairing of L and σ associated with a given paradigm cell determines the rules which apply to derive the appropriate inflected word-form. Rule selection is determined by competition between the rules in a given Rule Block. The outcome of rule competition is decided in favour of the most narrowly-defined rule agreeing with the set of features in σ . This principle of precedence based on specificity, known as Pāṇini's Principle, has been widely utilized in accounting for morphological phenomena (e.g. Halle & Marantz 1993; Anderson 1995; Stump 2001). The rules in (28) offer an example of the operation of Pāṇini's Principle in determining rule application. Rule (27c) introduces the form $[n\epsilon]$ to realize agreement with a second-person-

¹⁴ Stump (personal communication) suggests that the mutual exclusivity of these aspect and mood exponents might also be effectively captured by taking *the-* and *ghe-* to be expressions of indicative mood as well as of perfective aspect, thereby accounting for their mutual exclusivity with the optative prefix in way that is semantically motivated.

singular subject. This rule competes with rule (27d), however, which also realizes second-person-singular subject agreement. If σ includes both the features [pfv] and [2.sg.sbj], rule competition is decided in favour of (27d), which agrees with the features in σ and is more narrowly defined.¹⁵

A second important characteristic of PFM Rules of Exponence and Rule Blocks concerns their ordering. An important difference between the lexical and inferential approaches concerns morphotactics, the linear relationships between the meaningful pieces of morphological form. In PFM, surface morphotactics reflects the relative ordering of Rule Blocks in the definition of the Paradigm Function. The preceding discussion of Realization rules has glossed over this consideration of morphotactics. Applying a rule such as (28a) to a stem such as *shé_tj* produces *shéghetj*, which is a perfectly grammatical verb-form if context dictates agreement with a third-person subject. However, if context requires agreement with a first-person-singular subject, and therefore the verb-form *shéghestj* ‘I ate’, then a speaker’s morphological knowledge must also somehow encode the relative ordering of the rules affixing *ghe-* and *s-*. This is accomplished in PFM through the ordering of Rule Blocks in the definition of the Paradigm Function. Assigning the Rule Block in (27) the index 1, and that in (28) the index 2, the PF for Dene Sų́líné may be simply defined as in (29).

$$(29) \quad \text{PF}(L, \sigma) = (\text{RB}_2(\text{RB}_1(X)))$$

“Fed” a paradigm cell (i.e. $\langle L, \sigma \rangle$ pairing), (29) produces the expected inflected verb by the repeated application of Rules of Exponence. The narrowest applicable rule in RB_1 applies,

¹⁵ This is a simplification of the facts, however, as the distributions of *ne-* and *j-* are subject to the same complex conditions determining the distribution of *the-* and *H*.

returning an output (e.g. $n\epsilon X$) that serves as input to the narrowest applicable rule from RB_2 . In this way the PF derives the fully-inflected word-form associated with any given paradigm cell. The formulation in (30) illustrates the proposed operation of a PF in deriving the first-person-singular perfective form of the lexeme TSAGH ‘cry’.

$$\begin{aligned}
 (30) \quad PF \langle TSAGH, \{1.SG, PFV\} \rangle &= (RB_2(RB_1(tsagh))) \\
 &= (RB_2(itsagh)) \\
 &= \mathbf{ghitsagh}
 \end{aligned}$$

Competition amongst the member rules of RB_1 is decided in favour of rule (27b), the rule narrowest in definition and agreeing with the morphosyntactic features in σ . This rule applies the segment [i] to the left edge of the stem. RB_2 rule competition is decided in favour of rule (28a) which affixes [$\gamma\epsilon$] to the left edge of the output of RB_1 . This provides the inflected form *ghitsagh*, filling the first-person perfective cell of TSAGH. Though words of high frequency may be stored and retrieved, the assumption is that in many cases inflection constitutes the operation of a PF like that depicted in (30).

With this, I conclude my introduction to key concepts of PFM. Each of the concepts defined and illustrated in this section will come into play in the PFM application to H and N in Chapter 5. In the following section, 4.3, I provide a similar introduction to the basic concepts and mechanisms of the DM framework, paralleling the introduction provided here to the extent that this is possible.

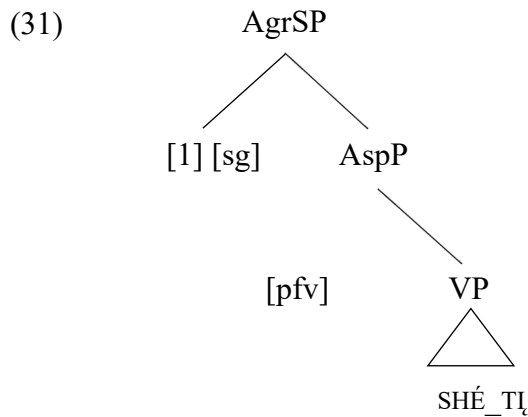
4.3 DISTRIBUTED MORPHOLOGY

The formulation of Distributed Morphology (DM) was roughly contemporaneous to that of PFM, and, like PFM, DM has undergone various iterations and innovations since the time of its initial formulation (e.g. Trommer 1999; Siddiqi 2009). Halle and Marantz (1993) introduced the first formulation of DM, presenting the framework as an alternative to inferential theories (taking Anderson's A-Morphous Morphology (Anderson 1995) as the target for their critique of the inferential approach). The DM framework centres on a rejection of Lexicalism, that is, a rejection of an independent morphological component, or generative lexicon, responsible for the derivation of complex words (Siddiqi 2019: 145). In DM, the operation of morphology is proposed to be distributed between the syntax and the phonology, not attributed to an autonomous morphological module. It is this "distributed" treatment of morphological phenomena to which the framework owes its name. As with other theories representing Stump's lexical type, in DM, both stems and affixes receive equivalent treatment as stored lexical items. However, DM differs from earlier lexical approaches in that the morphemes proposed to be manipulated by the syntax are taken to be formless bundles of features and are assigned phonological forms subsequent to the syntactic derivation. It is this relationship between content and form which places DM alongside PFM in Stump's taxonomy as an example of a realizational theory.

4.3.1 CLAUSE STRUCTURE AND FUNCTIONAL HEADS

In the interest of comparison, I attempt to introduce the key features of DM in a way paralleling the preceding account of PFM, though the quite different conceptualization of morphology proposed by each framework makes a direct comparison difficult on some points.

I began my discussion of PFM with the concept of the paradigm, the proposed “foundation” of the morphological architecture and source of the lexical and morphosyntactic features relevant to inflection. In DM, the paradigm is epiphenomenal; paradigms, to the extent that they merit discussion as such, simply emerge as a consequence of the combinatory potential of the lexical and functional morphemes entering the syntactic derivation. The morphosyntactic features relevant to the inflectional derivation enter the syntactic derivation as phrase-heads occupying terminal nodes. For the purposes of a discussion of verbal inflection, the relevant syntactic structure is VP and the functional phrases dominating it. Thus, assuming the relevant morphosyntactic features for the Dene Sųliné verb *shéghesti* ‘I ate it’ to be [1], [sg], and [pfv] we might attribute these features to the heads of functional phrases in a syntactic structure resembling (31).



To the DM theorist the “morpheme” is any of the set of feature bundles occupying terminal nodes in a syntactic structure like (31). In PFM, the set of morphosyntactic features associated with a given paradigm cell (σ) is unordered and unstructured. The phonological form of the word

and the linear arrangement of exponents (to the extent that it may be described in terms of linearity) are determined by the morphological rules and Rule Blocks defining the Paradigm Function. In DM, however, the structure of morphologically-complex words is understood to be derived from the syntactic arrangement of lexical and functional morphemes. If an inflected word's form exhibits non-isomorphism with the presumed syntactic structure, the DM theorist derives the morphological structure via combinations of movement or post-syntactic processes. Perhaps the key difference between the two models in terms of content is that in PFM, the "contentful" inflectional features originate in the paradigm in an unstructured, unordered list, while in DM, features originate in syntactic terminal nodes, and the syntactic structural relationships into which these morphemes enter is assumed to be reflected in morphological structure either directly or indirectly through the application of movement and post-syntactic processes.

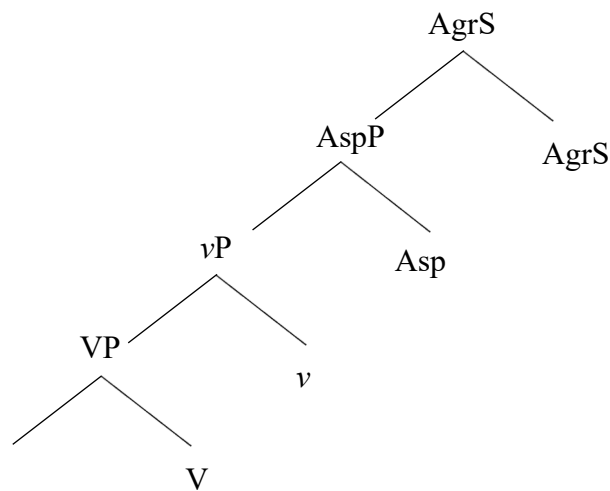
4.3.2 THE DM ACCOUNT OF MORPHOTACTICS

In section 4.1.2, I described how PFM takes an inflected word-form's morphotactics to reflect the ordering of Rule Blocks in the definition of the Paradigm Function (see (30)). Though the ordering of morphological exponents may reflect cross-linguistic tendencies of the sort observed by Bybee (1985) or Rice (2000), the synchronic ordering of Rule Blocks is effectively an arbitrary, learned fact about an individual language. In DM, by comparison, where a relationship between syntactic structure and morphotactics is a central assumption, non-isomorphism between syntactic structure and surface morphotactics must be accounted for. This is accomplished by five chief processes, some adopted from syntactic theory, others innovative. These are: morpheme addition, head-movement, merger, fusion, and fission. In the present

section, I briefly introduce the most relevant of these mechanisms, drawing on Dene Sųlíné data to illustrate their implementation.

The first mechanism I consider is head-movement. This is the process whereby a morpheme, as phrasal head, moves to a new position in the syntactic clause, there adjoining with the head of the phrase targeted by movement. The relevance of head-movement to a DM account of Dene morphology is discussed in detail in Chapter 5. For present purposes I provide a simple illustration. As has been observed, the Dene “classifier” correlates to meanings of voice and valency. For this reason it has been proposed to originate as the little-*v* head in a structure such as (32) (Rice 2000; Harley 2011).

(32)

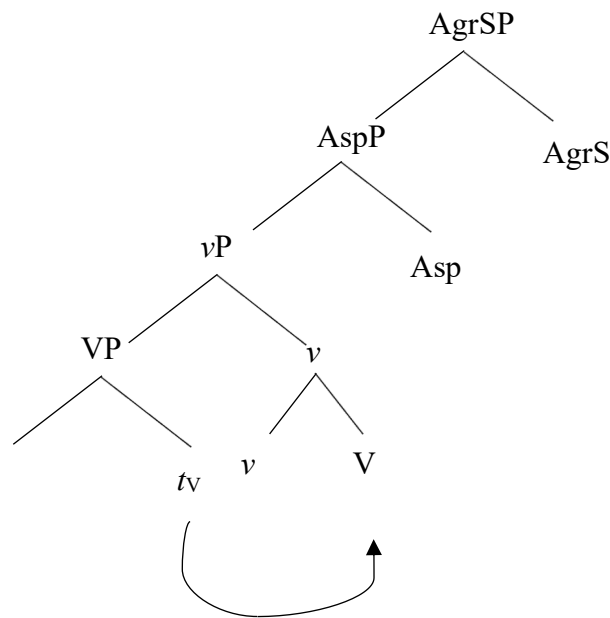


If surface morphotactics were isomorphic with the structure in (32), we would predict a verb with the structure V-*v*-Asp-AgrS, where in fact we observe Asp-AgrS-*v*-V. (e.g. *ghe-s-d-yen*; {PFV-1.SG.SBJ-CL-sing}; ‘I sang’). Though head-movement alone may not be sufficient to derive the latter from the former, this process has been proposed as the mechanism effecting the

reversal of the verb root and classifier observed in the surface verb-form (Harley 2011: 25).

Thus, a first step in a DM derivation of the Dene Sų́liné would be head-movement as in (33).

(33)



The proposed outcome of a head-movement is a complex head comprising two discrete morphemes into which two discrete Vocabulary Items would be inserted. In the case of the head-movement depicted in (33), movement and adjunction of V are taken to reverse the relative positions of V and *v*, producing the observed surface order of the Dene classifier and root.

Further manipulations would be necessary to bring the remaining morphemes into a configuration reflecting Dene Sų́liné surface morphotactics.

The second mechanism I consider is merger, or merger-under-adjacency (MUA). Merger, like head-movement, results in a complex head comprising discrete morphemes. Merger is taken to be limited to structurally-adjacent phrases, and generally “joins a head with the head of its complement XP” (Halle & Marantz 1993: 117). What MUA permits, in effect, is head-

movement to a position lower in the tree resulting in a complex word comprising (at least) two discrete morphemes into which two discrete Vocabulary Items will be inserted. MUA will also figure prominently in the application of DM to Dene Sų́líné verbal morphology in Chapter 5.

Though fusion and fission will not figure in my application to follow, I briefly describe how they are proposed to operate. Fusion, like head-movement and MUA, joins together two heads, but differs from the latter two mechanisms in that the result is a single morpheme, realized by a single Vocabulary Item. Thus, fusion is the proposed mechanism at play in instances of cumulative exponence, where a single unit of morphological form expresses a combination of inflectional meanings. Therefore, if it were determined that the chunking approaches described in Chapter 2 were in fact the best manner of understanding the Dene Sų́líné verb, then the DM theorist would take the proposed portmanteau morpheme (*e.g.* *ghi-* ‘pfv.3.sbj’) to be the result of an instance of fusion, combining the Asp and AgrS heads into a single morpheme occupying a terminal node. The resultant morpheme, semantically complex but structurally simplex, sets fusion apart from head-movement and merger, which result in complex heads. In this case, the resultant fused morpheme would be realized by a single Vocabulary Item, such as the proposed chunk *ghi-*. Fission is the opposite and complementary mechanism to fusion, whereby a semantically complex morpheme is split into multiple morphemes, each realized by a discrete Vocabulary Item. Halle and Marantz employ fission in an analysis of Georgian verbal morphology, splitting agreement features of person and number into discrete morphemes (1993: 118).

Combinations of the above-described mechanisms are proposed to account for mismatches between assumed universals of clause structure and observed language-specific morphological structure, whether differences of linear arrangement (morphotactics) or those of

form-meaning correspondence (e.g. cumulative exponence). The structure resulting from these various processes may therefore have a greater or lesser number of terminal nodes than the presumed SS structure and in different hierarchical arrangements. It is the terminal nodes of this derived structure into which Vocabulary Items compete for insertion via a process of Vocabulary Insertion. Details of Vocabulary Insertion are the topic of the following section.

4.3.3 VOCABULARY INSERTION

In PFM, the set of morphosyntactic features associated with a given paradigm cell determines which Rules of Exponence will operate to define the phonological form of the inflected word. In DM, morphemes manipulated by the syntax are formless bundles of morphosyntactic features understood to acquire their phonological form through a process of Vocabulary Insertion taking place after the syntactic/post-syntactic derivation. Vocabulary insertion operates to populate each terminal node with the most appropriate Vocabulary Item (VI) based on that terminal node's featural content. A DM VI is defined as a pairing of phonological form and meaning, and is typically represented in the manner of (34), where the left side of the definition provides the VI's phonological form, and the right side the feature(s) licensing its insertion.

$$(34) \quad /s/- \leftrightarrow [1]$$

The definition in (34) is that which I propose for one of Dene Sųliné's exponents of first-person subject agreement. According to this definition, the segment [s] will be inserted into a terminal node hosting the morphosyntactic person feature [1]. The DM Vocabulary Item resembles a PFM Rule of Exponence in that its definition comprises a phonological form and set of

morphosyntactic features. However, where a Rule of Exponence is conceptualized as an operation on a stem and its position relative to other such rules is defined by the ordering of Rule Blocks in the Paradigm Function, the VI in DM is a lexical item and its position within the complex word is the position of the insertion terminal node within the derived syntactic structure. Like rule competition in PFM, Vocabulary insertion operates in accordance with Pāṇini's Principle; the semantic component of VIs may be defined with greater or lesser specificity, and the insertion of a VI defined with greater specificity takes precedence over a more generally defined VI. VIs may be underspecified with respect to their featural component; a VI underspecified in this way may be inserted into a terminal node provided none of the features included in its definition conflict with features at the terminal node, and no more specifically defined VI exists that would take precedence. Given an agreement terminal node hosting the features [1] and [pl], though the VI in (34) agrees with the [1] feature and does not conflict with the [pl] feature in any way, Dene Sųliné's vocabulary must also be assumed to include a more specifically defined VI, including a [pl] feature in its definition and resembling that defined in (35).

(35) /id/- ↔ [1], [pl]

Given a phrase structure with [1] and [pl] features at AgrS, the VI in (35) applies, as it matches more of the features at the insertion site and contains no conflicting features. This would account for the use of *s-* in first-person-singular forms like *hesjen* 'I'm singing', but *id-* in a first-person plural form like *hįjen* 'we're singing'. The simple examples in (34) and (35) capture the basic operation of Vocabulary Insertion in DM.

4.3.4 NON-CONCATENATIVE MORPHOLOGY AS READJUSTMENT

As was observed in 4.1, non-concatenative morphology has figured prominently in arguments for inferential frameworks (and against lexical ones) for the difficulty in capturing such phenomena in terms of the concatenation of morphemes. To account for instances of non-concatenative morphology, DM employs what are known as READJUSTMENT RULES. Readjustment rules operate at PF, alongside Vocabulary Insertion and operate to transform the phonology of a targeted VI. The application of a Readjustment Rule is typically contingent on the insertion of a triggering VI. To illustrate, Halle and Marantz (1993: 128) propose rules to account for putative non-concatenative processes in English inflection. To account for the difference in stem form in a pair of verbs like *stand* and *stood*, for example, Halle and Marantz define the Readjustment Rule in (36) which is described as being triggered by the insertion of the [+past] suffix *-d*.

$$(36) \quad \text{Rime} \rightarrow /u/ / \text{X} ______ [+past]$$

\downarrow
x

where X-Rime = *shall, will, can, stand* (Halle & Marantz 1993: 128)

The Readjustment Rule in (36) is proposed to capture the fact that for the set of verbs including *stand*, the local presence of a [+past] morpheme and insertion of the VI *-d*, trigger the transformation substituting [ʊ] for the existing stem rime; thus, the past tense forms: *should*, *would*, *could*, and *stood*. Of particular relevance to an account of Dene Sųliné's non-segmental exponents, H and N, Halle and Marantz do not limit the application of Readjustment Rules to stems; they may also apply to affixes (Halle & Marantz 1993: 132). Thus the framework permits

possible interpretations of both N and H as the output of Readjustment Rules affecting the affixes on which they are manifested. This is a possibility considered in greater detail in the DM application in Chapter 5.

CHAPTER 5. PFM AND DM APPLICATIONS TO H AND N

Having established pertinent details of the PFM and DM frameworks in Chapter 4, in the present chapter I consider applications of the PFM (Section 5.3) and DM (Section 5.4) frameworks to Dene Sų́liné’s “non-segmental” exponents H and N, highlighting each framework’s strengths and weaknesses, notable challenges, and other points of interest revealed in the process. Before commencing an examination and comparison of the specifics of each framework, I first establish a number of analytic assumptions of relevance to both, the morphosyntactic categories and features forming the “contentful” side of the analysis (5.1), and inflection-class features relevant to selection of exponents (5.2).

5.1 MORPHOSYNTACTIC FEATURES

Both PFM and DM describe morphological content in terms of morphosyntactic categories (e.g. Tense, Aspect, Agreement) and the specific values or morphosyntactic features instantiating each category in a given construction (e.g. [pst], [pfv], [1.sg.sbj]). Establishing the relevant morphosyntactic categories and features at the outset will facilitate the applications of both frameworks to follow.

For the purposes of a consideration of Dene Sų́liné verbal morphology, and the H and N exponents in particular, the morphosyntactic categories of primary importance are Aspect (of which H is a primary exponent) and Agreement (of which I presume N to be a primary exponent). Transitive verbs may take two agreement prefixes, one each for subject and object arguments, and while neither H nor N realizes features related to object arguments, object agreement features (or the forms realizing them) are relevant to an account of H, as will be made clear in the sections to follow. A final morphosyntactic category relevant to Dene Sų́liné verbal

morphology, which will not figure in the discussion to follow, is Mood. In the discussion to follow I will employ the representations of morphosyntactic features listed in Table 4 below.

Table 4: Relevant morphosyntactic categories and features

Morphosyntactic Category	Morphosyntactic Features
Aspect	[pfv], [ipfv], [prog]
Mood	[ind], [opt], [imp]
Subject Agreement (AgrS)	[1.sg.sbj], [1.pl.sbj], [2.sg.sbj], [2.pl.sbj], [3.sbj], [ar.sbj]*, [def.sbj]*
Object Agreement (AgrO)	[1.sg.obj], [1.pl.obj], [2.sg.obj], [2.pl.obj], [3.obj], [ar.obj]*

*Feature abbreviations [ar.sbj]/[ar.obj] and [def.sbj] refer to the so-called “areal” subject/object and “default” subject introduced in Chapter 1

In definitions of Rules of Exponence (PFM) and Vocabulary Items (DM) in the analyses to follow, I will refer to the relevant features listed in Table 4. In some cases, however, reference to morphosyntactic features alone is insufficient to account for the selection of exponents, and rules or VI entries must also refer to inflection-class features.

5.2 INFLECTION-CLASS FEATURES

For several of the morphosyntactic features realized by Dene Sųlíné verbs, there exist multiple formal realizations for a single feature value. Examples of this type of many-to-one relationship between content and form include [1.sg.sbj], which is realized in some verb-forms by the prefix *s-*, and in others by the prefix *i-*; [3.sbj], which may be realized by N or the absence of a formal

exponent; [pfv], which may be realized by *the-*, *ghe-* or H; and [ipfv], which is typically unmarked but is realized by *the-* in some paradigms. The distribution of these various formal realizations contributes to the definition of a system of inflectional classes. Whether working within an inferential framework like PFM, or a lexical one like DM, a complete account of inflectional behaviour must make reference to inflection class to explain the choice of one exponent over another. In either framework, competition between exponents of this type is decided by including class-features in definitions for exponents (see e.g. Halle & Marantz 1993: 124; Stump 2001: 88). Class-features resolve competition between exponents which would arrive at a stalemate based solely on the morphosyntactic features realized. Successfully accounting for the morphological patterns observed in Dene Sų́líné using either framework therefore necessitates some account of the inflectional classes to be referred to. I propose a set of classes here to be referred to in both the PFM and DM analyses to follow.

In defining Dene Sų́líné inflectional classes, it is useful to start with the sets of aspect prefixes. In much of the literature on Dene languages these prefixes have been labelled “conjugation markers” for their utility in defining different conjugation classes. The two largest classes, defined in terms of choice of aspect prefix, are the \emptyset /*ghe-* and the \emptyset /*the-* classes. In both classes, imperfective aspect is unmarked, while the choice of perfective prefix varies depending on class, the former taking *ghe-* and the latter *the-*. A correlation has been proposed between the choice of perfective prefix and the lexical aspect of the verb: *the-* tends to be found in verbs with non-durative semantics (e.g. *theʔál* ‘s/he bit’), while *ghe-* is found in those with durative semantics (e.g. *eghıʔál* ‘s/he chewed’) (Wilhelm 2003a: 134). This correlation is imperfect, however. It is not clear, for example, why the lexeme DA_YA ‘go up’ should inflect with *the-* while NA_YA ‘go down’ should inflect with *ghe-* (Elford & Elford 1998: 169). There does not

seem to be anything inherently durative about ‘going down’, nor anything inherently non-durative about going up. Given the apparent arbitrariness of such distributions, I treat them as reflecting facts about inflectional class membership, rather than as indicative of a semantic distinction. Based on this distribution of aspect prefixes, an account of Dene Sų́liné inflectional classes must at least refer to the two classes of verbs marking perfectivity with one prefix or the other: a *ghe*-class and a *the*-class¹⁶.

Table 5: Preliminary definition of Dene Sų́liné verbal inflection classes

Dene Sų́liné verbal inflectional classes	
<u>Class 1 (<i>ghe</i>)</u>	<u>Class 2 (<i>the</i>)</u>
<i>ghesjen</i> ‘I sang’	<i>náthesze</i> ‘I hunted’

The broad two-class division in Table 5 is not entirely sufficient; the model must also account for the choice of agreement exponents. Third-person subject agreement lacks a formal exponent in imperfective verbs and a subset of perfective verbs, but is expressed by N in other perfective forms, while first-person verbs can be further divided according to their selection of the prefixes *s-* or *i-*. Verbs marking perfective with *ghe-* must be further differentiated; some verbs taking this perfective prefix exhibit N in third-person forms and the prefix *i-* in first-person-singular forms, while others lack formal exponence for third-person agreement and take the prefix *s-* in marking first-person-singular agreement. Likewise, verbs taking *the-* ‘perfective’

¹⁶ While these are the two classes most relevant to my study of Dene Sų́liné’s tonal and nasal exponents, this inflection-class representation does not capture the full range of inflectional behaviour of Dene Sų́liné verbs; a class of verbs with stative semantics inflects with a *the-/ghe-* pattern, taking *the-* in the imperfective and *ghe-* in the perfective (Cook 2004: 125), and, as will be discussed in Chapter 7, there are reasonable arguments for a \emptyset/\emptyset class as well, lacking any affixal exponent of aspect in either the imperfective or perfective.

must also be further differentiated. Verbs taking *the-* uniformly lack a formal exponent of third-person subject agreement, but differ in their selection of exponent for first-person-singular agreement, some taking *i-* 1.SG.SBJ and others *s-*. To account for this further differentiation I propose the addition of subclasses under each main class defined in Table 6.

Table 6: Further differentiation of Dene Sųliné verbal inflection classes

Dene Sųliné verbal inflectional classes and subclasses			
<u>Class 1 (<i>ghe-</i>)</u>		<u>Class 2 (<i>the-</i>)</u>	
<u>1a</u> (1.SG <i>s-</i>)	<u>1b</u> (1.SG <i>i-</i>)	<u>2a</u> (1.SG <i>s-</i>)	<u>2b</u> (1.SG <i>i-</i>)
<i>ghesjen</i> 'I sang'	<i>ghitsagh</i> 'I cried'	<i>náthesze</i> 'I hunted'	<i>thitł'q</i> 'I knit'

Further differentiation of subclasses within each main class permits a morphological derivation to select appropriate exponents for each class of verb by associating each exponent with the appropriate (sub)class feature. A lexeme or stem indexed for subclass 1b, such as TSAGH 'cry', will select *ghe-*, given this exponent's association with Class 1, and *i-* as an exponent of first-person subject agreement, given this exponent's more specific association with subclass 1b.

This inflection-class analysis is a departure from Cook's (2004) account of the distribution of the agreement exponents. As discussed in Chapter 2, Cook's account of the distribution of *i-* in first-person-singular forms and N in third-person forms identifies the classifier's form as the relevant conditioning factor, rather than inflection class. Thus, Cook describes a verb such as *ghitsagh* 'I cried' as belonging to the *ghe-* conjugation class, and accounts for the selection of the *i-* prefix with reference to the stem's classifier. Specifically, the

i- first-person-singular prefix and N in third-person forms are found in verb stems taking the “Ø” or *l-* classifiers, while the *s-* 1.SG.SBJ and “Ø” ‘3.SBJ’ are found in verbs taking the *d-* or *l-* classifiers. Whether this proposed account of their distribution is meant to reflect some manner of subcategorization or phonological conditioning is not entirely clear. These correlations between agreement exponents and classifier form are observable in the data, to the extent that classifiers are apparent in verb-forms. Thus, for example the forms *hureghitker* ‘I asked permission’ and *yureghitker* ‘s/he asked permission’ (Elford and Elford 1998: 102) exhibit the *l-* classifier in their stem *-itker*, and take the expected agreement prefixes *i-* ‘1.SG.SBJ’ and *ɨ-* ‘3.SBJ’, while a verb like *deghehpoh* ‘It (a moose) called’ exhibits the *l-* classifier and the expected null exponent of third-person agreement. The forms of classifiers are frequently obscured, however, and their proposed underlying forms are therefore quite abstract. This fact in turn obscures their correspondence with the exponents for agreement. Confusingly, *l-* has been frequently voiced to *l-* under the influence of neighbouring sounds while *l-* undergoes devoicing to *l-* for similar reasons, and both may be lost entirely to deletion (Cook 2004: 146). Furthermore, *l-* has undergone weakening to [h] in several dialects (including that spoken in Wollaston Lake) and is vulnerable to deletion through further weakening. The proposed *d-* classifier does not in fact appear as such in verb-forms, which Cook (2004: 70) attributes to coalescence or deletion depending on the form of the root-initial consonant. And, of course, the “Ø” classifier is merely the absence of any other classifier, which itself may be confused with any of the other classifiers lost to deletion. Given these complications, rather than attempting to attribute selection of agreement morphemes to abstract underlying classifiers, I propose that attributing their distribution to inflectional classes is a preferable and more realistic option. Therefore, in the

PFM and DM models to follow, matters of selection based on inflection class will refer to appropriate class features: 1, 2, 1a, 1b, 2a, 2b.

5.3 APPLICATION OF PARADIGM FUNCTION MORPHOLOGY

In the present section, I explore an analysis of the morphological exponents H and N within the PFM framework. Below, I apply the formal mechanisms of PFM to an analysis of these exponents, taking as examples three different types of verbs: those with simplex stems, those with discontinuous stems formed of a root and a conjunct prefix (henceforth DC stems) and those with discontinuous stems formed of a root and a disjunct prefix (DD stems). N is accommodated with little trouble in a PFM model, although, for various reasons to be discussed, I ultimately adopt an affixal analysis of this exponent. Accounting for H, however, suggests a number of challenges for a PFM account.

5.3.1 PFM AND N

In the PFM framework, an account of a particular morphological exponent entails the definition of a Rule of Exponence and the situation of this rule within the morphological system, as defined by the Paradigm Function. This latter consideration concerns the inclusion of the rule within a particular Rule Block and the organization of that Rule Block relative to other Rule Blocks. The basic definition of a Rule of Exponence captures two fundamental facts of an exponent: its formal characteristics and its contentful ones. That is, it must define the phonological change the rule effects on an input stem, and it must define the morphosyntactic (and class) features conditioning the rule's application. In the case of N, the formalization of both aspects of a Rule of Exponence raises a number of questions. Beginning with the formal component of the rule, I

have adopted “N” for this exponent, following Cook (2004), a label which Cook employs as shorthand for a “nasal feature” (p. 165). Cook’s use of the N label follows from his assumption that the nasality in third-person perfective verb like *ghĩtsagh* ‘s/he cried’ is the surface manifestation of a formally-indeterminable underlying affix. Thus, Cook would provide a morphemic analysis of the verb as in (37).

- (37) *ghĩtsagh*
 ghe-Ø-N-Ø-tsagh
 PFV-3.SBJ-?-CL-cry
 ‘s/he cried’

Cook commits to neither a segmental form nor a function for N, hence my use of “?” in the morphemic gloss in (37). Cook attributes the presence of a high vowel, [i], in the surface form to the effect of the nasal feature of N on the underlying [ɛ] vowel of the prefix *ghe-*, in other words, to a raising process triggered by the nasal feature. This explanation results in a suspicious asymmetry in Cook’s analysis, however. If we look to his analysis of a corresponding first-person form like *ghitsagh* ‘I cried’, Cook would provide a morphemic analysis as in (38).

- (38) *ghitsagh*
 ghe-i-Ø-tsagh
 PFV-1.SG.SBJ-CL-cry
 ‘I cried’

Though Cook attributes the high vowel in *ghitsagh* ‘I cried’ to the same diachronic source as N, a reconstructed palatal nasal prefix **ɲ-* (2004: 166), in his synchronic analysis, *i-* is simply

treated as a vocalic prefix. Application of *i-* triggers elision of the preceding vowel, resulting in the surface form *ghitsagh* (2004: 119). This does not seem to be an unreasonable analysis.

I have disagreed with Cook's assumption of an underlying affix as the source of N, providing arguments against this analysis in 2.1.2. However, if I were to follow him in treating phonologically-conditioned raising as the source of the high vowel in a verb like *ghitsagh* 's/he cried', then one possibility is to consider N as a morphological process of nasalization with concomitant phonological raising. This would give the Rule of Exponence and partial derivation in (39).

- (39) a. Where a stem X is a sequence of two or more syllables
 ...CV(C)CV(C)
 X, V_{1b}, {3.sbj, pfv} → CV_[+nasal](C)CV(C)
- b. *ghetsagh*, V_{1b}, {3.sbj, pfv} → *ghetsagh*
phonological raising → *ghitsagh*

The rule proposed in (39) is conditioned by the morphosyntactic feature set {3.sbj, pfv} and the 1b class feature and has the effect of nasalizing the nucleus of the penultimate vowel in a polysyllabic stem. The occurrence of the high vowel in a verb-form like *ghitsagh* is attributed to a concomitant phonological process of vowel-raising triggered by the [+nasal] feature. There is evidence, however, that raising is not well-motivated as a phonological process associated with nasality. Cook himself notes the existence of verb-forms with nasalized mid vowels (e.g. *hunéja* 'it is tamed') where we would expect a high vowel under the influence of a general raising rule. Cook also notes the lack of a phonetic motivation linking raising with nasality (2004; 77). This evidence suggests that the high vowel associated with N is not the result of a phonological

raising process. If so, another possibility is to treat both nasalization and raising as the direct result of a morphological process as in (40).

- (40) a. Where a stem X is a sequence of two or more syllables,
 ...CV(C)CV(C)
 X, V_{1b}, {3.sbj, pfv} → CV_[+nasal, +high](C)CV(C)
- b. *ghetsagh*, V_{1b}, {3.sbj, pfv} → *ghĩtsagh*

The rule (40) attributes both nasalization and vowel raising to the morphological Rule of Exponence, taking an input stem such as *ghetsagh* and producing the output form *ghĩtsagh* by raising and nasalizing the penult vowel.

Cook's abstract account of N with concomitant phonological raising triggered by [+nasal] inspired my initial consideration of N as a non-segmental exponent alongside H. Rules of the sort proposed in (39) and (40) accord with a treatment of N as a non-segmental exponent, defining the formal exponent in terms of non-concatenative processes of nasalization and raising. However, upon closer consideration, it may be preferable to treat N as a segmental prefix *i-* in a like manner to the prefix *i-* marking a first-person-singular subject, giving the Rule of Exponence in (41).

- (41) X, V_{1b}, {3.sbj, pfv} → *i*X

A number of considerations seem to recommend this last approach to N over the preceding alternatives. On the assumption that the derivation of a verb like *ghĩtsagh* 'I cried' can be reasonably considered to involve the application of a vocalic prefix *i-* followed by elision of the

preceding vowel, there does not appear to be any obstacle to treating N in a like manner. /i/ is available in the language's phonemic inventory (Cook 2004: 2), supported by minimal pairs like *ts'i* 'boat' and *ts'j* 'belonging' or *si* 'I' and *sɿ* 'emphatic marker'. This treatment also eliminates the asymmetry of Cook's proposal by treating both *i*- and *-i* in a like manner. Finally, and more germane to the PFM analysis specifically, while the rules in (39) and (40) require situating the rule introducing N in a Rule Block subsequent to that introducing *ghe*-, thereby allowing nasalization (and raising) processes to apply to this prefix's vowel, the rule (41) introducing the prefix *j*- can be contained within the Rule Block introducing the other subject-agreement prefixes. With this analysis N need not be considered an abstract, underlying nasal prefix as Cook proposes, but it need not be considered a non-segmental or non-concatenative process either, if we take the surface form of the verb at face-value and treat the *j*- prefix as one realization of third-person subject agreement in perfective verb-forms of the 1b class.

In consideration of the above arguments, I posit the following formal definition of the Dene Sų́líné verbal Paradigm Function and the Rule Blocks and Rules of Exponence relevant to an account of Dene Sų́líné N. Below this I provide illustrations of derivations for relevant third-person perfective verb-forms for simplex, DC and DD verbs. (42) is a definition of the paradigm function, defined in terms of a nested series of three Rule Blocks. (43) - (45) list the individual Rules of Exponence making up each Rule Block included in the PF definition.

$$(42) \quad \text{PF}(L, \sigma) = (\text{RB}_3(\text{RB}_2(\text{RB}_1(X)))$$

(43) Rule Block 1

- | | |
|--|--|
| a. $X, V_a, \{1.\text{sg.sbj}\}$ | $\rightarrow sX$ |
| b. $X, V_b, \{1.\text{sg.sbj}, \text{pfv}\}$ | $\rightarrow iX$ |
| c. $X, V, \{2.\text{sg.sbj}\}$ | $\rightarrow n\epsilon X$ |
| d. $X_{\text{DC}}, V, \{2.\text{sg.sbj}\}$ | $\rightarrow \tilde{i}X^{17}$ |
| e. $X, V, \{1.\text{pl.sbj}\}$ | $\rightarrow \text{id}X$ |
| f. $X, V, \{2.\text{pl.sbj}\}$ | $\rightarrow \text{uh}X$ |
| g. $X, V_{1b}, \{3.\text{sbj}, \text{pfv}\}$ | $\rightarrow \tilde{i}X$ |

Rule Block 1, represented in (43), contains Rules of Exponence realizing subject-agreement features. As the most deeply-nested Rule Block in the PF, rules included in Rule Block 1 are first to apply to the stem. As defined, the Rule of Exponence proposed in (41) introducing N (as *i*-) may now be included in this block as rule (41g), alongside the other subject-agreement rules. By its definition, this rule applies if the paradigm cell to be realized includes both the [3.sbj] and [pfv] features and the verb belongs to class 1b. Note Rule Block 1 lacks any additional rules realizing a [3.sbj] feature; in the default case, [3.sbj] is realized by the lack of a formal exponent. Stump (2001: 143) captures such cases by an “Identity Function Default”. In the case at hand,

¹⁷ The notation X_{DC} employed in (43)d is meant to capture the preceding-conjunct-prefix condition on the application of some Rules of Exponence, including that introducing H. X_{DC} specifies that one condition on the rule’s application is that the stem is Discontinuous Conjunct. While this captures some of the instances of the rule’s application, it does not capture cases where the preceding conjunct prefix is an inflectional prefix and thereby understood to be introduced by a subsequent Rule Block. The specific challenges in accounting for this condition are discussed in closer detail in 5.3.2.

any combination of features including [3.sbj], but failing to satisfy the conditions on rule (g), will be realized by an identity function by default, returning the bare stem as output.

(44) Rule Block 2

- | | |
|-------------------------------|--|
| a. X, V ₁ , {pfv} | → $\gamma\epsilon X$ |
| b. X, V ₂ , {pfv} | → $\theta\epsilon X / \# ______$ |
| c. X, V, {opt} | → waX |
| d. X _{DC} , V, {opt} | → uX |

Rule Block 2 contains the set of rules realizing values of aspect and mood. The rules defined in this Rule Block are adequate to account for the two large inflectional classes introduced in section 7.2 (Table 5), which I have labelled Class 1 (taking *ghe-* in the perfective) and Class 2 (taking *the-*). Though it will suffice for my present purposes, Rule Block 2 would require further refining to account for other classes found in the language. As per discussion of Rule Blocks and mutual exclusivity in section 5.1.2, the inclusion of both aspectual rules (a-b) and modal rules (c-d) in this Rule Block accounts for the mutual exclusivity of these two types of exponent.

(45) Rule Block 3

- | | |
|---------------------|---------------------------------|
| a. X, V, {1.sg.obj} | → $s\epsilon X$ |
| b. X, V, {1.pl.obj} | → $nuh\epsilon X$ |
| c. X, V, {2.sg.obj} | → $n\epsilon X$ |
| d. X, V, {2.pl.obj} | → $nuh\epsilon X$ ¹⁸ |

¹⁸ Though I have defined two different rules with phonologically identical operations in (45)d and e, the syncretism of 1.pl and 2.pl would be addressed in one of two ways, with a “Rule of Referral” in PFM 1 (Stump 2001: 29),

- e. $X, V_c, \{3.obj\} \rightarrow p\epsilon X$
- f. $X, V, \{ar.obj\} \rightarrow hoX$
- g. $X, V, \{3.obj, 3.sbj\} \rightarrow j\epsilon X$

Lastly, Rule Block 3 contains rules introducing object agreement prefixes. This Rule Block is not particularly relevant for my analysis of N, but will be for my analysis of H to follow.

The Dene Sų́líné paradigm function in (42), itself defined by the three Rule Blocks in (43)-(45), provides for a relatively straightforward account of Dene Sų́líné N. (46) provides a sample derivation, taking the simplex lexeme $TSAGH_{1b}$ ‘cry’ as an example.

(46) Derivation of Simplex stem, $PF(TSAGH_{1b}, \{3.sbj, pfv\})$

$$\begin{aligned}
 PF(TSAGH_{1b}, \{3.sbj, pfv\}) &= (RB_3(RB_2(RB_1(tsagh))) \\
 &= (RB_3(RB_2(\textit{jtsagh})) && \boxed{\text{Rule 1g}} \\
 &= (RB_3(\textit{ghejtsagh}) && \boxed{\text{Rule 2a}} \\
 &= \textit{ghejtsagh} && \boxed{\text{N/A}} \\
 \boxed{\text{Elision}} &\rightarrow \textit{ghjtsagh}
 \end{aligned}$$

In the case that the paradigm cell $\langle TSAGH_{1b}, \{3.sbj, pfv\} \rangle$ serves as input to the paradigm function, this combination of morphosyntactic and class features decides competition in favour of rule (43g), affixing the segment [i] to the left edge of the appropriate stem producing an

replacing one of these with a rule referring to the other, or by a mismatch between distinct content and form paradigms in PFM2 (Stump 2016) where the content paradigm contains two distinct cells for [1.pl.sbj] and [2.pl.sbj] which map onto a single cell in the content paradigm. As a further possibility, Stump (personal communication) suggests treating *nuhe-* as the output of a single rule conditioned solely by the presence of a [pl] feature. This analysis works if we assume that irrelevance of number for third-person forms reflects a co-occurrence restriction between the features [3] and [pl]. Such a restriction would account for the absence of *nuhe-* in forms agreeing with a third-person object.

intermediate stem, *itsagh*, for input to Rule Block 2. The presence of a Class 1 feature (whether 1a or 1b) and the [pfv] feature decides the outcome of Rule Block 2 in favour of rule (44a) affixing [yɛ] to the left edge of this input form, returning *ghejtsagh*. As this is an intransitive verb and the syntactico-semantic context provides no object argument features, Rule Block 3 returns an identity function by default and the output of the paradigm function is the form *ghejtsagh*. A phonological process of elision resolves the marked hiatus in this form, deleting the vowel <e> and producing the surface form, *ghjtsagh* ‘s/he cried’

The examples of derivations involving discontinuous (DC and DD) stems in (47) and (48) are less straightforward. (47) is my proposed derivation for the third-person perfective form of the DC-stemmed Lexeme EDE_TTHÉL_{1b} ‘chop’ and (48) shows the derivation of the third-person perfective form of the DD-stemmed lexeme YA#_LTI_{1b}.

(47) Derivation of DC stem - EDE_TTHÉL_{1b}, ‘chop’

$$\begin{aligned}
 \text{PF}(\text{EDE_TTHÉL}_{1b}, \{3.\text{SBJ}; \text{PFV}\}) &= \text{ede} (\text{RB}_3(\text{RB}_2(\text{RB}_1(\text{tthél}))) \\
 &= \text{ede} (\text{RB}_3(\text{RB}_2(\text{jthél}))) && \boxed{\text{Rule 1g}} \\
 &= \text{ede} (\text{RB}_3(\text{ghejthél})) && \boxed{\text{Rule 2a}} \\
 &= \text{edeghejthél} && \boxed{\text{N/A}} \\
 \boxed{\text{Phonological processes}} &\rightarrow \text{ereghjthél}
 \end{aligned}$$

(48) Derivation of DD stem – YA#_ŁTI_1b ‘talk’

$$\begin{aligned}
 \text{PF}(\text{YA}\#_Ł\text{TI}_{1b}, \{3.\text{sbj}, \text{pfv}\}) &= ya (\text{RB}_3(\text{RB}_2(\text{RB}_1(\text{łti}))) \\
 &= ya (\text{RB}_3(\text{RB}_2(\text{łti}))) && \boxed{\text{Rule 1g}} \\
 &= ya (\text{RB}_3(\text{ghełti})) && \boxed{\text{Rule 2a}} \\
 &= yaghełti && \boxed{\text{N/A}} \\
 \boxed{\text{Elision}} &\rightarrow yaghłti
 \end{aligned}$$

The details of rule competition described in the preceding account of the simplex verb TSAGH remain unchanged; however, these examples exhibit an interesting “morpho-semantic mismatch”, an inversion of the canonical ordering of inflection and derivation that complicates analysis (see e.g. Ackerman 2003). Considering the form *yaghłti* ‘s/he spoke’ derived in (48), the string *yalti* serves as the verbal stem, signifying the lexical meaning ‘speak’, and is common to all forms of the paradigm, regardless of their inflectional content (e.g. *yasti* ‘I speak’, *yanelti* ‘you speak’ and so on). Given the lexical status of this discontinuous stem, were this the canonical case, the expectation would be that the formal exponents of inflectional content would appear at edge of this string, peripheral to *ya#*. Thus, given the primarily prefixing behaviour of Dene Sųłiné inflection, we might expect forms such as **syalti* ‘I speak’ or **neyalti* ‘you speak’. Instead, we find inflectional content “sandwiched” between these two stem syllables. Indeed, in all such cases of discontinuous stems, as for example the pair of verbs in (49), the formal exponents of agreement and aspect appear directly to the left of a stem’s final syllable.

This type of rule seems sufficient to capture the non-canonical morphotactics of the inflectional markers in Dene Sų́líné verbs. This approach defines the placement of such prefixes in a definite and precise way; however, it remains fundamentally stipulative. It does not explain why inflectional markers appear in this position and not at the edge of the stem as we might otherwise expect. A second possibility is that a Rule of Exponence targets a specific unit of morphological structure as its point of application. In this case we might re-define the rule in (50) such that the formal exponent's point of application is defined as the verb root.

$$(51) \quad X, V_1, \{pfv\} \quad \rightarrow (X)_{\mathcal{Y}\epsilon X_{\sqrt{}}}$$

Here I define the target of the rule introducing *ghe-* as the root of a verbal stem, *X*, using the subscript $\sqrt{}$ to indicate that this is the root element. This approach aligns with accounts of Dene Sų́líné verbal structure put forward by Cook (2004: 219), and with accounts provided of other Dene languages (e.g. Kari 1979: 43) in which the verb's final syllable is occupied by the morphological root. In effect, this approach is similar to a rule referring to phonological structure but has a number of advantages. Firstly, identifying the target of application as a verb root provides at least a small improvement, in terms of explanatory value, over the arbitrary stipulation of a unit of phonological structure as the point of application. That said, it still begs the question, why do inflectional markers apply to the edge of the root, rather than to the edge of the complex stem?

On first consideration, allowing morphological processes to refer to a particular element of morphological structure appears to conflict with PFM's commitment to a "structureless" or "a-morphous" morphology. Stump captures this commitment with the assumption that "an

uncompounded word’s morphological form is not distinct from its phonological form” (2001: 12). If this assumption is to be interpreted to mean that there is no uniquely morphological structure to which the definition of a morphological process may refer, then it would appear to preclude a rule such as (51) that refers to the root as a unit of morphological structure within the word. Though Stump’s assumption seems to preclude a rule referring to morphological structure, in his formulation of PFM Stump describes a principle with potential to explain this interesting characteristic of Dene Sų́liné verbal inflection. Stump (2001: 96-137) devotes an entire chapter to an account of head-marking, which he argues constitutes strong evidence for the existence of paradigms and paradigm functions. As one illustration of the type of head-marking in question, Stump points to examples from a system of verb-compounding in Sanskrit. Sanskrit compound verbs are formed by the combination of a “preverb” and a verb root and bear a resemblance to Dene Sų́liné’s complex stems. The examples in (52) are illustrative.

(52)	<u>Verb root</u>	<u>Compound verb root</u>	<u>3sg imperfect</u>
a.	<i>gam-</i> ‘to go’	<i>vi-gam</i> ‘to go away’	vi- a -gacchat
b.	<i>śī-</i> ‘to recline’	<i>sam-śī</i> ‘to be doubtful’	sam- a -śeta

(Stump 2001: 97)

Examining the Sanskrit verbs in (52), the relevant points of comparison concern both the “preverbs”, which perform a similar function to Dene Sų́liné’s adverbial or thematic prefixes, and the position of the prefix *a-* marking imperfective aspect, which, like Dene Sų́liné’s inflectional exponents of aspect and agreement, is positioned adjacent to the root of the construction, not peripheral to the construction as a whole. In Sanskrit compound-verbs, as in Dene Sų́liné complex verbs, the function of the modifying constituent may be more or less

transparent and the meaning of the compound may be more or less compositional, as in (52a) or idiosyncratic, as in (52b). Stump's proposal to account for this type of inflectional behaviour is that some derivational morphological processes, like those producing compound-verbs in Sanskrit, result in headed constructions. Stump proposes that these types of constructions inflect through their head, meaning that inflection of a compound-verb like Sanskrit *vi-gam* operates through the inflectional paradigm of its head *gam*. Thus, when the compound-verb *vi-gam* inflects for a particular set of morphosyntactic features, it does so via the Paradigm Function for its head, PF($\langle \text{GAM}, \sigma \rangle$), the output of which will be the corresponding member of the paradigm of *gam*, *agacchat* in the example in question, with the 3.sg, imperfective prefix *a-* positioned internal to the preverb. In this way, Stump accounts for the internal position of inflectional markers without requiring Rules of Exponence to target a particular unit of morphological structure. Instead, it is the head itself which is understood to undergo inflection, accounting for the position of inflectional markers adjacent to this formative. Stump refers to this principle as the Head Application Principle (HAP), which he defines as follows (2001:115): "Where root Y is headed by root Z (and is a member of the H[ead]M[arking] subclass), each word in Y's inflectional paradigm is headed by the corresponding word in Z's inflectional paradigm." Stump argues that the behaviour of head-marking constructions, in referring to the inflectional paradigm of another lexeme, provides strong evidence for the theoretical validity of paradigms and paradigm functions.

If Dene Sųliné's verbs can reasonably be considered examples of headed constructions, then Stump's HAP provides a principled means of accounting for the language's non-canonical placement of inflectional exponents. If these complex verbs inflect through head-marking, then there is no need to specify a phonological or morphological target for a Rule of Exponence;

instead, the inflected form of a complex verb reflects the application of the PF to the corresponding paradigm cell of the verb’s head. The pair of verbs in (53) provides a concrete example.

- | | | | | |
|------|----|--|----|--|
| (53) | a. | <i>náreg^hit^hhel</i> | b. | <i>ghit^hhel</i> |
| | | ná#de-ghe- ^h i-t ^h hel | | ghe- ^h i-t ^h hel |
| | | ITER#-TH-PFV-3.SBJ-chop | | PFV-3.SBJ-chop |
| | | ‘S/he chopped (chips)’ | | ‘S/he chopped’ |

(Elford & Elford 1998: 112–113)

In (53a), the complex verb NÁRE_TTHEL ‘chop chips’ would inflect through the paradigm of its head TTHEL ‘chop’. The fact that the third-person perfective form of the complex verb is realized by the form in (53a), *náreg^hit^hhel*, with its inflectional markers adjacent to the root, is taken to reflect the fact that the complex verb is headed by the third-person perfective form of its head TTHEL ‘chop’, i.e. PF((TTHEL, {3. sbj, pfv})), *ghit^hhel* depicted in (53b).

Though Stump’s HAP displays promise in accounting for Dene Sų́liné’s non-canonical positioning of inflectional markers, there are some facts of Dene Sų́liné’s verbs which pose a challenge to this account. First, because head-marking is argued to operate through the inflectional paradigm of a complex verb’s head, this necessitates that the head paradigm is part of a speaker’s morphological knowledge. The examples in (53) do not seem particularly problematic in this regard. However, while all complex Dene Sų́liné verbs exhibit inflectional markers adjacent to their roots, there is not clear evidence in every case for an independent root/head paradigm to which head-marking would refer. For example, in the cases of verbs *ya^hti* ‘speak’ and *shé^hti* ‘eat’, there do not appear to be obvious candidates for independent *ti* and *ti* paradigms through which these complex forms would inflect. The absence of an attested “head”

paradigm is not necessarily problematic, however, if learners are able to arrive at a representation of such a paradigm by abstracting over the total set of head-marked constructions in the language, rather than through direct exposure.

I perceive a second potential problem for the head-marking account in the apparent universality of internally-marked inflection in Dene Sųliné’s complex verbs. Stump provides evidence that through language-change headed-constructions may undergo reanalysis and cease to be analyzed as headed. Because headedness is a prerequisite for head-marking, the expectation is that having undergone reanalysis, such constructions would no longer inflect through their head. As an example, Stump takes the English verb *behave*, which was formerly a headed construction inflecting through the paradigm of its head *have*. This was (and remains) the behaviour of similarly derived verbs e.g. *behold/beheld*; *become/became* etc. In the case of *behave*, however, the construction was reanalyzed as un-headed and consequently ceased to inflect through head-marking, giving the past tense form, *behaved* (Stump 2001: 106-108). Given this possibility, and the presence of similarly opaque examples in Dene Sųliné’s verbal lexicon, it is suspicious that there are no examples of verbs displaying evidence of a similar reanalysis. Verbs like YA_ŁTI ‘speak’ conceivably arose through derivational processes resembling those forming more transparent examples like DA_LGE ‘climb’ (lit. ‘up crawl’). However, given the apparently non-compositional semantics of a verb like YA_ŁTI ‘speak’ it would seem reasonable to expect the existence of verbs in the language which have been reanalyzed as unheaded-constructions. As such, it is suspicious that there are no examples of verbs exhibiting inflection on the periphery of a “complex”, polysyllabic root. If for example, a verb like *ya_łti* were no longer reasonably analyzed as a headed-construction, then the internal

position of inflectional markers in verb-forms of this paradigm may require an alternative explanation.¹⁹

There is a final challenge to the head-marking account in pairs of complex verbs like DA_SA ‘go up’ and NÁ_SA ‘go down’. In comparison to a verb like YA_ŁTI ‘speak’, verbs such as these are compositional in their meaning, formed of adverbial prefixes *da-* ‘up’/*ná-* ‘down’ and the root *-sa* meaning ‘go’. These verbs would appear to be straightforward candidates for treatment as head-marked constructions. If this were the case the expectation would be that both complex verbs would inflect through the paradigm of their head *sa* ‘go’. What we observe, however, is that these two verbs belong to two different classes and inflect for aspect with distinct exponents. This is demonstrated by the pair of verbs in (54).

- | | | | | |
|------|----|--|----|--|
| (54) | a. | <i>dathiya</i>
da#the-i-ya
up#PFV-1.SG.SBJ-go
‘I went up’ | b. | <i>nághiya</i>
ná#ghe-i-ya
down#PFV-1.SG.SBJ-go
‘I went down’ |
|------|----|--|----|--|

If it were the case that the pair of verbs in (54) owed the position of their inflectional exponents to head-marking, then I presume we would also expect them to exhibit identical inflectional exponents, a reflection of the fact that they both inflect through the paradigm the same head *sa-* ‘go’. Here again it seems that some account other than head-marking is responsible for the morphotactic facts of Dene Sų́liné’s discontinuous stems.

¹⁹ Stump (personal communication) points out that English too has instances of non-compositional headed constructions, such as *understood*, *withheld*, or *overtook*. Non-compositionality is therefore not a sufficient cause for the loss of headedness through reanalysis. I will maintain, however, that the total absence of any such instances of reanalysis in Dene Sų́liné is an interesting fact in need of explanation.

5.3.2 PFM AND H

Discussion in 5.3.1 has shown that N can be accommodated within a PFM model by attributing it to a Rule of Exponence introducing a segmental prefix *i-*, (43g). The tonal exponent, H, poses a more significant challenge to an analysis within the PFM framework. As described in Chapter 2 there are three conditions relevant to an account of the distribution of H: 1. agreement with a third-person subject, 2. membership in the *the-* class of verbs, and 3. the presence of a preceding conjunct prefix. The first two conditions may be captured in a relatively straightforward fashion given PFM's realizational nature. As this is a realizational framework, the full set of morphosyntactic and class features relevant to the inflectional derivation is provided at the outset of the derivation, represented by the variable σ in the input to the paradigm function. The definition of a Rule of Exponence introducing H would include the relevant morphosyntactic and inflection-class features ensuring that the rule takes precedence over rules with which it is mutually exclusive (e.g. rules introducing the perfective prefixes *the-* and *ghe-*). Thus, a preliminary rule introducing H might be defined as (55).

$$(55) \quad X, V_2 \{3.sbj, pfv\} \rightarrow \acute{X}$$

Some aspects of the distribution of H are captured in the rule definition in (55) by limiting the rule's domain to verbs of a particular class, here represented by the subscript class index 2, and further, to contexts including the morphosyntactic features [3.sbj] and [pfv]. Rule (55) is still overly simplistic, however, for failing to define the position at which the high tone appears in the word-form. This question of position also relates to the final factor conditioning the occurrence of H. Though reference to appropriate inflection-class and morphosyntactic features may account

for the first two conditioning factors, the third factor, presence of a preceding conjunct prefix, poses a greater challenge. Accounting for this final condition presents a problem of order-of-operations. In PFM, as we have seen, the Paradigm Function is defined in terms of the cyclic application of Rules of Exponence. A bare stem or root (e.g. *tsagh*) serves as input for a first rule which produces an altered form of this stem as an output (e.g. *itsagh*). This output form serves in turn as input for the next applicable rule and so on. The ordering of Rule Blocks represents a language's morphotactics and the order of operations of a morphological derivation. An order-of-operations challenge which theoreticians have grappled with is that of "look-ahead" (Stump 1997:222), that is, instances where the selection of a particular morphological exponent is conditioned by the presence of an exponent introduced by a subsequent operation. In Dene Sųliné, the selection of N/*i*- interpreted as an exponent of subject agreement presents a potential instance of look-ahead in that the choice of *i*- over the default \emptyset - subject marker could be understood as being contingent on the presence of the more peripheral perfective prefix *ghe*-. In realizational frameworks, the existence of apparent cases of look-ahead is often unproblematic; such cases follow naturally from the assumption that content precedes form. In this case it is not the presence of the piece of form *ghe*- on which the selection of *i*- depends, but rather the presence of a morphosyntactic feature [pfv], which conditions the selection of both *ghe*- and *i*- and which is available to both Rules of Exponence (in σ). While the precedence of content over form may resolve the apparent look-ahead problem for N, H seems to present a different, more challenging look-ahead problem.

Comparison of word-forms exhibiting H, as shown in (56) furnishes a number of useful generalizations about the position of H in a word and its distribution relative to *the*-.

(56)	a. <i>nayeréq</i> ‘s/he turned it over’	cf. <i>nariq</i> ‘I turned (it) over’
	b. <i>edenélk’á</i> ‘s/he got fat’	cf. <i>edenesk’á</i> ‘I got fat’
	c. <i>néda</i> ‘s/he sat down’	cf. <i>nida</i> ‘I sat down’
	d. <i>héki</i> ‘s/he went (on water)’	cf. <i>hiki</i> ‘I went (on water)’
	e. <i>nátheya</i> ‘s/he went (and returned)’	cf. <i>náthiya</i> ‘I went (and returned)’
	f. <i>yéʔál</i> ‘s/he bit it’	cf. <i>thiʔál</i> ‘I bit it’
	<i>deneyuaze theʔál</i> ‘s/he bit the boy’	(Elford & Elford 1998)

In the examples in (56), we observe the presence of H in each of the third-person perfective forms on the left, and its absence in the corresponding first-person perfective forms to the right. The first useful generalization is that H consistently occurs on a word’s penult. H falls on this syllable regardless of the morphological function of the segment occupying this position. These examples also illustrate the relative distribution of H and *the-*, one of mutual exclusivity. The verbs can be separated into groups displaying different behaviours with respect to this distribution. In the first group, comprising examples (a-d), verbs have discontinuous stems in which the non-root element (e.g. /nare/ in (a)) is conjunct; in other words, these verbs belong to the set of verbs I have labelled discontinuous conjunct (DC). In DC verbs of this type *the-* is not apparent in any verb-forms, third-person or otherwise, and H occurs in third-person perfective forms. This first group of verbs is not necessarily problematic; if all elements of the discontinuous stem are present at the outset of the derivation there is no problem for order of operations; the rule introducing H need only be sensitive to the presence of a conjunct element in the stem, accounting for the precedence of the rule introducing H over that introducing *the-*.

In the second group of verbs, (56e-f), the stem is either discontinuous, with a disjunct non-root element (e.g. *ná-* in (e)), i.e. belonging to the DD type, or the stem is simplex, as in (f). In the DD and simplex verb types, selection of *the-* or H depends on inflectional properties of the verb, rather than properties of the stem. The prefix *the-* is present in all verb-forms, including those agreeing with a third-person subject, unless inflection introduces an intervening prefix, in which case third-person verbs take H. Herein lies an ordering problem that is considerably more complex than that presented by N. If we assume that the Rule of Exponence introducing H belongs to Rule Block 2, (44), along with other Rules of Exponence realizing aspect (those introducing *the-* and *ghe-*, for example), then resolving competition between *the-* and H would require “looking ahead” to determine the presence or absence of a more peripheral conjunct prefix. What makes this type of look-ahead more problematic than that characterizing N is that there are three inflectional prefixes which can serve to condition the appearance of H: these are the *ye-* object marker, the *ho-* “areal” object marker, and the so-called “default subject” prefix *ts’e-*. Taking this relatively small set of prefixes into consideration, one possible solution to the look-ahead problem is to include each of the features associated with these prefixes in the Rule of Exponence introducing H, in a similar manner to the rule proposed for *i-* ‘3.sbj’. However, where selection of *i-* required reference to only one additional morphosyntactic feature, [pfv], accounting for H in this manner requires reference to a set of morphosyntactic features representing the possible triggering prefixes: [3.obj], [ar.obj], and [def.sbj]. In a further complication, this set of features must be listed disjunctively, as the presence of any one of these three features in conjunction with [3.sbj] and [pfv] is sufficient to condition the appearance of H. Following this line of thinking, the rule defined in (57) does predict the correct distribution of H and *the-*.

$$(57) \quad X_{\sigma\sigma}, V_2, \{3.sbj \wedge pfv \wedge \{3.obj \vee ar.obj \vee def.sbj\}\} \rightarrow X'_{\sigma\sigma}$$

Using the symbols \wedge and \vee to indicate the conjunctive and disjunctive relationships between the various features, rule (57) captures the fact that H, realized formally as a high tone on a word's penult, occurs in class-2 verbs which realize a set of morphosyntactic features including [3.sbj], [pfv] and at least one of the disjunctive feature set. Adding this rule into the proposed Rule Block 2, revised in (58), does predict the correct outcome of rule competition in many instances.

(58) Rule Block 2 (Revised)

a. $X, V_1, \{pfv\}$	$\rightarrow y_{\epsilon}X$
b. $X, V_2, \{pfv\}$	$\rightarrow \theta_{\epsilon}X$
c. $X_{\sigma\sigma}, V_2, \{3.sbj \wedge pfv \wedge \{3.obj \vee ar.obj \vee def.sbj\}\}$	$\rightarrow X'_{\sigma\sigma}$
d. $X_{DC}, V_2, \{3.sbj, pfv\}$	$\rightarrow X'_{\sigma\sigma}$
e. $X, V, \{opt\}$	$\rightarrow waX$
f. $X_{DC}, V, \{opt\}$	$\rightarrow uX$

As defined, the rules in the updated Rule Block in (58) do predict the complementary distribution of *the-* and H in verbs of the (56e-f) type, those that are simplex (e.g. *yé?áɬ* 's/he bit it') or of the DD type (*nátheya* 's/he went (and returned)'). Given a paradigm cell with the content ($NÁ\#_GHA_{t2}, \{3.sbj, pfv\}$), for example, the Paradigm Function would apply an identity function by default for Block 1, (43), as this particular set of morphosyntactic and class features would fail to trigger any of the rules listed in Block 1. Rule (58b) is returned from the revised Block 2,

producing the expected form *ná-the-Ø-ya*. Rule (58b) wins out in this case, as NA#_GHA does not have a DC stem, nor does the set of morphosyntactic features in σ include features from the disjunctive set of {3.obj, ar.obj, def.sbj}. If, on the other hand, the derivation were of the cell (?ÁŁ_2 , {3.sbj, pfv, 3.obj}), the narrowest applicable rule from Block 2 would be (58c) due to the presence of [3.obj]. Following application of this rule, the [3.obj] feature would trigger the application of a rule from block 3 introducing the prefix *ye-* and ultimately, the PF would return the word-form *yé?át* ‘s/he he went up there’.

Though the proposed rules and Rule Blocks would produce the expected word-forms in many cases, there are a number of considerations which seem to call into question this type of solution. Firstly, recourse to disjunctive sets of features within the definition of a Rule of Exponence introduces additional complexity absent from the rules proposed by Stump (2001) in his formulation of PFM1, though Stump does employ disjunction in later work (e.g. 2016b: 50). Inclusion of disjunctive features within a Rule Block also appears to contradict one of Stump’s key assumptions, that “exponence is the only association between inflectional markings and morphosyntactic properties” (2001:11), which I interpret to mean that the only morphosyntactic features which ought to be included in a Rule of Exponence are those features which can properly be considered to be expressed, or realized, by said rule. In the case of the simplest type of rule, such as (43f) realizing second-person plural subject agreement, the single feature [2.pl.sbj] conditioning the rule’s application can be considered to be the meaning signified by the form associated with this rule, *uh-*; in other words, *uh-* is the primary exponent of [2.pl.sbj]. Introducing additional features into a rule’s definition complicates this picture. If, as in the case of the proposed rule introducing *í-*, the rule includes one additional feature ([pfv] in this case), inclusion of this feature raises the question: does *í-* signify both perfectivity and third-person

subject agreement, or is it primarily an exponent of agreement conditioned only secondarily by the presence of a [pfv] feature? In the case of *i-*, it does not seem unreasonable to suggest that this prefix signifies something about both subject agreement and perfectivity. It seems far less reasonable to me, however, to suggest that H is an exponent of this complex set of features, namely of perfectivity and third-person subject agreement in conjunction with third-person object agreement or areal object agreement or default subject agreement.

Even if the inclusion of contextual features in a rule's definition could be dismissed as a concern, there remain other issues with this approach. Rule (58c), with its set of disjunctive contextual features, cannot on its own account for all instances of H, as for example H in a form like *néda* 's/he sat down'. For this reason it is necessary to include an additional rule in block 2, (58d), which accounts for the occurrence of H in DC stemmed verbs such as NE_DA 'sit down' which take H, despite lacking any of the set of disjunctive features in the definition of rule (58c). Thus, my Rule Block 2 captures the distribution of H with two different Rules of Exponence, (58c), taking morphosyntactic features alone to be the relevant conditioning factors, and (58d), referring to the combination of necessary morphosyntactic features and structural characteristics of the stem. This is a rather cumbersome way of capturing the generalization Cook describes in terms of a conditioning "preceding conjunct prefix" (Cook 2004: 159). This is a seemingly simple generalization that is difficult to capture using the formal mechanisms of PFM. As has been established, in PFM, apparent instances of "look-ahead" are captured by rule definitions referring to morphosyntactic features. It seems, however, that the conditioning environment captured by the expression "preceding conjunct prefix" is difficult to define in terms of morphosyntactic features. If the relevant conditioning factor of "preceding conjunct prefix" has more to do with phonology than morphosyntax, which does seem to be the simpler

generalization, then the “look-ahead” problem remains unresolved. Though discontinuous-conjunct verbs of the (56a-d) type may not present a problem, as they can be captured relatively simply with a rule referring to the DC nature of the stem, those of the (56e-f) type remain problematic. If it is not the morphosyntactic content associated with rules introducing prefixes like *ye-* that conditions the appearance of H, but rather the fact that such rules introduce a prefix with a phonological form, then it is difficult to correctly determine the outcome of competition between *the-* and H without “looking ahead” to the output of subsequent rules. One might propose resolving this look-ahead problem by including the rule applying H in a subsequent Rule Block, such that conditioning prefixes, like *ye-*, are already present in the input to the rule. Having done so, however, it would appear to be difficult to provide an account of the absence of the prefix *the-*; if *the-* and H are not mutually exclusive because they occupy the same Rule Block, then what prevents the application of *the-*?

An additional point of interest concerning the distribution of H and *the-* concerns the status of the proposed object agreement prefixes including *ye-*. The prefix *ye-* does not conform to typical cases of agreement in that this prefix is mutually exclusive with an overt syntactic argument phrase. The set of expressions in (59) (repeated from (56)) illustrates this fact.

- (59) *yéʔál* ‘s/he bit it’ cf. *thiʔál* ‘I bit it’
dəneyuaze theʔál ‘s/he bit the boy’

In the case that a sentence contains an overt object argument, e.g. *denɛyuazɛ* ‘boy’, then *ye-* does not appear on the verb. In the absence of *ye-* the verb-form marks perfectivity with *the-*, not H. This behaviour of *ye-* may be taken as evidence recommending a treatment of *ye-* as a

pronominal clitic, rather than an exponent of object agreement. Treatment of formatives like *ye-* as clitics is equally problematic, however, given their placement inside discontinuous stems, as illustrated in (60).

- (60) a. *nádayeretthét* b. *lēgháyénìlther*
 ‘s/he is chopping wood’ ‘s/he killed him’

(Elford & Elford 1998: 114, 204).

Though *ye-* occurs internal to the disjunct content *lēghá* and *náda* in these verbs, were they to take a syntactic object phrase, this phrase would sit at the periphery of the discontinuous stem, as can be seen in the following sentence.

- (61) *dene lēghánìlther*
 ‘He killed people (or a person)’

(Elford & Elford 1998: 457)

Contrasting the sentence in (61) with the verb in (60b) demonstrates the distinct positions occupied by free syntactic object phrases and the object prefix *ye-*²⁰. This state of affairs may be equally problematic for my rule (58c) applying H and the Rule of Exponence (45g) applying *ye-* in that in both cases the presence of a [3.obj] feature incorrectly predicts the application of both

²⁰ Further complicating matters, Cook (2004: 121-124), records the existence of verb-forms in which object markers like *ye-* are in fact found to the left of disjunct prefixes e.g. *bedá#wílt’us* ‘we’ll all punch him’ (p. 122). Cook proposes that such verbs are derived transitives originating as intransitives. These examples are particularly interesting in light of the discussion of head-marking in the preceding section. They provide possible examples of inflection in a canonical position, external to the complex stem. Interestingly, however, aspect and agreement morphology in such forms remains in its typical “head”-adjacent position, e.g. *bereghes?ì* ‘I disrespected him’.

rules regardless of whether or not the sentence contains an independent object phrase. This behaviour seems difficult to explain with the PFM tools considered. A possible explanation is that Dene Sų́liné grammar affords two alternative strategies to signify an object argument, one syntactic and one morphological. In case the syntactic alternative is chosen, presumably for reasons related to pragmatics or information-structure, then the object argument features are exhausted and no longer available to the morphological derivation. This explanation seems to resolve the overapplication of rules (58c) and (45g), but the other challenges identified for the PFM remain unresolved.

As a possible means of resolving some of the challenges surrounding the selection of H, Stump (personal communication) proposes what he terms a “morphomic prefix analysis” of Dene Sų́liné’s discontinuous stems. On this analysis, an element such as *ne-* in the verb *néda* ‘s/he sat down’ is proposed to be a morphomic (i.e. semantically-vacuous) prefix rather than a part of a discontinuous lexical stem. This type of prefix could be considered to be the output of a Rule of Exponence conditioned by a morphomic feature associated with the root *-da* and belonging to a Rule Block more peripheral to one such as (58), thereby accounting for the apparent “sandwiching” of inflectional exponents. An advantage of this treatment lies in its potential for a uniform treatment of the preceding-conjunct-prefix condition, by collapsing rules (58c) and (58d) into a single rule exhibiting sensitivity to a more peripheral prefix. Though this morphomic prefix analysis might resolve the need for two distinct Rules of Exponence introducing H, it would not on its own resolve the problem of look-ahead, as the resulting consolidated rule must still somehow encode H’s sensitivity to a more peripheral prefix. As a possible means of addressing the look-ahead problem, Stump suggests the usefulness of concepts of conditional exponence and rule composition: where one exponent (such as H) appears to be

conditioned by another (such as *ne-*), this is taken to reflect the operation of a composite rule conditioned by the unification of the sets of features associated with each exponent (Stump 2021: 263). Representing the proposed morphomic feature conditioning *ne-* as “morph_{ne}”, a composite rule introducing H in this particular context would resemble (62).

$$(62) \quad X, V_2, \{\{\text{morph}_{ne}\} \cup \{\text{pfv}, 3.\text{sbj}\}\} \rightarrow néX$$

By rule (62), the formal exponent *né-* represents the output of a composite rule conditioned by the union (U) of the feature sets associated with *ne* and with H. This type of rule captures both H’s sensitivity to the more peripheral *ne-* prefix and, by Pāṇini’s Principle, its mutual exclusivity with the more generally defined rule introducing *the-*.

Though the use of the concepts of conditional exponence and rule composition for an analysis of Dene Sųliné verbal morphotactics may merit further consideration, I perceive a number of potential challenges. The first concerns the treatment of prefixes such as *ne-* as morphomic. The existence of a related word-form such as *theda* ‘s/he sat’, which contrasts in form and meaning with a form like *néda* ‘s/he sat down’, would appear to recommend a treatment of *ne-* as a derivational prefix forming a new lexeme NE_DA ‘sit down’, rather than a morphomic prefix selected by the root *-da*. Secondly, even assuming the validity of a morphomic prefix analysis, a rule such as (62) still only accounts for one of the several possible prefixes conditioning H, necessitating numerous further rules to account for forms like *naré?q* ‘s/he flipped it’ *yéttsj* ‘s/he made it’ and so on. As such, I perceive similar challenge for this approach as for the complex rule in (57): attempting to capture the preceding-conjunct-prefix condition in terms of morphosyntactic features, rather than form, remains relatively cumbersome. Lastly, as

rule composition effectively amounts to “chunking” it is susceptible to criticisms similar to those I have presented in my critique of the chunking approach in 2.2.

5.3.3 INTERIM SUMMARY - PFM

PFM Rules of Exponence define morphological exponents as phonological operations acting on an input stem. Rules of Exponence are quite powerful in that the phonological operations included in such definitions are not limited to the affixation of segmental phonological material. Such rules may easily capture non-concatenative morphological processes by defining morphological operations altering stem vowel quality, for instance, or stem tone. It was for their perceived non-concatenative characteristics that I have sought to examine Dene Sų́liné H and N through the lens of lexical and inferential frameworks. In light of this motivation, it is notable that a relatively straightforward account of N was provided in 5.3.2, by treating this exponent as segmental affix, not as non-concatenative morphology. That said, the possibility of at least two other interpretations, as a process of nasalization, or as a combined process of nasalization and raising, illustrate potential pitfalls related to the power of morphological rules, which may fail to determine a single analysis from among numerous possibilities. In such cases, additional evidence could perhaps be brought to bear to rule out alternatives, as I have attempted in my arguments for my proposed affixal analysis.

Dene Sų́liné’s tonal exponent, H, poses little obstacle for PFM Rules of Exponence as concerns form; it is not difficult to conceive of an operation transforming a low-toned penult vowel to a one that is high-toned. The factor conditioning the appearance of H, which Cook captures concisely as the presence of a “preceding conjunct prefix” evades simple definition as a PFM Rule of Exponence. It is possible to define Rules of Exponence such that rule competition

is decided in favour of H in the presence of certain disjunctive pairings of morphosyntactic features and/or when the input stem is DC. However, this is not a particularly elegant solution and seems to miss a simpler generalization based on phonological characteristics of the inflected verb-form. Consideration of H, in the PFM framework suggests a number of interesting challenges for an account of this type of phenomenon, the implications of which are discussed in greater detail in Chapter 7. I now proceed to my application of the lexical framework, DM.

5.4 APPLICATION OF DISTRIBUTED MORPHOLOGY

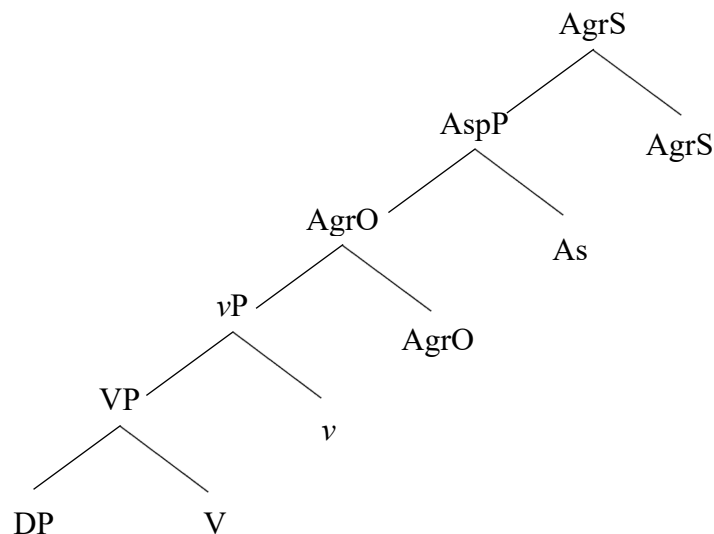
Advocates of DM argue that, to a large extent, inflectional morphotactics reflect the syntactic arrangement of functional heads in a clause (e.g. Halle & Marantz 1993: 114; Harley & Noyer 1999: 3). Where the morphotactic configuration of inflectional exponents is non-isomorphic with commonly assumed universals of clause structure, such mismatches may be attributed in part to syntactic movement. In instances where non-isomorphism is not readily attributed to movement, DM provides a number of tools beyond those provided by narrow syntactic theory, like “merger” and “fusion” to account for observed morphotactics (Halle & Marantz 1993: 116).

An application of DM to Dene Sųlíné verbal morphology requires: 1. definition of the basic phrase structure and functional heads assumed to form the verb-word, 2. identification of syntactic movements affecting phrasal constituents, 3. identification of any necessary post-syntactic processes (e.g. mergers), and 4. definition of Vocabulary Items and an account of the factors deciding competition outcomes in Vocabulary Insertion. In the sections to follow I consider each of these points as they relate to Dene Sųlíné verbal inflection and in particular to an account of the foci of my thesis, the exponents H and N.

5.4.1 THE EXTENDED PROJECTION OF V

A central goal of the DM framework is to reduce the observed facts of morphological structure to facts of hierarchical syntactic structure, and to arrive thereby at a uniform treatment of linguistic structure from the clause to the word. In accordance with this reductionist goal, language-specific facts of word structure are assumed to reflect or derive from universals of syntactic structure. For the purposes of a DM account of Dene Sųliné verbal morphology, therefore, it is necessary to first define the phrase structure presumed to underlie the word. As my focus is verbal morphology, the relevant structural units are the verb phrase and its extended projection of functional heads. I follow the precedent established by other linguists working with Dene data (e.g. Speas 1991; Harley 2011) in treating the phrase structure in (63) as the syntactic structure underlying the complex verb.

(63) [AgrSP [AspP [AgrOP [vP [VP]]]]]



The hierarchical arrangement of functional phrases above V depicted in (63) accords with a lengthy tradition in syntactic theory (e.g. Pollock 1989; Cinque 1999) and reflects the cross-linguistic morphotactic tendencies observed by Bybee (1985).²¹

5.4.2 SYNTACTIC MOVEMENT AND MORPHOTACTICS

A cursory examination of the Dene Sų́liné verb reveals that the phrase structure in (63) does not reflect Dene Sų́liné surface morphotactics. Comparison with the typical Dene Sų́liné verb in (64) illustrates the challenge in attempting to derive Dene morphotactics from a proposed universal phrase structure as in (63).

- (64) *yeghılthq*
 ye-ghe-ı́-l-thą
 4.OBJ -PFV-3.SBJ-CL-dry
 ‘s/he dried it (a hide)’

(Elford & Elford 1998: 150)

Comparing the verbal morphotactics in (64) with the hierarchical structure in (63) reveals that the ordering of exponents exhibits significant displacement from that predicted by the syntactic phrase. Where the phrase structure predicts the ordering V-AgrO-Asp-AgrS, the verb’s surface morphotactics present the configuration: AgrO-Asp-AgrS-V.

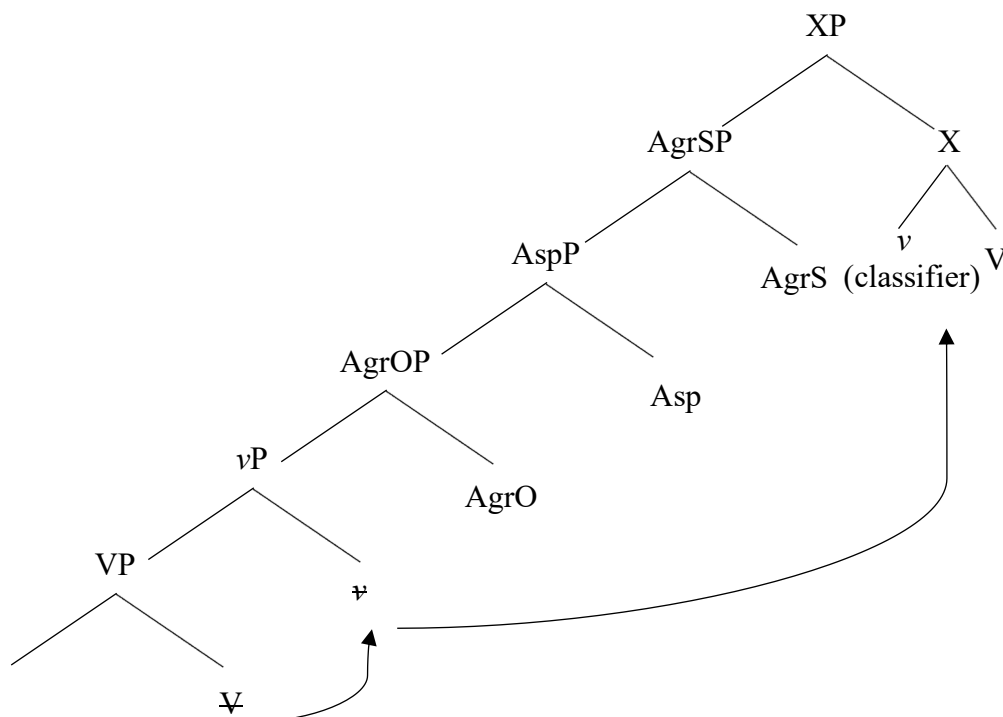
If (63) is to serve as the basic phrase structure underlying the Dene Sų́liné verb, it must undergo significant manipulation in deriving the non-isomorphic surface form. This is the

²¹ Inclusion of Agreement phrases in the syntactic representation is likely to be a point of contention, however, given arguments for the exclusion of AgrS and AgrO phrases presented in contemporary syntactic theory (e.g. Chomsky 2015: 326). See fn. 23 for comments on implications of this exclusion for the DM analysis considered in this thesis.

conundrum addressed in works on Dene languages such as Navajo (Speas 1991; Hale 2001; Harley 2011) and Slavey (Rice 1998; 2000). Of these accounts, those of Speas, Harley and Rice are fundamentally syntactic, employing operations such as head-movement to derive surface morphotactics. A DM account of Dene Sų́líné morphotactics must proceed in like manner, providing an account of the syntactic/post-syntactic operations required to derive the morphotactic configuration in (64).

Comparison of the expected and observed configurations of lexical and functional material suggests one immediate possibility for resolving the discrepancy. In their linear arrangement, the two configurations differ only in the position of the V head relative to the collective functional heads. This suggests the possibility that V has moved from its base position to a position dominating the functional phrases. This possibility, represented in (65), would produce the linear ordering observed in surface morphotactics with two movements.

(65)

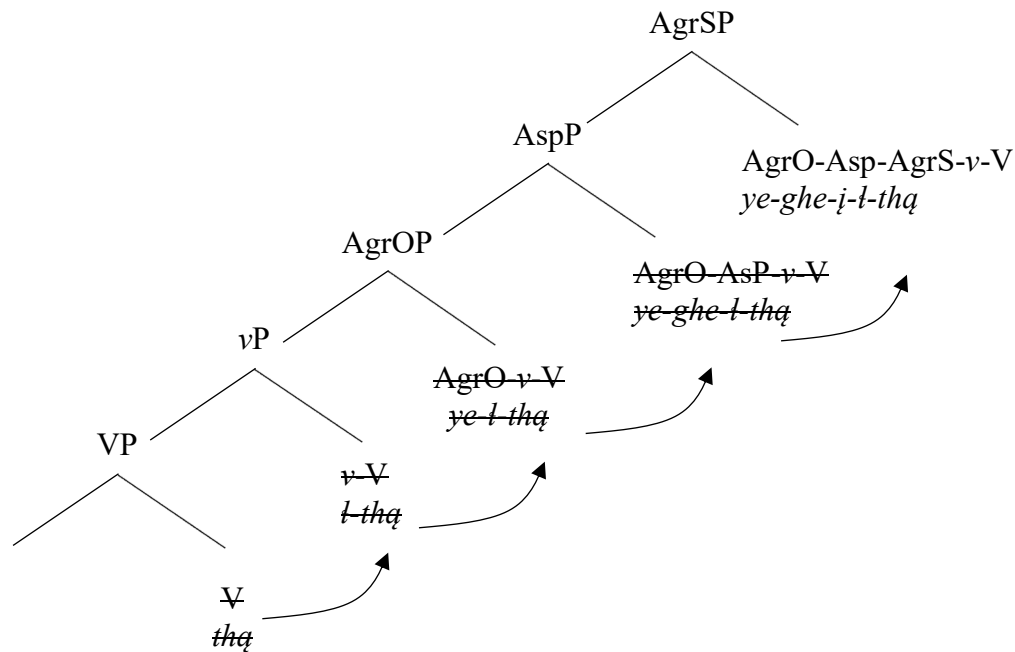


I have followed Harley (2011) in treating the classifier as a realization of the head of little-*v*, which has been associated with valency (e.g. Folli & Harley 2007). Given the classifier's correlation with distinctions of valency and its position relative to the verb root, this treatment does not seem unreasonable.²² Thus, if the V head moves first to *v*, there forming a complex head comprising the classifier and verb root, and this complex head undergoes a second movement to a position at the top of the phrase, the resulting structure agrees with surface morphotactics in its linear order. This account is deficient in several respects, however. While this derivation is reasonably economical in terms of the number of movements required, the long distance movement to the top of the phrase is arguably less than ideal from the perspective of locality. It is also unclear what the identity of the functional head serving as "landing-site" is (XP in (65)). The most likely candidate, TP, can presumably be ruled out, as it would be occupied by Dene Sųłiné's tense particles *ni* and *ha*. An additional consideration recommending against this type of movement is the notion (see e.g. Baker 1988) that a complex word's existence as a cohesive phonological unit, a prosodic word, reflects a syntactic fact, namely that the functional and lexical constituents of the word have come to occupy a single terminal node.

Rice (1998: 667), in her account of the similar morphotactic facts of the Slavey language, proposes a syntactic account utilizing a series of head movements by which lexical and functional morphemes come to occupy a single terminal node. Applying Rice's proposal to the verb in (64) *yeghıłthq* 's/he dried it' would result in a derivation resembling (66).

²² I will continue with this assumption in the analysis to follow. If, however, it were deemed preferable to treat the classifier as a fossilized, non-compositional feature of the V head, as may well be the case, the only consequence would be a simplification of the derivation, eliminating the need for the V to *v* movement.

(66)



This derivation is less economical than (65), requiring four movements where the latter required two; however, it has an advantage in terms of locality in that each movement targets the directly dominating phrase as its landing point. In this way, it also obviates the need for the additional poorly-motivated functional head to serve as a landing site: all morphemes ultimately occupy the head of AgrSP. This account also captures the fact that the inflected word-form is a single cohesive phonological unit by consolidating all morphemes into a single complex head. In order to produce the expected morphotactics, however, head movements employ a mix of left-adjunction (as in the V to v movement), as well as what I will term “interpolative adjunction”. In the latter case, the morpheme that is the target of movement is linearized adjacent to V, interpolated within the complex head undergoing movement. This means, for example, that when the complex head comprised of AgrO and v undergoes movement to AspP, the aspect morpheme must be interpolated within the complex head undergoing movement, in this case between AgrO

and *v* (*ye-* and *lthq*) rather than to the right or left of this head. In a maximally restrictive theory, head-movement is understood to result in complex heads through left-adjunction (Harley 2011: 2), not through the interpolation of morphemes within a complex head.

The last account I will consider, and that which I adopt as the basis for my own application of DM to Dene Sų́liné, is the proposal put forward by Harley (2011) in an analysis of Navajo. Harley observes that languages like Navajo and Dene Sų́liné exhibit morphological structures that cannot be accounted for under the maximally restrictive theory, i.e. one limited to left-adjoining head-movement. To derive Navajo surface morphotactics, Harley’s analysis employs a combination of (left- and right-adjoining) head-movement, the post-syntactic operation of merger-under-adjacency (MUA) and a principle of lexically-stipulated linearization. Both MUA and lexically-stipulated linearization are familiar tools of the DM framework (see e.g. Halle & Marantz 1993; Siddiqi 2009) . In examples (67) - (69), I provide Harley’s proposed derivation for the Navajo verb *ch’ishidinı́ldqzh* ‘he jerked me’.

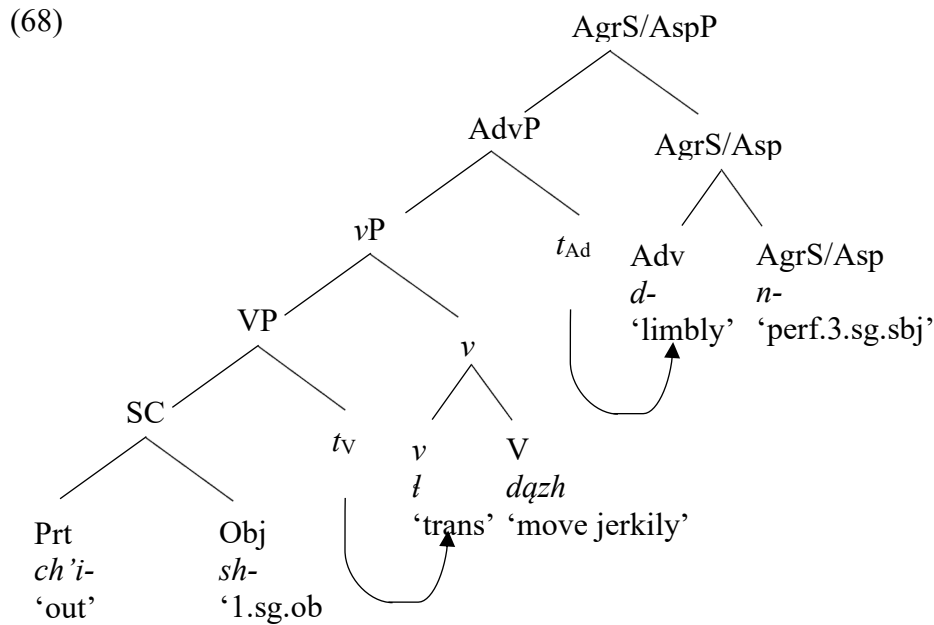
- (67) *ch’ishidinı́ldqzh*
 ch’i-sh-d-n-l-dqzh
 out-1.SG.OBJ-limb-PERF.3.SG.SBJ-TRANS-move.jerkily
 ‘he jerked me’

(Harley 2011: 21)

The morphemic gloss in (67) illustrates the morphotactic similarities shared by Dene Sų́liné and Navajo: the classifier, glossed ‘TRANS’, shares the same phonological form as that found in Dene Sų́liné and occupies the same position adjacent to the root; to its left we find an aspect and agreement marking prefix; the prefix next to this *di-* is presumably cognate to the *de-* “gender”

prefix of Dene Sųlíné; and finally, on the periphery, we find the object marker and a prefixed adverb or adposition. This Navajo form also presents the same morphotactic challenge in that the observed surface morphotactics AgrO-Asp-AgrS-V is at odds with the proposed universal structure [AgrS [Asp [AgrO [V]]]].

The diagram in (68) represents the head-movements proposed by Harley as a first stage in deriving surface morphotactics. An initial movement sees the V head move to *v*, forming a complex head with the *l*- classifier. The linear order of these two elements is attributed to the specification of *l*- as a prefix. A second movement raises *d*- to AgrS/Asp, a movement likewise resulting in a complex head, but here with a reverse linearization outcome attributed to the specification of *d*- as a prefix.²³

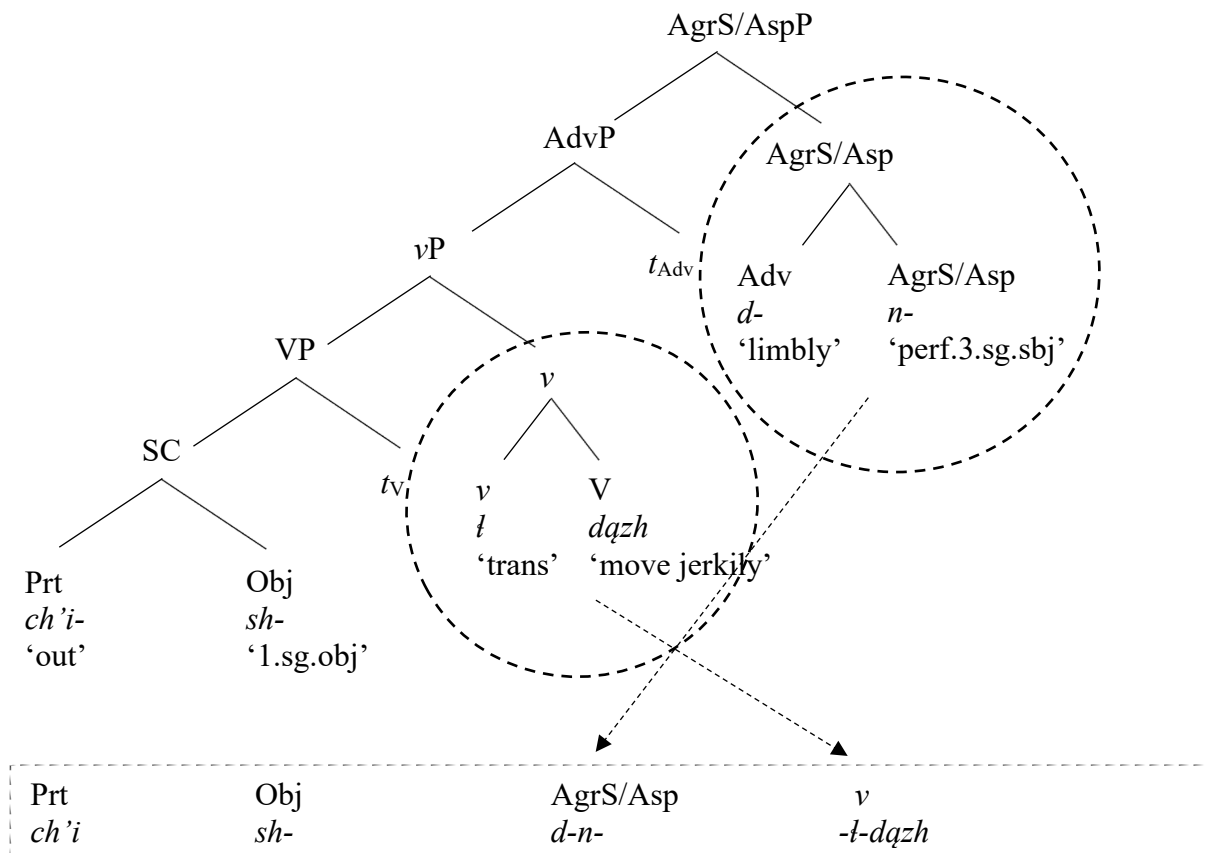


(Harley 2011: 25)

²³ Harley's proposed role for morpheme-specific linearization appears problematic for a DM account of Dene Sųlíné morphotactics, however, given the framework's key assumption of "late-insertion", a problem I consider in greater detail in 7.2.

Head-movement and morpheme-specific linearization provide the correct linear arrangement of morphemes within the *v* and AgrS/AsP complex heads; however, additional manipulation is necessary to consolidate these complex heads and reverse their linear order to produce the surface morphotactics. Harley proposes that MUA, in conjunction with lexically-specified linearization, effects this final reversal. The tree in (69) represents Harley's proposal for how this would be accomplished. In all tree-diagrams to follow I use solid lines to indicate movements and hashed lines to indicate mergers.

(69)



(Harley 2011: 26)

Harley proposes that the two complex heads (circled in (69)) undergo MUA. MUA consolidates the two complex heads but would not, in and of itself, produce the reversed order. This, Harley again attributes to lexically-stipulated linearization; in this case Harley proposes that it is the prefixal specification of the adverbial *d-* which forces the complex head of AgrS/Asp to linearize to the left of the complex head of *v*, reversing their linear configuration. Once this reversal has been effected, all morphemes occupy their surface positions, as depicted in the row beneath the tree diagram.

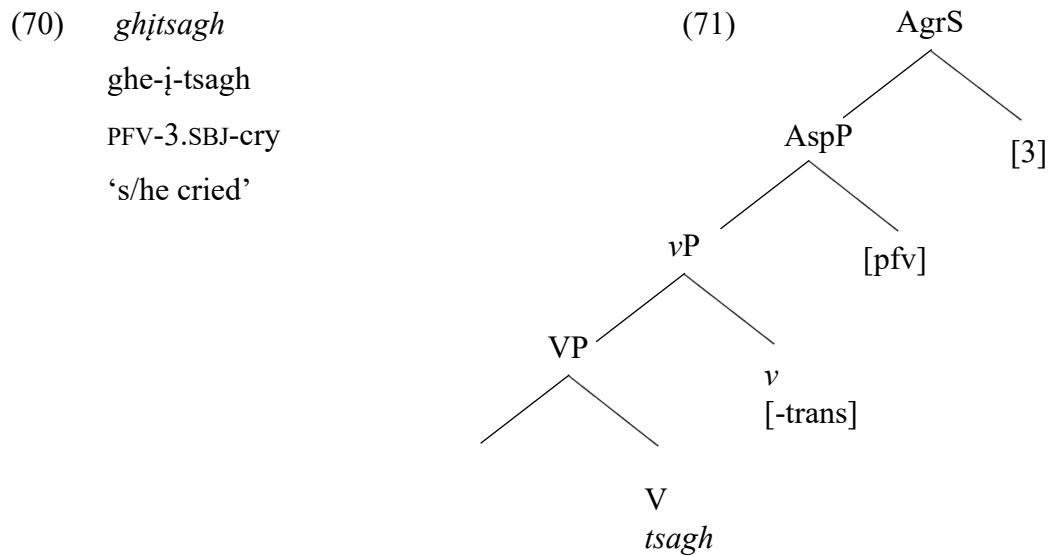
Compared to strict head-movement-approaches, such as Rice's, Harley's account of Navajo morphotactics introduces additional complexity by the introduction of MUA and lexically-stipulated linearization. However, Harley's approach employs only local movements and mergers, and obviates the need for the interpolative-adjunction required in Rice's account. Based on this advantage and its inclusion of the DM tools of MUA and morpheme-specific linearization, I take Harley's approach as a point of departure for the DM-application to Dene Sųliné to follow.²⁴

5.4.3 DM AND N

To parallel my application of PFM, I begin my application of DM with an examination of Class-1 (*ghe-* class) verbs taking N. As the first object of my analysis, I consider the same simplex Class 1b verb, *ghįtsagh* 's/he cried' considered in the PFM analysis in 5.3.1. The morphemic gloss of this verb is represented in (70). Due to its relatively simple structure, the basic phrase

²⁴ In my DM application, I follow Harley (2011) in positing an AgrS functional phrase into which subject-agreement affixes are inserted and in taking object-marking prefixes as realizations of DP complements to V. It is worth noting that contemporary syntactic theory has largely abandoned Agr functional phrases in representations of clausal universals (e.g. Chomsky 2015: 326). Removing AgrS is unlikely to result in significant changes to the analysis, however, provided the site of insertion of the agreement VI occupies a similar position at the top of the tree.

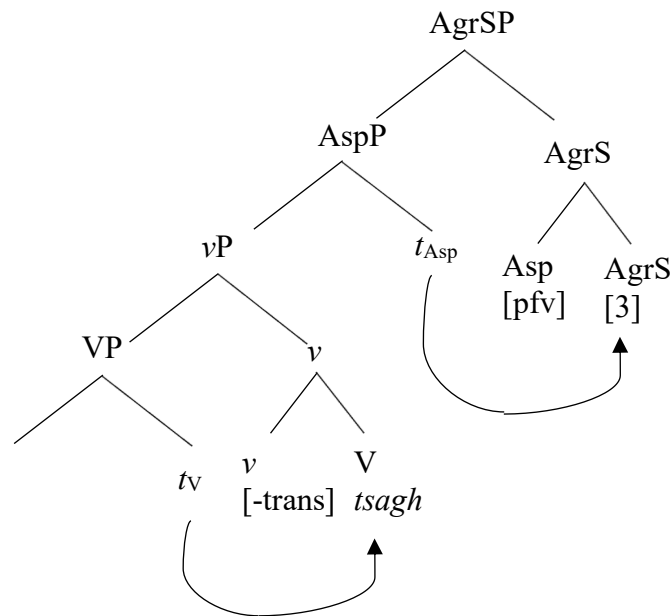
structure of *ghitsagh*, depicted in (71), lacks many of the complexities present in the Navajo verb analyzed by Harley. Unlike H, with its complex preceding-conjunct-prefix condition, the behaviour of N is fundamentally the same in both simplex and complex-stemmed verbs. For this reason, I will limit consideration here to the present simplex verb and save discussion of the additional complexities of discontinuous (DD and DC) verbs for the analysis of H.



The structure I propose in (71) differs from Harley’s Navajo verb structure for my decision to treat Agr and AspP as distinct, unfused functional heads. This decision is supported by the presence of distinct surface forms (*gh(e)-* and *i-*) for each and accords with my arguments against the “chunking” approach presented in 2.2. Apart from these differences, the basic configuration of functional heads proposed here is the same as that adopted by Harley.

Given the relative simplicity of its structure, shown in (71), fewer movements and mergers are necessary to derive surface morphotactics than in the complex-stemmed transitive verb considered by Harley. Necessary head movements are depicted in (72).

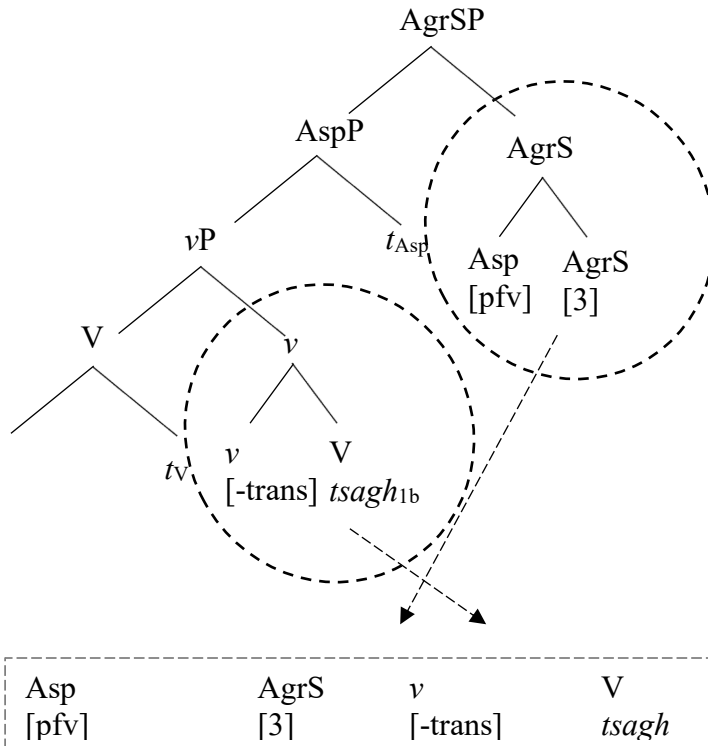
(72)



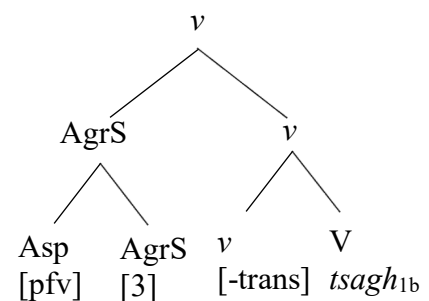
Head-movement of V to *v* and Asp to AgrS results in the intermediate structure in (72), resembling that of (68) in Harley's derivation. This structure differs from Harley's derivation, however, in that the second movement operates on Asp, as the verb *ghitsagh* includes no adverbial/gender prefix. If linearization outcomes at this juncture may be reasonably attributed to lexically-stipulated linearization, as Harley proposes, then the structure represented here requires only reversal of the linear configuration of the complex *v* and AgrS heads to produce the surface morphotactics. Following Harley in attributing the consolidation and reversal of morphemes to MUA, the second phase of the derivation, depicted in (73) merges the complex heads, consolidating them under *v*. At this point, the linearization of the AgrS head to the left of the *v* head is attributed to the specification of [pfv] as a prefix. Harley does not provide details on what the structure of the merged complex head would be; the diagram in (73) reflects the highest level of detail Harley provides in this respect. I will assume, however, that the resultant structure

would be that depicted in (74), in keeping with a definition of MUA as a process which “joins terminal nodes under a category node of a head (a “zero-level category node”) but maintains two independent terminal nodes under this category node” (Halle & Marantz 1993: 116). The specifics of this structure are relevant to Vocabulary Insertion, as will be discussed in greater detail in the following paragraphs.

(73)



(74)



Accepting for the present the mechanisms with which Harley accounts for linearization, MUA and lexically-stipulated linearization produce a syntactic structure, shown in (73)-(74), that agrees with observed surface morphotactics, awaiting only Vocabulary Insertion to complete the derivation of the verb-word. Taking (75) and (76) below as the relevant sets of VIs, several

interesting questions arise regarding VI definitions and selectional criteria necessary to account for the observed patterns of exponence in Dene Sų́líné verbs.

(75) Agreement Vocabulary Items

- a. /s-/ ↔ [+1]
- b. /íd-/ ↔ [+1], [+pl]
- c. /ĩ-/ ↔ [+2]
- d. /nɛ-/ ↔ [+2] / #___
- e. /uh-/ ↔ [+2], [+pl]
- f. /∅-/ ↔ [+3]
- g. /ĩ-/ ↔ [+3], ([pfv]) ([Class-1b])

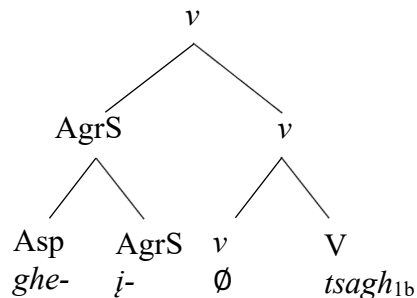
(76) Aspect Vocabulary Items

- a. /yɛ-/ ↔ [pfv] ([Class-1])
- b. /θɛ-/ ↔ [pfv] ([Class-2])
- c. /∅/ ↔ [pfv]
- d. /∅/ ↔ [ipfv]

In a morphological system which adheres to the “isomorphic ideal”, wherein each unique unit of content corresponds to one and only one unit of form, the only features relevant for the selection of a VI would be those which the VI could be said to primarily express. Where the correspondence between form and meaning is non-isomorphic, as in Dene Sų́líné’s conditioned selection of competing VIs (N/∅- or H/*the*-), VI definitions must be further specified, including contextual features to account for the selection of one VI over another. Proceeding with the derivation of *ghıtsagh* ‘s/he cried’, insertion of the expected agreement VI (75g) *ĩ-* is conditioned in part by the presence of the [3.sbj] feature occupying the AgrS head, which this VI may be considered to primarily express; however, insertion of this VI is also conditioned by two different types of contextual feature, a morphosyntactic feature, [pfv] (sister to AgrS in (74)) and a feature of inflectional class ([Class-1b]) associated with the VI inserted at the V head.

Following Harley and Noyer (1999: 6), I differentiate contextual features from primary features in VI definitions by enclosing the former in parentheses. In the absence of these contextual features, the more generally applicable null VI would be inserted in place of *i-*. Insertion of the expected aspectual VI, (76a) *ghe-*, is determined in part by the primarily-expressed [pfv] feature on Asp and in part by a contextual specification referring to the class of the stem, ([Class-1]). I limit detailed consideration here to the insertion of the relevant f(unctional)-morphemes for agreement and aspect; however, the phonological forms for both the classifier (null) and the V head (*tsagh*_{1b}) would also require realization through Vocabulary Insertion. The final outcome of Vocabulary Insertion would be the representation in (77), related to the surface form *ghitsagh* ‘s/he cried’ through minor phonological adjustment.

(77)



Though I have thus far accepted without question the use of contextual features in the VI definitions in (75) and (76), these contextual sensitivities raise several interesting questions. Stump (2001: 10) argues that the distinction between features of content and context is an unmotivated one and underdetermines analyses in lexical frameworks; the analyst is forced to choose whether a given feature is part of an exponent’s content or part of its subcategorization. This type of contextual sensitivity has not gone unaddressed in the literature on DM. Halle and Marantz (1993: 123) distinguish “context-free competition”, determined purely by substantive

features of the morpheme being realized, from “context-dependent competition”, or “conditioned allomorphy”, competition between VIs decided by contextual features. As an example, Halle and Marantz consider English tense morphology, accounting for the competition between regular past tense suffix *-ed* (e.g. *explain-ed*) and a null-VI (e.g. *wrote-∅*) with reference to the presence/absence of a [+strong] feature on the verb root (p. 123-123). Taking this view, the choice between Dene Sɬliné’s perfective prefixes *the-* and *ghe-* might likewise be attributed to context-dependent competition decided by the class of the verb root, with the presence of a [Class-1] feature on V licensing insertion of *ghe-* and a [Class-2] feature licensing *the-*. An unresolved question arising from Halle and Marantz’s account of context-dependent competition concerns the nature of the structural relationship which holds between an inserted VI and the contextual feature(s) conditioning its insertion. Halle and Marantz note the relevant features using “/”-notation in their vocabulary entries (e.g. [+past] ↔ ∅ / [+strong]____); in the case of English tense morphology this notation may suffice, if, as Halle and Marantz assume, the V and T heads are structurally adjacent following the merger and lowering of T. Accounting for the distribution of aspect VIs in Dene Sɬliné cannot be identically addressed, however, as the conditioning class feature on V is not structurally adjacent to the Asp head in the resulting complex head in (77).

Harley and Noyer (1999: 6) employ a similar mechanism, which they term “secondary expression”. As with Halle and Marantz, Harley and Noyer do not pursue explicit discussion of the structural relationship that holds between the realized morpheme and the morpheme(s) hosting the “secondarily expressed” conditioning features. Harley and Noyer do, however, specify that insertion of the VI in question occurs only if the secondarily-expressed feature has undergone “prior discharge” by the insertion of a VI primarily expressing this feature. This

account at least has clear implications for order of operations; considering once again the Dene Sųlíné verb *ghıtsagh* ‘s/he cried’, if insertion of *i-* vs. \emptyset ‘3.sbj’ (or *i-* vs. *s-* ‘1.sbj’) amounts to secondary expression of [pfv], the implication is that [pfv] must have been previously discharged by insertion of a relevant VI. Harley and Noyer also note (p. 4) that Vocabulary Insertion is generally assumed to take place cyclically, beginning with the most deeply embedded morphemes. It is not entirely clear, however, how this principle would apply in the case of the symmetrical structure resulting from MUA in (77).

Elsewhere, Harley and Noyer (2000) employ the notion of licensing in an account of lexical-morpheme selection; in this case the relevant licensing environment is defined structurally, with reference to Government. If I may extend their concept of licensing to functional-morpheme selection, taking c-command to be the relevant structural relationship holding between a target morpheme and the contextual features licensing its insertion, this requirement appears to be problematic for at least one of the VIs in the derivation of a verb like *ghıtsagh*. The sensitivity of *i-* ‘3.sbj’ (75g) to the contextual feature [pfv], is not problematic, as a relation of symmetric c-command holds between the AgrS and Asp morphemes in the structure in (77), but it is less clear whether the same relationship holds between AgrS and the class feature on V. The same problem arises in the selection of Asp morphemes, likewise sensitive to inflection-class features of the V root.

To consider a final alternative, Siddiqi (2009: 43) proposes doing away with licensing/context-dependent competition altogether, by attributing the choice of competing forms to fusion and Vocabulary Insertion. In this case, the relevant contextual feature is assumed to have fused with the lexical head and the choice of VI can proceed with reference to the targeted terminal node alone. Siddiqi’s proposal resolves the need for contextually determined selection

in cases of suppletive stems or stem allomorphy (e.g. *go/went*, *sing/sang*) where it is reasonable to propose fusion of the relevant stem and functional morpheme (doing away with the need for null tense VI and Readjustment Rules in the process). However, it is not clear how this proposal would work in the case at hand, as the aspect and agreement morphemes have not undergone fusion with V, as evidenced by their realization by separate VIs. In sum, even accepting the range of mechanisms proposed by Harley (2011), a number of unresolved problems exist in defining VIs that accurately account for the selection of Dene Sųliné’s tonal exponent in a way that is principled and well-motivated in terms of syntactic structure.

5.4.4 DISTRIBUTED MORPHOLOGY AND H

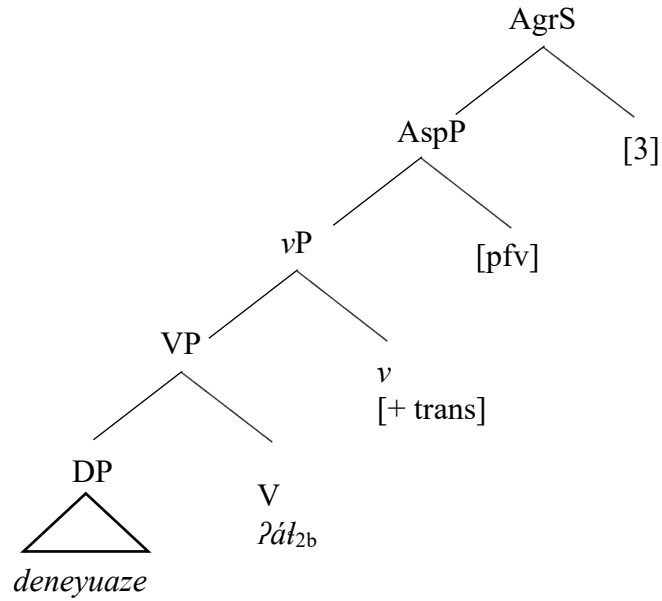
Consideration of H within the PFM framework revealed that the distribution of this tonal exponent makes it the more challenging of the two phenomena under consideration (Section 6.3.2). The following application of DM to H reveals similar complications. In addition to the simplex, i.e. non-discontinuous verb type, in this section I also consider verbs with complex, discontinuous stems, as structural characteristics of such verbs are relevant to the distribution of H. This also permits me to evaluate DM’s ability to accommodate verbs of all three types and addresses a gap in Harley’s analysis, which only considered a single Navajo verb (representing the DC type).

5.4.4.1 H IN SIMPLEX VERBS

I begin by considering the simplest case, taking the simplex verb *theʔáł* ‘s/he bit (something)’, (78) as the object of my analysis. I take the structure in (79) to be underlying.

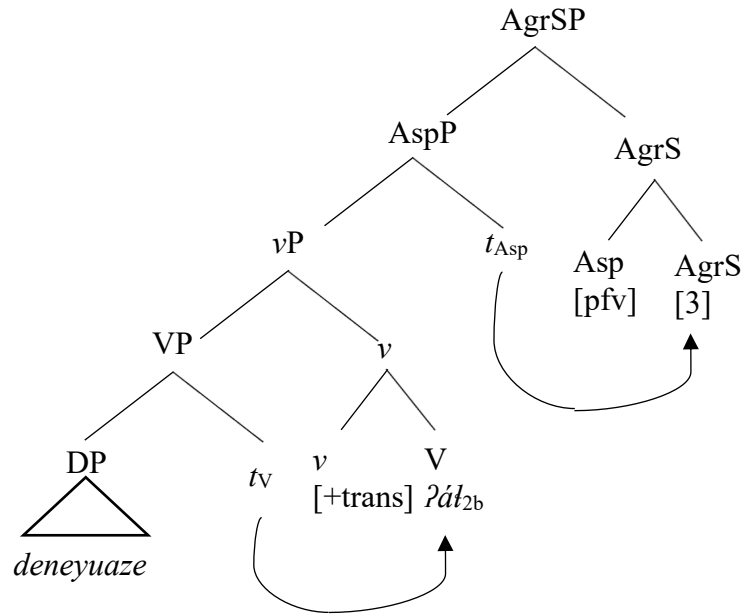
- (78) *deneyuaze theʔát*
deneyuaze the-Ø-Ø-ʔát
 boy PFV-3.SBJ-CL-bite.pfv
 ‘It bit the boy’

(79)

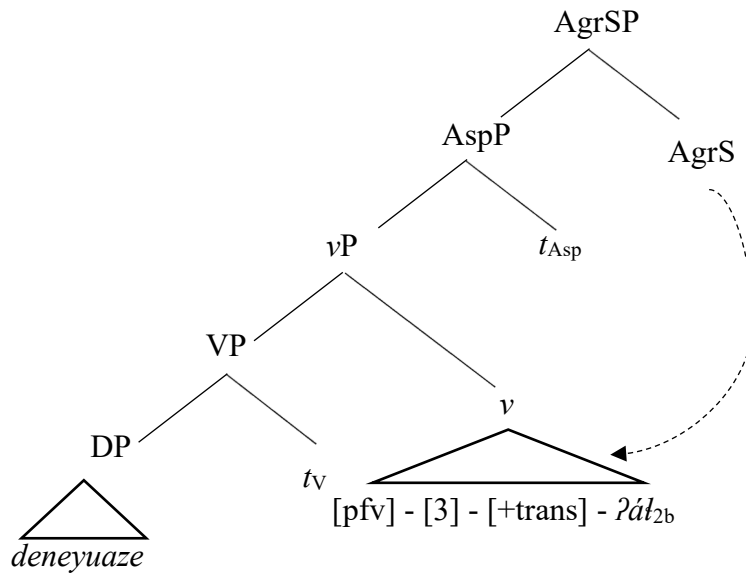


Head-movements and MUA proceed in the same manner as in the simplex verb *ghɨtsagh* considered in 6.4.3 culminating in the structure in (81), in which all morphemes are incorporated under *v*.

(80)



(81)



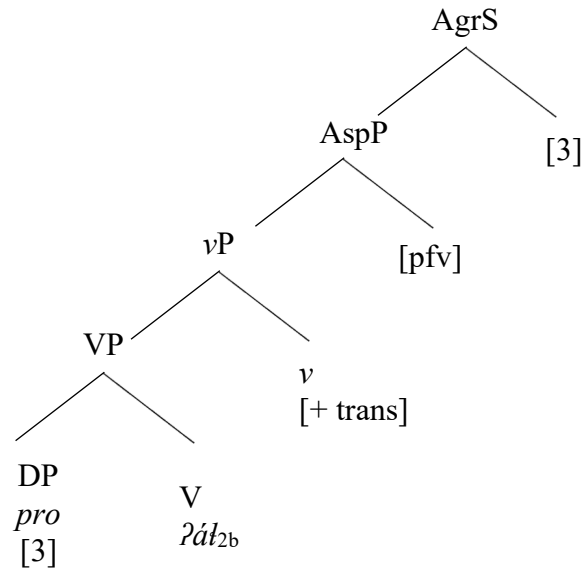
Vocabulary Insertion

deneyuaze *the* - \emptyset \emptyset $\text{?}á\text{?}$

Once the configuration of morphemes corresponds to surface morphotactics, the process of Vocabulary Insertion realizes each morpheme. Competition between VIs specified for [pfv] (i.e. *the-* and *ghe-*) is resolved based on the presence of a Class-2 feature on the V head *ʔál*. The null morpheme, \emptyset , is selected to realize the [3.sbj] feature in this case, because the competing VI, *i-* in (75g) conflicts with the class feature on V.

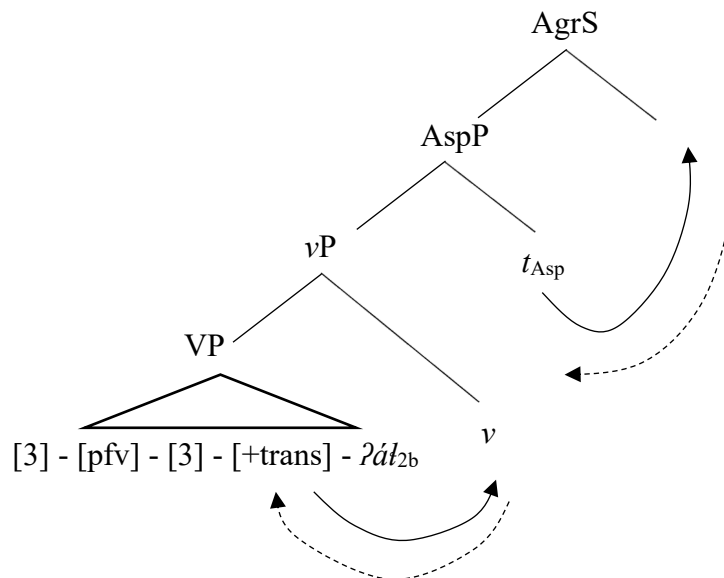
The proposed derivation of *theʔál*, occurring in a phrase like *deneyuaze theʔál* ‘s/he/it bit the boy’, is relatively straightforward. As established in Chapter 2, however, *ʔál* belongs to the set of verbs which exhibit H in verb-forms meeting each of the three criteria introduced in 2.1.1: Class-2 membership, agreement with a third-person subject, and the presence of a preceding conjunct prefix. In the presence of an object DP, such as *deneyuaze* ‘boy’, H is absent and the *the-* prefix appears. To consider the DM framework’s ability to adequately account for H, it is important to consider the derivation of a verb like *ʔál* ‘bite’ in a context meeting all conditions for the application of H. All conditions are met in a construction lacking an object argument DP, in which case the verb takes the *ye-* object marker, satisfying the preceding-conjunct-prefix condition. In this context, a speaker would produce the verb-form *yéʔál* ‘s/he bit him/her/it’. Here I presume the underlying structure would be that shown in (82), where we find a null pronominal as complement to V, rather than the overt DP *deneyuaze*.

(82)



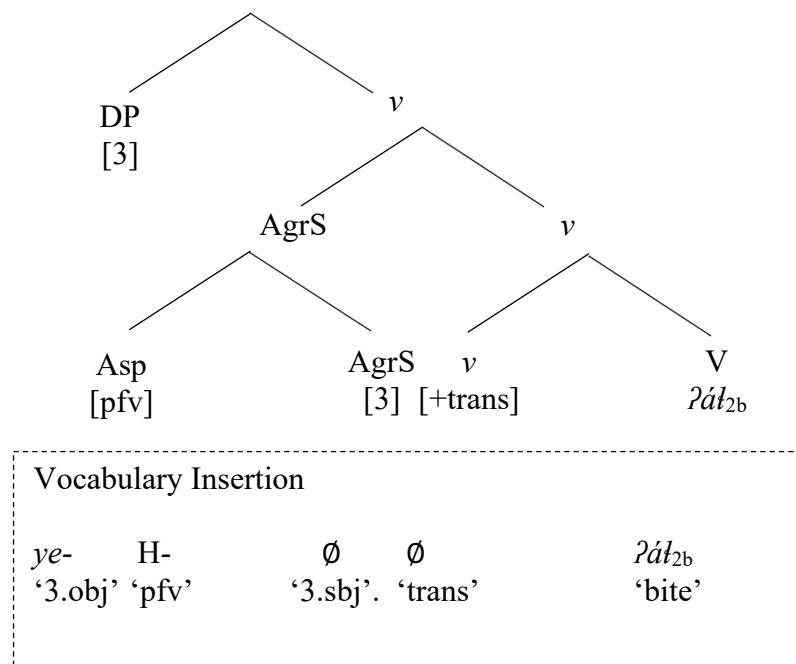
The now familiar series of head-movements and MUA produce the structure in (83) with all morphemes incorporated into the verb-word and in an order reflecting surface morphotactics.

(83)



With all morphemes incorporated and linearized, the syntactic structure is ready for Vocabulary Insertion. While accounting for the distribution of morphemes in Class-1b verbs taking N is relatively straightforward, accounting for the distributions of *the-* and H in Class-2 verbs is considerably more complicated.

(84)



I assume that the resultant structure, following all necessary applications of head-movement and MUA, is the complex head in (84). VIs compete for insertion into each of the terminal nodes in this structure. An adequate account of Vocabulary Insertion must explain the distribution, specifically the mutual exclusivity, of *ye-* and non-pronominal object DPs, as well as the mutual exclusivity of *the-* and H. In (85)-(87), I reintroduce the list of VIs with the necessary revisions and additions to account for these additional complexities.

(85) AgrS Vocabulary Items

- a. /s/- ↔ [1.sbj]
- b. /i/- ↔ [1.sbj], ([pfv]), (V_b)
- c. /id/- ↔ [1.sbj], [+pl]
- d. /ne/- ↔ [2.sbj] / #___
- e. /ĩ/- ↔ [2.sbj]
- f. /uh/- ↔ [2.sbj], [+pl]
- g. /Ø/ ↔ [3.sbj]
- h. /ĩ/- ↔ [3.sbj], ([pfv])
/ ___ V_{1b}

(86) Aspect Vocabulary Items

- a. /yε-/ ↔ [pfv] / ___ V₁
- b. /θε/ ↔ [pfv] / #___ V₂
- c. Ø ↔ [pfv]
- d. Ø ↔ [ipfv]

(87) Object-Marking Vocabulary Items

- a. /sε/- ↔ [1.obj]
- b. /ne/- ↔ [2.obj]
- c. /be/- ↔ [3.obj]
- d. Ø ↔ [3.obj]
- e. /ye/- ↔ [3] ([3])

I consider each morpheme in (84) from left to right, beginning with that hosting the [3.obj] feature. Considering only the primarily expressed agreement feature [3], there are three VIs competing for insertion to this terminal node: *be-*, *ye-*, and a null morpheme. Limiting discussion to the *be-* and *ye-* alternatives, competition must be resolved with reference to contextual

features. As *ye-* only occurs in verbs expressing agreement with a third-person subject, one possibility is that *ye-* is selected over *be-* when a [3.sbj] feature is discharged by a VI elsewhere in the word (in this case, by (85g)). In such instances, *ye-* is selected over *be-* as the most narrowly-defined VI compatible with the features of the target morpheme. Defining the VI in this way explains the mutual exclusivity of *ye-* and *be-*; however, a complete account must also explain the mutual exclusivity of these bound morphemes with syntactically free object DPs such as *deneyuaze* ‘boy’. Relatedly, some account must also be provided for the bound vs. free status of these morphemes. If this difference is owing to a difference in syntactic structure, then presumably the difference would be that between the structures in (80) and (83) where the object DP remains unincorporated in the former, but is incorporated into the word via MUA in the latter. However, if the object DP is a bundle of features in each case, an explanation is required for why MUA incorporates the morpheme that will be realized by *ye-*, but not the morpheme realized by a non-pronominal DP. Given the principle of late insertion (e.g. Halle & Marantz 1994: 275), it is unclear how to motivate the differences in the applications of MUA producing these two structures. Given this challenge, it would seem the simplest account is to treat both DPs identically in terms of syntactic structure, i.e. leave this DP unincorporated in both cases but list *ye-* as a bound form in the lexicon.²⁵

A second complication in Class-2 verbs taking H is to account for the distribution of H and *the-*. The first decision required to this end is whether or not H should be treated as a VI. Accepting H as a VI alongside forms like *the-* does not seem to be a trivial decision; this means permitting VIs with phonological forms lacking any segmental content. Of course, advocates for DM already postulate VI entries with no phonological content, i.e. null VIs, though the

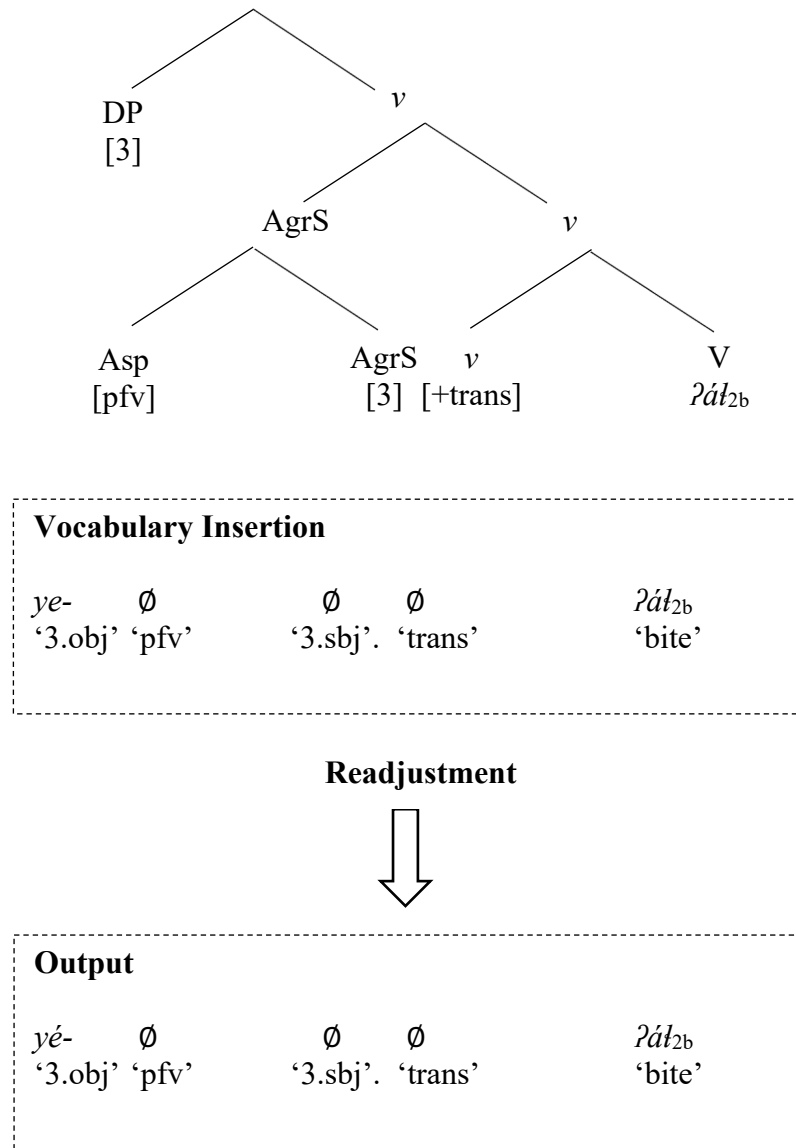
²⁵ However, this approach is also problematic in consideration of the data in (60) demonstrating distinct positions for *ye-* and the unbound object argument.

requirement for an abundance of such null forms has been the target of critique by advocates for both inferential and lexical frameworks (e.g. Stump 2001: 10; Siddiqi 2019: 152). In at least one sense, however, morphemes devoid of any phonological form are easier to deal with than those consisting solely of non-segmental features. Null morphemes may be posited wherever the semantic/functional content of a word-form dictates, without any concern for how their presence may affect the phonological form of the word. Where the form of a VI consists solely of non-segmental features a number of questions arise. Firstly, some account must be provided for the position of the non-segmental feature at spell-out. Secondly, (and a similar critique may be made of null morphemes), given the equivalent treatment of lexical and functional morphemes in the DM framework, why are such VIs limited to serving as realizations of functional morphemes?

An alternative possibility available to the DM framework is a treatment of H as the output of a Readjustment Rule. This treatment avoids the above-mentioned drawbacks of a VI account of H, but is not without its own complications. Applications of Readjustment Rules in DM have largely figured in accounts of non-concatenative processes affecting stems (see discussion of Halle and Marantz’s analysis of English, section 4.3.4). In general, however, Readjustment Rules “have the form of phonological rules and apply to *morphemes* after Vocabulary Insertion” (Halle & Marantz 1993: 128, emphasis mine) and should not in principle be limited to stem morphemes. A Readjustment Rule introducing H would have to be conditioned by the presence of a [3.sbj] feature, [pfv] feature, and the presence of a “preceding conjunct prefix”. It would seem that the best way to approach the readjustment account of H would be to define VIs in such a way that a null VI, rather than *the-*, is inserted into the Asp head in such forms, and a Readjustment Rule introducing H applies to whichever VI acts as “preceding conjunct prefix” (however this is ultimately defined syntactically). The distribution of

the- and H suggests possible means of accounting for selection of a null VI over *the-*: *the-* only appears word-initially, that is, adjacent to the disjunct boundary. I have represented this fact in the definition of rule (86b) using the “#___” notation to represent this context. This notation might be taken as shorthand for a syntactic structure in which the targeted aspect morpheme is asymmetrically c-commanded by another morpheme within the complex head. Stated inversely, *the-* is only inserted in the case that the targeted Asp morpheme is not asymmetrically c-commanded by any morpheme within the word (and is therefore adjacent to the prosodic word boundary at spell-out). If a null VI is selected to realize [pfv] when this condition does not hold, then the Readjustment Rule need only introduce a high tone on the VI satisfying the preceding-conjunct-prefix condition (*ye-* in this case). Vocabulary insertion into the structure in (84) would proceed as follows: the default null morpheme would be inserted into the Asp head, beating out *the-*, which only applies in a position adjacent to the word-boundary (i.e. directly dominated by the head hosting the word). An additional null morpheme (85g) is inserted into the AgrS head, as the alternative agreement VI, *i-*, is incompatible with the class feature on V. Finally, the *ye-* VI (87e) is inserted at the AgrO head, selected over *be-* (and \emptyset), due to its contextual sensitivity to the previously discharged [3.sbj] feature. Insertion of *ye-* also fulfills the final condition on the application of the Readjustment Rule introducing H by satisfying the preceding-conjunct-prefix condition, and the end result is the output form in (88).

(88)

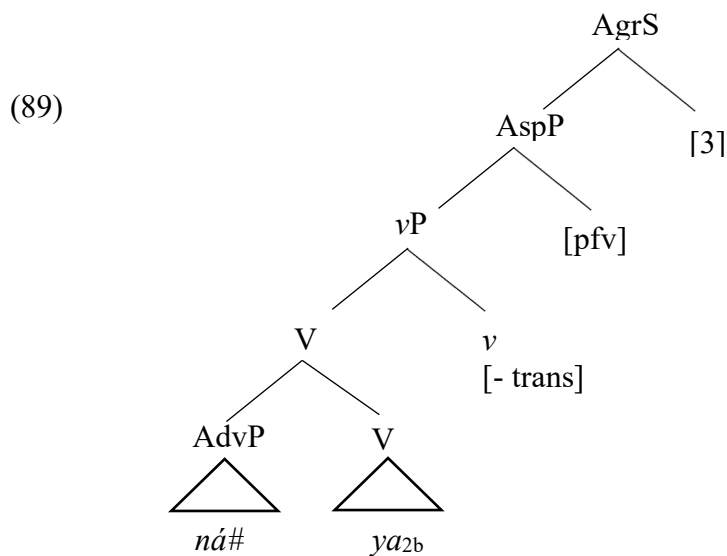


The proposed treatment of H as a Readjustment Rule rests on the proposed definition of “word-initial” in syntactic rather than phonological terms, as the presence or absence of a c-commanding morpheme. What this requires, however, is that Vocabulary Insertion be sensitive to a distinction between syntactic structure at the sub- and supra-word levels, as the targeted morpheme is potentially c-commanded by morphemes outside of the word, in which case the VI *the-* is expected. This distinction seems problematic, however, given the DM assumption of the

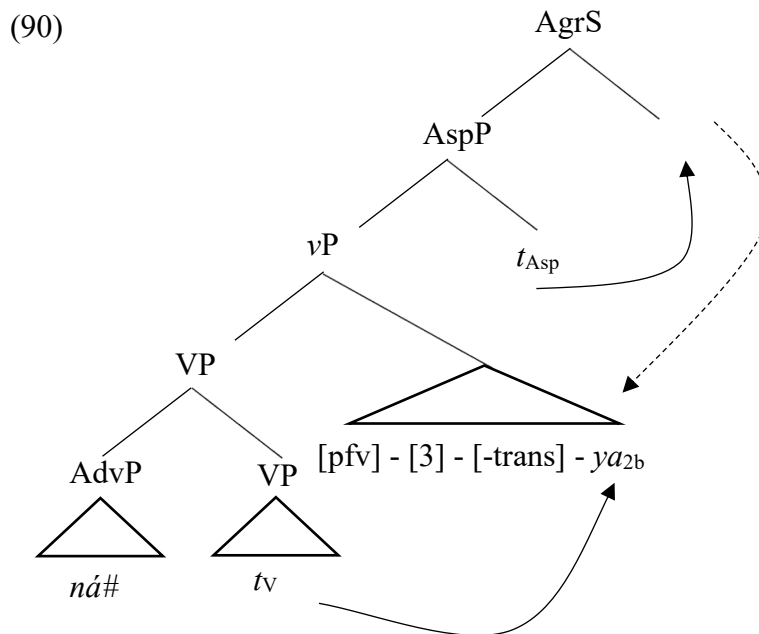
equivalence of word- and phrase-level syntax. In sum, the application of DM to a simplex stem considered here raises some interesting questions about possible interpretations of Dene Sų́líné morphological structure within the DM framework. In the following sections, I consider how Dene Sų́líné's discontinuous stems may inform possible resolution of these questions.

5.4.4.2 H IN DISCONTINUOUS-DISJUNCT VERBS

In this section, I consider the DD verb-form *nátheya* 's/he went (and returned)', composed of the disjunct element *ná-* 'reversative' and the root *-ya* 'go'. A verb like *nátheya* does not take H because the requisite preceding conjunct prefix is absent; the reversative prefix *ná-* is one of the set of disjunct prefixes and so does not preclude insertion of *the-* or trigger H. The high tone on *ná-* is an inherent feature of this prefix, not an instance of H. Consideration of this type of verb is useful to shed light on the structural position of disjunct elements like *ná-* 'reversative' and the structural differences between this type of verb and the DC type as they relate to the distribution of *the-* and H. In its basic structure, *nátheya* would resemble the structure Harley (2011) proposes for her Navajo example, though the structure I propose, (89), departs from Harley's account in a number of respects.



In addition to my treatment of AgrS and AspP as unfused functional phrases, the structure in (89) includes a further departure from the structure proposed by Harley: I propose treating the reversative morpheme *ná-* as a VP adjunct, rather than a constituent of a small clause as Harley has proposed. Harley herself notes (2011: 23) the potentially “controversial” nature of her choice in this regard, and given the roughly adverbial function of this morpheme, treating it as a VP adjunct seems to be a reasonable means of incorporating it into the phrase structure while accounting for both its peripheral positioning and “disjunct” behaviour. Taking this structure as the starting place of the morphological derivation, the established movements and mergers apply, producing the pre-vocabulary-insertion structure in (90).

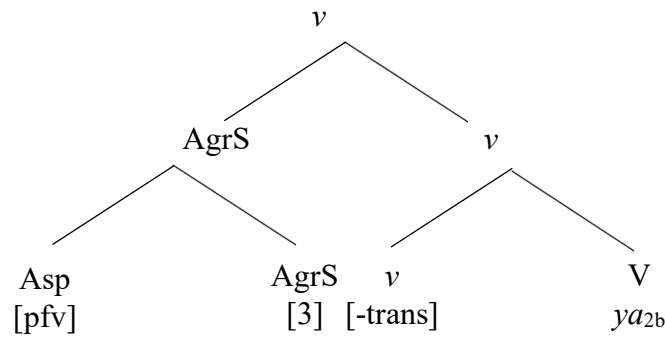


Vocabulary Insertion

<i>ná-</i>	<i>the-</i>	∅	∅	<i>ya</i> _{2b}
‘reversative’	‘pfv’	‘3.sbj’	‘-trans’	‘go’

In this verb-form, Vocabulary Insertion is decided in favour of *the-* to realize [pfv] because the aspect morpheme in the derived structure is not asymmetrically c-commanded by any other morpheme within the word, as illustrated by the word-internal structure in (91).

(91)

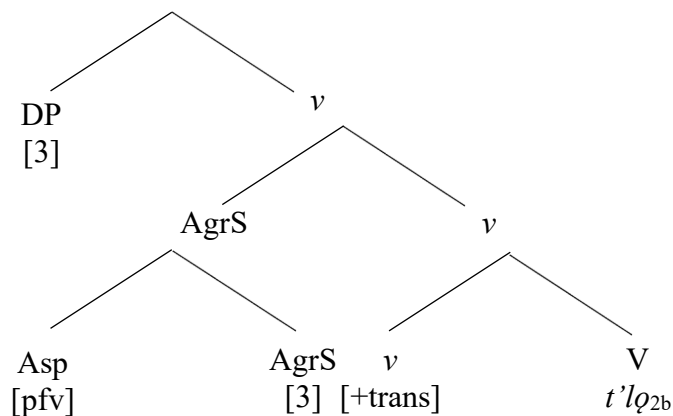


This structure satisfies the “/#_____” contextual condition of the relevant VI, (86b), introducing *the-*. In accordance with Pāṇini’s Principle, (86b) applies as the most narrowly defined applicable rule, accounting in this way for the presence of *the-*.

The application of DM to the DD verb *nátheya* demonstrates how the structural configuration of *ná-*, specifically its position external to the incorporated word, might determine the outcome of Vocabulary Insertion in favour of *the-* over the more generally defined null VI, (86c). Taking this structural configuration, i.e. the absence of an asymmetrically c-commanding word-internal morpheme, as the relevant contextual condition on selection of *the-* appears to have promise as an explanation for the distribution of *the-*. A complication arises, however, when we consider the possibility of asymmetrically c-commanding morphemes realized by null VIs. Not all transitive verb-forms take a phonologically overt object marker; it is for this reason that the set of object-marking VIs, (87), includes a null VI. A verb-form agreeing with two third-

person arguments will always exhibit the *ye-* prefix, which will rule out selection of *the-* and trigger the application of the Readjustment Rule introducing H, e.g. *yét'lq* 's/he knitted it'; however, where the subject is first- or second-person and the object third-person, many verb-forms lack a phonologically overt [3.obj] prefix, e.g. *thitl'q* 'I knitted (it)'. If we assume the pre-insertion structure in (92) for a verb like *thitl'q*, paralleling that proposed for *yéʔál* 's/he bit it' in (84), then the presence of the c-commanding object morpheme incorrectly predicts selection of \emptyset to realize [pfv], not *the-*.

(92)



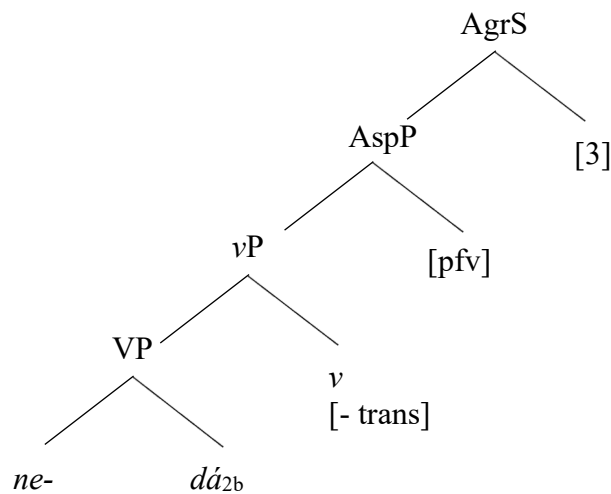
The fact that selection of *the-* is sensitive to the phonological properties of the VI realizing the object morpheme calls into question the proposed treatment defined in terms of syntactic structure. This is, in effect, much the same problem as was encountered in the PFM account of H. As it is the insertion of a phonologically-overt VI at the c-commanding morpheme that is relevant both for the selection of *the-* vs. \emptyset - and as condition on a rule introducing H, attempting to capture this condition in terms of syntactic structure is not sufficient. Here too we encounter a similar look-ahead problem in that selection of the aspect VI is conditional on phonological

characteristics of the c-commanding morpheme, a fact that is particularly problematic if we follow Harley and Noyer in proceeding with VI insertion from the most embedded morphemes outward.

5.4.4.3 H IN DISCONTINUOUS-CONJUNCT VERBS

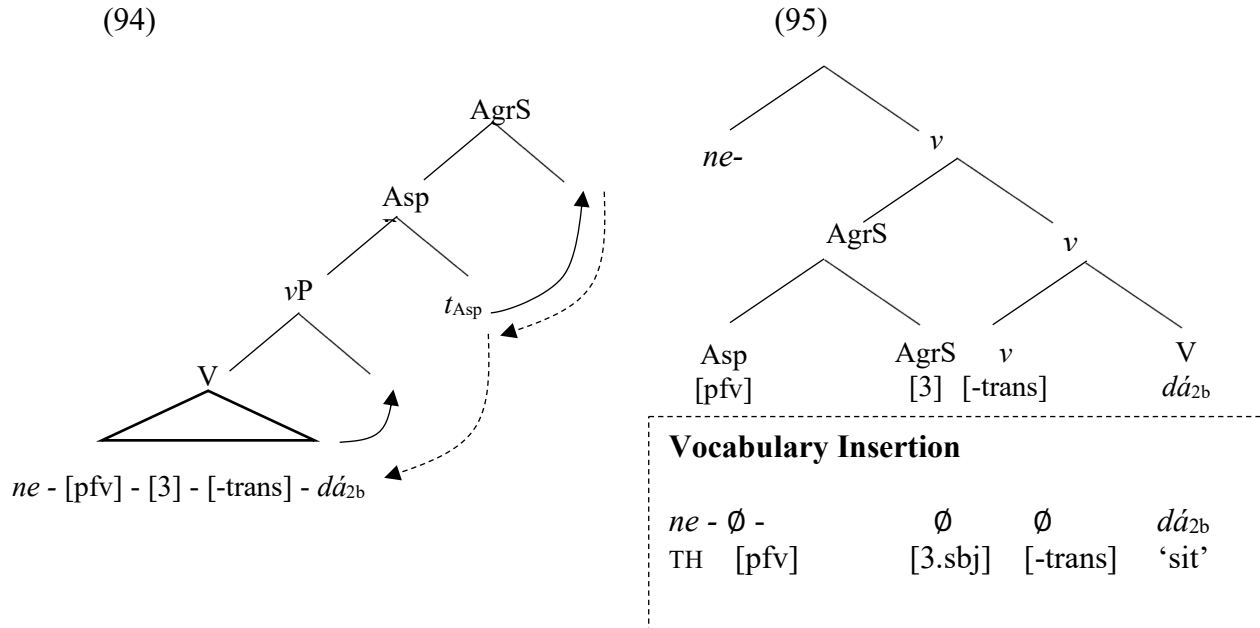
The last verb I will consider in my application of DM is the DC verb *néda* ‘s/he sat down’. For this verb, I propose the underlying structure in (93).

(93)



With the structure in (93), I depart from Harley’s analysis in my treatment of the thematic prefix *ne-*. Harley treats a similar prefix, *di-*, as an adverb and functional head in the extended projection of V. The structure I propose (93) aligns with Cook’s account of Dene Sųliné (2004: 175), which treats such prefixes as “thematic”, i.e. lexical, with any semantic correlations they may exhibit taken to be vestigial. As such, I propose treating such prefixes as forming a

compound verb headed by the verb root, in this case *-dá*. This is analogous to what Rice (1998: 667) proposes in her account of Slavey. Taking the verb root to be the head of this compound verb permits its movement to *v* via head-movement, as in the preceding examples. Movements and mergers produce the structure in (94), with details of the resulting complex head represented in (95)



Realization of the functional morphemes in (95) would result in insertion of the null VI into the Asp head, which is c-commanded by *ne-* and will not, therefore, occupy a word-initial position, thereby disqualifying *the-*. As with the previously considered derivations, however, conditioning selection of the null aspect VI on the presence of *ne-* entails the same look-ahead problem if *ne-* is inserted subsequent to the aspect VI. The AgrS head is realized by a null morpheme as well, as the remaining subject-agreement VIs conflict with either the person feature or the class feature on V. Finally, insertion of *ne-*, in conjunction with the presence of the [3.sbj] and [pfv] features triggers the Readjustment Rule introducing H, resulting in the surface form *néda*.

5.4.5 INTERIM SUMMARY - DM

With the preceding discussion, I have demonstrated one possibility for a DM analysis of Dene Sųlíné's tonal exponent, treating this high tone as the outcome of a Readjustment Rule. As with my consideration of H in the PFM application of 5.3, a major challenge in the DM account of H is in capturing the distribution of this tone in a satisfactory way; in particular, it is challenging to account for the preceding-conjunct-prefix condition and the mutual exclusivity of H and *the-*. I have considered the possibility of referring to syntactic structure in accounting for these distributional facts, with both the Readjustment Rule applying H and the Vocabulary Item *the-* conditioned by the presence of a c-commanding morpheme, the former applying in the presence of such a morpheme, and the latter selected in the absence of one. In one respect, this account seems preferable to that proposed in my PFM application. Where the relevant PFM Rule of Exponence (57) captured the preceding-conjunct-prefix condition with a complex list of disjunctive morphosyntactic features, DM seems to offer the potential for a simpler, more unified account of the various prefixes satisfying this condition with reference to the structural relationship of c-command. However, reference to c-command in the definitions of the proposed Readjustment Rule and VI necessitates a distinction between c-commanding morphemes within the word and those in syntactic structures external to the word, a distinction which runs counter to DM's assumption of the equivalence of word-level and phrase-level syntax. This account is also deficient in that it does not reflect the fact that phonological properties of inserted VIs decide selectional outcomes, not the presence of c-commanding morphemes in general.

Ultimately, the DM account runs up against a very similar look-ahead problem to that encountered in my application of PFM. The problem encountered by both frameworks is that the "preceding-conjunct-prefix" condition describes an environment defined in terms of form, rather

than content. Regardless of the framework, DM or PFM, unless assumptions about order of operations are revised there does not appear to be a straightforward way of capturing H in terms of morphological exponence.

CHAPTER 6. WOLLASTON LAKE DENE SŪLINÉ

I now consider a number of interesting qualities observed in the dialect of Dene Sŭliné spoken in Wollaston Lake (Thęłtué), Saskatchewan and how they pertain to the descriptive and theoretical goals of this thesis. I first discuss some points on which Wollaston Lake Dene Sŭliné differs from other dialects described elsewhere, such as in Cook's grammar, before considering a number of intergenerational differences in the productions of the Wollaston Lake Dene Sŭliné speakers I have interviewed: Florence St. Pierre and Melanie St. Pierre. Florence was born and raised in Wollaston Lake, and now resides in Prince Albert, Saskatchewan, where she is engaged as a student of Indigenous Studies and as a teacher. Florence's mother, Melanie, resides in Wollaston Lake, and is actively engaged in child-welfare initiatives involving the broader Dene community. Both Florence and Melanie are passionate about and engaged in language-education and language-reclamation. I am very grateful to have had the opportunity to work with Florence and Melanie, both of whom have been generous (and patient) in sharing their knowledge of Dene Sŭliné with me. I look forward to continuing to work with Florence, Melanie and other members of the Wollaston Lake community in an ongoing educational materials project. It is my sincere hope that some of what I have learned about Dene Sŭliné verbal morphology may prove useful to language-learners and language-educators working to ensure the Dene Sŭliné language is passed on to future generations.

Concerning the theoretical goals of my thesis, my work with Florence and Melanie St. Pierre has also permitted me to consider linguistic data I can confidently attribute to a single dialect, which has been valuable for the consideration of synchronic models of the grammar. At the same time, consideration of dialectal and intergenerational differences also has value to inform an understanding of morphological theory.

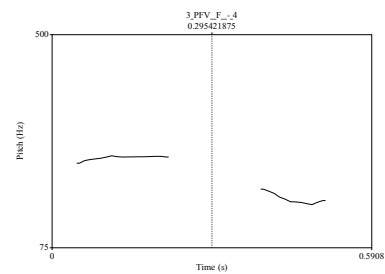
6.1 DIALECTAL DIFFERENCES

I first consider two points of interest encountered in my study of Wollaston Lake Dene Słliné, each of which bears on the theoretical applications of the preceding chapter. First is the presence of H in verb-forms apparently failing to meet the preceding-conjunct-prefix condition discussed at length in Chapter 5. The second is the total absence of aspect prefixes in paradigms of many complex verb lexemes.

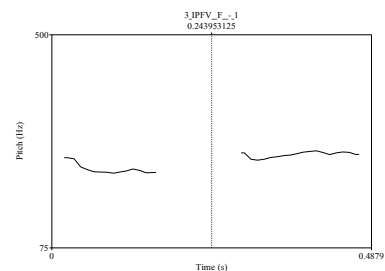
6.1.1 H IN INCEPTIVE-PERFECTIVES

Perhaps the most salient point revealed by the PFM and DM applications in Chapter 5 has been the challenge in accounting for the preceding-conjunct-prefix condition on the occurrence of H. Given this challenge, it is interesting to note that several of the verb-forms provided by Wollaston Lake consultants provide apparent instances of H in the absence of a preceding conjunct prefix. Examples (96) - (98) are verb-forms demonstrating this pattern.

- (96) a. hékith
he-H-Ø-kith
INCEP-PFV-3.SBJ-take.off.PFV
‘it took off’

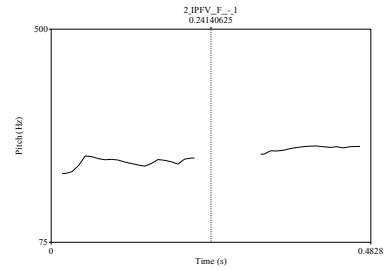


- b. hekíth
he-Ø-Ø-kíth
INCEP-IPFV-3.SBJ-take.off.IPFV
‘it will take off’



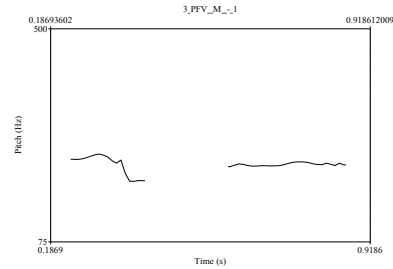
- c. hɨkíth
 he-Ø-i-kíth
 INCEP-IPFV-2.SG.SBJ-take.off.IPFV
 ‘you will take off’

(Florence St. Pierre 2022)

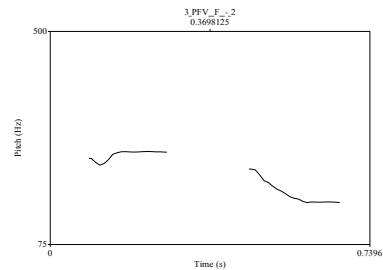


- (97) hélzé
 he-H-Ø-l-zé
 INCEP-PFV-3.SBJ-hunt
 ‘s/he went hunting’

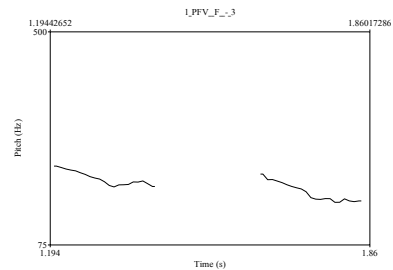
(Melanie St. Pierre 2022)



- (98) a. hékɨ
 he-H-Ø-kɨ
 INCEP-PFV-3.SBJ-go.by.boat.PFV
 ‘s/he went by boat’

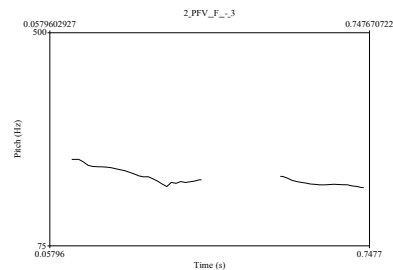


- b. hikɨ
 he-Ø-i-kɨ
 INCEP-PFV-1.SG.SBJ-go.by.boat.PFV
 ‘I went by boat’



- c. hɨkɨ
 he-Ø-i-kɨ
 INCEP-PFV-1.SG.SBJ-go.by.boat.PFV
 ‘You went by boat’

(Florence St. Pierre 2022)



Verbs in (96) - (98) represent three distinct paradigms based on lexemes: KÍTH ‘take off (depart)’, ZÉ ‘hunt’, and KÍ ‘go (by boat)’. Beside each gloss is a pitch contour of a corresponding token. In

(96), we find one third-person perfective form, *hékith* ‘it took off’, one third-person imperfective form *hekíth* ‘it will take off’, and one second-person imperfective form *híkíth* ‘you will take off (in a vehicle)’. The main point of interest in these forms is the presence of H on the penult of the third-person perfective form (and its absence in the corresponding imperfective forms). The difference between imperfective and perfective verb-forms is reflected in the pitch contours; (96a) exhibits a pronounced drop in pitch from the first to the second syllable, absent in (96b-c). The form in (97) is a third-person perfective verb-form *hélzé* ‘s/he went hunting’ in which both syllables are high-toned, reflected in the high, flat pitch contour. Lastly, in (98), I present a third-person perfective verb-form *héki* ‘s/he left (by boat)’, a first-person perfective form *hiki* ‘I left (by boat)’ and a second-person perfective form *híkí* ‘You left (by boat)’; here again we find a pronounced drop in the contour of the perfective form in (98a), absent in the corresponding first- and second-person forms. What is of particular interest is that in each of the third-person perfective forms in (96) - (98) the inflectional high tone H appears despite the apparent absence of the conditioning “preceding conjunct prefix”. If verb-forms such as these are an exception to this conditioning factor, what are the implications for a formal account of this inflectional process?

Whether forms like *hékith* ‘it took off’ constitute exceptions to the preceding-conjunct-prefix condition depends on the level of abstraction with which these verbs are analyzed. Forms of the type presented in (96) - (98) are not, in fact, novel or unattested in the literature. Cook (2004: 158), records *hélzé* as the third-person perfective form of the paradigm ‘to start to hunt’ (cf. *helze*, third-person imperfective and *heszé* first-person perfective). Elford and Elford (1998: 197) provide entries *télzé/hélzé* for a third-person form meaning ‘he starts hunting’ (cf. *teszé* ‘I started hunting’) as well as entries corresponding to the other Wollaston Lake forms in (96) -

(98): *héketh* ‘It started off’ (cf. *hekéth* ‘It will start off’) (p. 181) and *hékí / tékí* ‘He went across (on water)’ (cf. *hikí* ‘I went across’) (p. 177). Cook attributes the apparent deviation from the “preceding-conjunct-prefix” rule represented by a form like *hélzé* ‘he started to hunt’ to surface opacity, obscuring the underlying morphemic structure. Cook represents the underlying structure as in (99).

- (99) *hélzé*
 he-the- \emptyset -1-zé
 INCEP-PFV-3.SBJ-CL-hunt.PFV
 ‘s/he started to hunt’

If we accept the morphemic composition presented in (99), then verbs like *hélzé* are not exceptions to the rule, as the *he-* hosting H is taken to be a preceding conjunct prefix deriving an inceptive verb-form. Based on this proposed underlying structure, Cook explains the presence of H as a result of the same derivational process considered in Chapter 2, where H is linked to the deletion of an underlying *the-* prefix. The proposed inceptive prefix in these forms, *he-*, is a weakened reflex of a historical form, *te-* (Cook 2004: 181). The *te-* form of this prefix is still evident in some communities, as indicated by entries in Elford and Elford, e.g. *téya* ‘he started going’ (p.174).

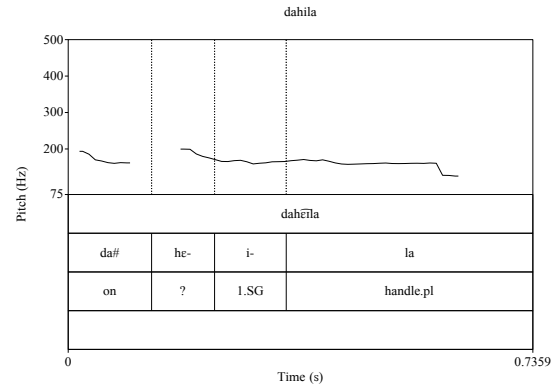
In Cook’s proposed derivational approach to a verb like *hélzé* I perceive the same problems I have identified in my critique of this approach in Chapter 2 (e.g. phonologically unnatural rules), and the account becomes increasingly suspicious in light of changes tending toward the neutralization of various morphological formatives to *he-*. In simplex paradigms such as T’ÉTH ‘cook’, imperfective verb-forms agreeing with third-person (\emptyset) or first-person-singular

(*s-*) subjects, and thereby lacking a syllabic agreement marker, exhibit a *he-* “peg prefix” (argued to fulfill a disyllabic minimality constraint on verb (Cook 2004: 85)), resulting in forms like *het'éth* ‘s/he is cooking’ and *hest'éth* ‘I am cooking’. These forms parallel the proposed inceptive imperfectives in forms like *helze* ‘s/he starts hunting’ and *hesze* ‘I start hunting’. It seems probable, based on these similarities, that a Dene Sų́líné learner would take these forms to be structurally analogous, rather than positing two distinct *he-* formatives. In this case, the alternation between imperfective *helze* and perfective *hélzé* invites analysis as an instance of H in the absence of a preceding prefix.²⁶ The inceptive paradigms of *helze*, *hekí* etc. would exhibit differences with the non-inceptive paradigms such as *het'éth*, however. Where a non-inceptive imperfective like *het'éth* ‘s/he cooks’ contrasts with a perfective taking *the-*, i.e. *thet'é* ‘s/he cooked’, the inceptive perfective exhibits a perfective form with /*hé*/. That said, in the speech I have recorded, the formal distinction between *he-* “peg” and *the-* ‘perfective’ is particularly vulnerable, with both consistently pronounced [hɛ], by Florence, the younger speaker, and with *the-* vulnerable to weakening to [hɛ] in connected speech produced by Melanie. It seems likely that this change in progress would increase the probability of a simplification of the representation of forms like *hélzé*. If this were the case, we might predict a reanalysis and extension of H to simplex verbs like *-t'éth* ‘cook’ lacking a preceding conjunct prefix. Observation of forms like *thet'é* or *hét'é* ‘s/he cooked’ (in place of *thet'é*) would furnish evidence confirming this prediction.

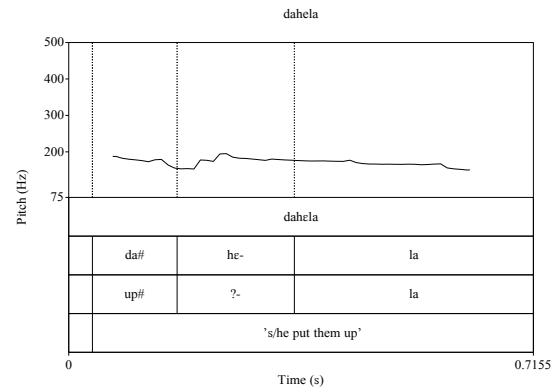
²⁶ This analysis of H would leave other features of the inceptive paradigm unexplained, however. In this particular paradigm we also observe an alternation between a voiced *l-* classifier in the imperfective form *helze* and a voiceless *l-* in the perfective forms, an alternation attributed by Cook to devoicing triggered by [θ] of *the-*. If speakers have not included *the-* in their representation of a verb like *hélzé*, then this alternation in voicing lacks a phonological explanation and would perhaps be reanalyzed as an additional contrast, a voicing alternation, signaling the distinction between imperfective and perfective.

A survey of the verbs produced by Florence and Melanie does not appear to bear the predicted reanalysis out, however.

- (100) *daheila*
 da#he-i-la
 up#?-1.SG-handle.pl.obj.PFV
 ‘I put them up’



- (101) *dahela*
 da#he-Ø-la
 up#?-3.SBj-handle.pl.obj.PFV
 ‘s/he put them up’



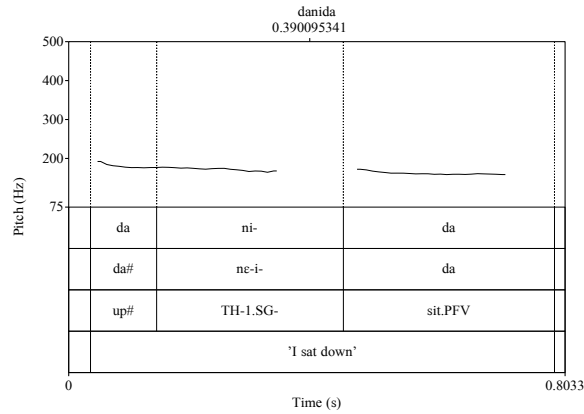
The form in (101), a third-person perfective form has a preceding disjunct prefix, *da-* ‘up’ and does not, therefore, meet the preceding-conjunct-prefix condition. If H were extended to *he-* in non-inceptive third-person lacking a preceding conjunct prefix, it would be reasonable to expect H in a form such as this (i.e. *dahéla*). However, this form does not appear to have a high tone on its penultimate syllable, /he/, and agrees with existing descriptions in this respect. Comparison with the first-person form in (100) reveals that both forms have similar low, flat pitch contours. Comparison of (100) and (101) with the forms in (102) and (103) illustrates the difference in pitch contours in paradigms with and without H.

(102) *danida*

da#ne-i-da

up#TH-1.SG.SBJ-sit.PFV

‘I sat down’

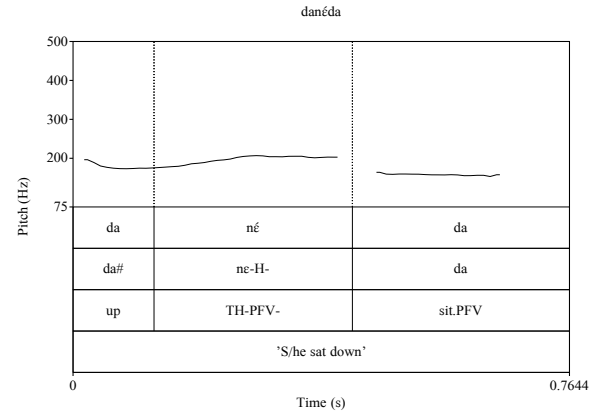


(103) *danéda*

da#ne-H-Ø-da

up#TH-PFV-3.SBJ-sit.PFV

‘s/he sat down’



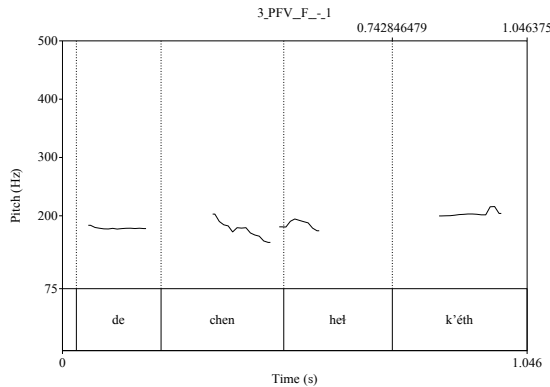
The third-person perfective form *danéda* ‘s/he sat down’ in (103) contrasts with the corresponding first-person form in (102) by the presence of H in the former and its absence in the latter. What sets these forms apart from those in (100) and (101) is the presence of the *ne-* thematic prefix, which satisfies the preceding-conjunct-prefix condition. Comparison of these four forms suggests that the distribution of H in Wollaston Lake Dene Sųliné has not diverged from the language as described by Cook. Examination of the pair of forms in (104) and (105) suggests the same; these two verbs are simplex and in their form closely parallel the inceptive verbs in (96) - (98). Despite the formal similarities shared by both pairs of verbs, the pair in (103) and (104) do not appear to exhibit the high tone found in the inceptive forms.

(104) *dechen helk'éth*

dechen he-Ø-l-k'éth

tree ?-3.SBJ-CL-shoot.PFV

‘He shot the tree’

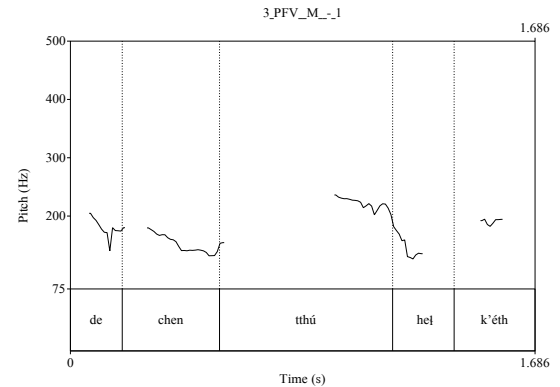


(105) *dechenththú helk'éth*

dechen-tthú he-Ø-l-k'éth

tree-tongue ?-3.SBJ-CL-shoot.PFV

‘He shot the branch’



Florence’s production in (104) is fairly level throughout, with the highest pitch on the final syllable, the verb root *k'éth*. This high pitch on *k'éth*, despite its utterance-final position, agrees with the corresponding entry provided by Elford and Elford, who list a high-toned root in related forms (e.g. *yélk'éth* ‘he shot him/it’ (p. 278)) The pitch on the penult /*hel*/ is also relatively high; however, given that utterance-final *k'éth* is higher still, I would hesitate to take this an instance of H. Melanie’s production differs from Florence’s by the inclusion of high-toned *tthú* ‘tongue’ in the word *dechenththú* ‘branch’ (lit. ‘tree tongue’). This provides for a more striking contrast between the high pitch on this syllable and that of the following syllable /*hel*/ where pitch takes a pronounced drop before rising again on the high-toned root. The evidence considered here, though limited, does not suggest any extension of H to novel contexts.

The distribution of H in forms like *hékith* ‘it took off’ does, however, raise the question of how best to accommodate these paradigms into the formal accounts (PFM or DM) considered in Chapter 5. I am somewhat skeptical of a treatment of *he-* as a distinct inceptive prefix given

the common occurrence of a formally indistinguishable prefix in a wide range of non-inceptive verb-forms (such as *dahela* of (101)). Despite their apparent formal similarities, speakers nevertheless appear to possess knowledge of a distinction between verbs like *hékith* and those like *helk'éth*, leading to the difference in inflectional behaviour observed in these paradigms, with the former patterning like a complex-conjunct paradigm, and the latter like a simplex paradigm. I consider how best to accommodate this complication in the proposed DM and PFM applications in the general discussion in Chapter 7.

6.1.2 ABSENCE OF THE- AND GHE- IN COMPLEX VERBS

A second point on which the productions of Florence and Melanie differ from verbs considered in my applications of PFM and DM in Chapter 5 concerns the distribution of the aspect prefixes *the-* and *ghe-* in paradigms with complex stems. In my formal applications in Chapter 5, verbs were taken to be exhaustively divided between two broad classes: Class-1, taking *ghe-* and Class-2, taking *the-*. This account of inflection class is simplistic in a number of respects, however, as is highlighted by the absence of either *the-* or *ghe-* in many of the complex-stemmed verbs produced by the Wollaston Lake speakers. The productions in (106) are illustrative.

- (106) a. *náit'ath*
 ná#Ø-i-t'ath
 ITER#PFV-1.SG.SBJ-cut.PFV
 'I cut'
- b. *nást'áth*
 ná#Ø-s-t'ath
 ITER#IPFV-1.SG.SBJ-cut.IPFV
 'I am cutting'
- c. *náit'ath*
 ná#Ø-ǰ-t'ath
 ITER#PFV-3.SBJ-cut.PFV
 's/he cut'
- d. *nát'áth*
 ná#Ø-Ø-t'áth
 ITER#IPFV-3.SBJ-cut.IPFV
 's/he is cutting'

(Melanie St. Pierre 2022)

The set of four paradigmatically-related forms in (106) exemplifies a paradigm apparently lacking any form of aspect prefix. The first-person perfective form in (106a) is distinguishable from the corresponding imperfective form in (106b) by the high vowel prefix *i-* in the former where *s-* marks first-person subject agreement in the latter. Likewise, the third-person perfective form in (106c) differs from the corresponding imperfective form in (106d) by the presence of N (*ǰ-*) in the former, where the latter lacks an agreement-marking prefix. The difference in aspect is also marked by a tone alternation in the root. Neither perfective form, however, bears any trace of an aspectual prefix, *the-* or *ghe-*. Given the noted correlation of N and *ghe-*, we might expect *ghe-* in the perfective forms, and presumably this was the case, at least historically. For comparison, Elford and Elford (1998:133) list a related form *tl'odeghit'ath* 'He cut the grass' in which *gh(e)-* is present. The pair of productions from Florence and Melanie in (107) provides a further example.

(107) a. *ts'iyíya*

ts'i-yé#Ø-N-ya

boat-in#PFV-3.SBJ-go.PFV

's/he got in a boat'

b. *ts'iyéggha*

ts'i-yé#Ø-Ø-gha

boat-in#IPFV-3.SBJ-go.IPFV

's/he gets in a boat'

(Florence St. Pierre 2021)

(Melanie St. Pierre 2022)

Like the forms in (106), the third-person verb-forms in (107) mark the contrast in aspect with N in the perfective form, and by distinct root forms. There is no evidence in these forms of a *ghe*-aspectual prefix.

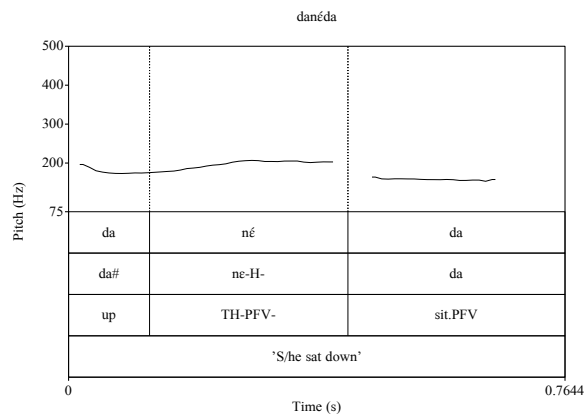
The absence of aspectual affixes is not limited to Class-1 (*ghe*-class) verbs. As has been noted in the discussion of Cook's derivational account of H in Chapter 2, the same pattern of inflection may be observed in forms like those in (108).

(108) a. *danéda*

da#ne-H-Ø-da

up#TH-PFV-3.SBJ-sit.PFV

's/he sat down'

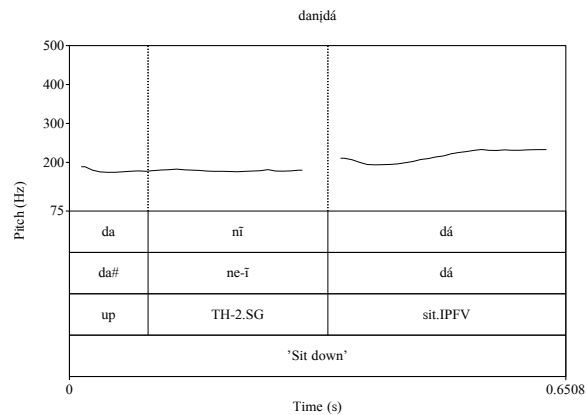


b. *danjdá*

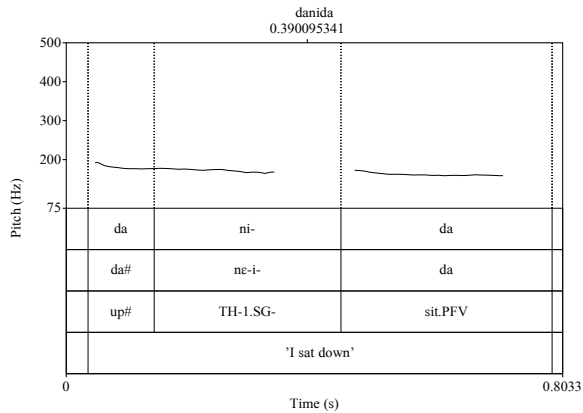
da#ne-ĩ-dá

up#TH-2.SG.SBJ-sit.IPFV

'sit down'



c. *danida*
 da#ne-i-da
 up# TH-1.SG.SBJ-sit.PFV
 ‘I sat down’



(Florence St. Pierre 2021)

The perfective forms in (108a) and (108c) do not contrast with the imperfective form in (108b) by the presence/absence of an aspectual prefix *the-*. In this paradigm, the aspectual distinction is signaled in part by a tone alternation on the root, with a high-toned *-dá* in imperfective forms, as may be seen in the second-person form *danídá*. In the absence of an aspect prefix, the sole difference in third-person forms, apart from the root alternation, is the presence of H on /nɛ/, while the presence of *i-* in a first-person perfective form sets this form apart from the corresponding imperfective form taking *s-*. Cook has observed a process of “prefix-initial *gh-* deletion” (2004: 41) in his discussion of language-change. He notes, furthermore, that in the most “innovative” dialects, in casual speech, both intervocalic *gh-* and the vocalic component of the aspect prefix are lost, with the consequence that “the aspect contrast (imperfective vs. perfective) has almost completely disappeared in innovative speech.” (p. 41). Based on my elicitations, Wollaston Lake Dene Słíné, as spoken by Florence and Melanie, appears to exist

on the “innovative” end of Cook’s spectrum: both *the-* and *ghe-* are almost entirely absent in an intervocalic position. It is worth noting that such prefixes are even absent from carefully produced “elicitation forms” of such verbs provided by the Wollaston Lake speakers, suggesting against attributing this pattern to a synchronic process of deletion limited to casual speech.

Given the widespread absence of aspectual prefixes in complex-stemmed verbs in my consultants’ productions, in need of explanation are instances in which these prefixes are retained in similar environments. The next three verb-forms (109) - (111) are examples of complex-stemmed verbs retaining some form of aspect prefix.

- (109) *bus batheda*
 bus ba#the-Ø-da
 *bus for#IPFV-3.SBJ-sit.IPFV*²⁷
 ‘s/he is sitting (waiting) for the bus’

- (110) *beschené baheda*
 beschené ba#the-Ø-da
 vehicle for#IPFV-3.SBJ-sit.IPFV
 ‘s/he is sitting (waiting) for the vehicle’

- (111) *beschené bahida*
 beschené ba#the-i-da
 vehicle for#IPFV-1.SG.SBJ-sit.IPFV
 ‘I was sitting (waiting) for the vehicle’

(Melanie St. Pierre, 2022)

²⁷ The glossing of *the-* as IPFV in the forms in (109)-(111) reflects these verbs’ membership in the class of stative verbs taking *the-* in the imperfective and *ghe-* in the perfective. See footnote 16.

The verb-forms in (109) - (111) represent a set of related verbs produced by Melanie St. Pierre. In contrast with the forms considered in (106) - (108), these three verbs do retain some form of aspectual prefix. All three forms are three syllables in length, in contrast with the complex-stemmed forms in (106) which are all two syllables long. This difference in syllabic structure is due to the penultimate syllables in (109) - (111), /θɛ/, /hɛ/ and /hi/ respectively, which I take to be manifestations of the *the*- aspectual prefix; although Melanie articulates the [θ] in careful productions, in others, I perceive this fricative to be [h]. How do we account for the difference in form exhibited by a pair of verbs like *bathida* ‘I was sitting...’ which retains its aspectual prefix, and one like *náit’ath* ‘I cut’, which lacks an aspectual prefix? Florence produces forms displaying a similar distinction.

- (112) *ts’ékwi hejen ha daheya*
 ts’ékwi he-Ø-jen ha da#he-Ø-ya
 woman PEG-3.SBJ-sing FUT up#?-3.SBJ-go.PFV
 ‘The woman went up to sing.’
- (113) *ʔanát’e ú náya*
 ʔa-ná-Ø-t’e ú ná#Ø-ya
 TH-TH-3.SBJ-finish and down-3.SBJ-GO.PFV
 ‘She finished and went down.’

The form in (112) displays a similar tri-syllabic structure, retaining the penult /hɛ/. By contrast, the form in (113), based on the same root, is disyllabic, lacking /hɛ/. Is there a principled explanation for these differences, or is this merely variability in pronunciation? I do not think it is the latter, as I have not observed any variability between tokens of these individual words; tokens of words from DA_GHA ‘go up’, for example, are consistently produced in the manner of

(112) *daheya* with three syllables, while those based on NA_GHA ‘go down’, for example, are consistently disyllabic, lacking /hɛ/.

I suspect the most likely explanation for this difference in behaviour lies in the identity (perhaps historical) of the aspect prefix itself. All three of the forms in (109) - (111) take (and retain) the prefix *the-*, though potentially in the weakened form [hɛ]. Forms such as those in (106) presumably, at least historically, behaved as Class 1 verbs, taking *ghe-*; the presence of N suggests as much. Perhaps the *ghe-* prefix was more susceptible to lenition and loss. Entries in Elford and Elford (1998: 179) support this explanation for at least the verbs based on the *-ya* ‘go’ root in (112) and (113); Elford and Elford include entries like *yedághe dathíya* ‘I went up onto it’ contrasting with entries like *nághíya* ‘I got down or across’ (p. 169) in which the two derived forms mark perfective aspect with different aspect prefixes. The choice of *ghe-* in the latter paradigm could explain the apparent absence of an aspect prefix in the form in (113) if *ghe-* has been more susceptible to loss.

It does not seem that all verbs lacking aspect prefixes originated as Class-2 verbs, however; those demonstrating H, such as *danéda* ‘s/he sat down’, presumably originated as Class-1 verbs. In this case, the difference between an “affixless” form like *danéda* ‘s/he sat down’ and one like *batheda* ‘s/he was sitting (waiting)’ is presumably due to the expected effect of the disjunct boundary, where conjunct *ne-* has led to the loss of *the-* and disjunct *ba-* has not. In sum, phonological or phonetic qualities of the aspect prefixes *the-* and *ghe-*, and the distinct effects of conjunct and disjunct prefixes appear to have interacted to produce an emergent class of verbs lacking aspect prefixes; *ghe-* has been lost consistently following both disjunct and conjunct prefixes, while *the-* has only been lost following conjunct prefixes, but is retained otherwise. What is particularly interesting is the fact that this distinct behaviour of *the-*

and *ghe-* class verbs is retained in Florence's speech (compare forms like *daheya* 's/he went up' with *náya* 's/he went down') despite Florence's typical pronunciation of both *the-* and *ghe-* as [hɛ].

The most remarkable implication of the loss of aspectual prefixes is the complete loss of a formal contrast of the imperfective/perfective distinction in verb-forms lacking other formal indicators of this distinction. In paradigms lacking root alternations the loss of aspect prefixes results in a significant increase in homophony in verb-forms agreeing with particular combinations of person and number. First-person-singular and third-person verb-forms (belonging to the b-subclass) exhibit distinct agreement markers in the imperfective and perfective taking *i-* and *j-* in their perfective forms (e.g. *nait'ath* 'I cut'; *najt'ath* 's/he cut') but *s-* and "Ø" in imperfective forms (e.g. *nást'ath* 'I cut'; *nat'ath* 's/he cuts'). Third-person verbs taking H also continue to contrast with corresponding imperfective forms lacking this high tone. Other combinations of person and number take identical exponents in imperfective and perfective forms, however (e.g. second-person plural, *uh-*), meaning the aspectual distinction may be left unmarked in the absence of an aspect affix. The result is an asymmetry in the aspectual system, where first-person-singular and third-person verb-forms retain formally distinct imperfective and perfective forms, a contrast lost to verbs agreeing with other combinations of person and number. As a consequence, markers like H and N seem to have gained an increased informational load in their paradigms, both as the sole exponents of aspectual distinctions in paradigms lacking root alternations, and potentially as "principal parts", providing information on the realization of other cells in their paradigms.

6.2 INTERGENERATIONAL DIFFERENCES

In addition to the differences setting Wollaston Lake Dene Sų́liné apart from other dialects of Dene Sų́liné described by Cook and Elford and Elford, I have also observed evidence of intergenerational differences in the speech of Florence and Melanie. I discuss these differences in the following sections, 6.2.1 and 6.2.2.

6.2.1 LOSS OF [ə] / [ʏ] CONTRAST

In chapters 1 and 2, I introduced basic characteristics of the structure and inflectional behaviour of the Dene Sų́liné verb, with particular attention to the formal expression of subject agreement and aspect. I described the role of the prefixal exponents *the-* and *ghe-* in the expression of aspect and in the definition of inflectional classes. Historically (and at present in some dialects), perfective verb-forms exhibiting one or the other of these prefixes (dependent on class) form a contrast with corresponding unmarked forms expressing imperfective aspect. The pair of verbs in (114) taken from Elford and Elford (1998) provides a relatively transparent example.

- | | | | | |
|-------|----|---------------------------|----|----------------------|
| (114) | a. | hesjen | b. | ghesjen |
| | | he-Ø-s-d-yen | | ghe-s-d-yen |
| | | peg-ipfv-1.sg.sbj-cl-sing | | pfv-1.sg.sbj-cl-sing |
| | | ‘I sing’ | | ‘I sang’ |

(Elford & Elford 1998: 280-281)

In the perfective first-person verb in (114b), *ghesjen* ‘I sang’, we find *ghe-*, the sole formal expression of perfective aspect in this form. This verb-form contrasts with the imperfective verb-form in (114a) by the absence of the *ghe-* prefix, the two forms being identical in all other

respects.²⁸ In this pair of verbs and others like it *ghe-* in (114b) and its absence from (114a) are key formal signifiers of a meaningful contrast in aspect. The *the-/ghe-* contrast also operates across paradigms defining inflectional classes (*ghejen* ‘s/he sang’, but *theʔál* ‘s/he bit’)

Having established the various contrasts marked by the *the-/ghe-* distinction I now turn to the facts specific to Wollaston Lake Dene Sųliné as spoken by Florence. In Florence’s speech the distinction between [θ] and [ɣ] has been almost entirely lost in contexts relevant to the *the-* and *ghe-* morphological distinction. In this context, segments historically pronounced as /θ/ and /ɣ/ are now typically pronounced as /h/. Thus, the verb historically pronounced *ghejen* is usually pronounced [hədʒen], rather than [ɣejen], and one like *theʔál* would be pronounced [heʔál], rather than [θeʔál]. This change has implications for both inter-paradigmatic and cross-paradigmatic contrasts.

A consequence of the /θ/, /ɣ/ > /h/ change is that pairs of imperfective and perfective verbs which historically exhibited a contrast both with affixation and N (or H) e.g. *hets’agh* ‘s/he cries’ vs. *ghıts’agh* ‘s/he cried’ are now distinct solely by virtue of N, e.g. *hets’agh* ‘s/he cries’ vs. *hıts’agh* ‘s/he cried’. Where formerly a pair of such verbs would have been analyzed as expressing its aspectual distinction primarily through the affixation of *ghe-*, with the loss of the /h/- /ɣ/ contrast, the sole formal expression of perfectivity in this third-person paradigm is the change in vowel quality from the mid, oral vowel [ɛ] to the high nasal vowel [ĩ]. The implication

²⁸ It bears noting here that the examples in (114) seem to contradict the statement above that a perfective prefix (*the-* or *ghe-*) contrasts with an imperfective verb-form unmarked for aspect, i.e. without an aspectual prefix. In (114), by comparison, the pair of verbs appear to contrast not by the absence of a prefix in (a) and the presence of *ghe-* in (b), but by the presence of *he-* in the former and *ghe-* in the latter. The form *he-* in (a) has been labelled a “peg prefix” in existing accounts of the Dene languages (e.g. Cook 2004:85) and analyzed as fulfilling a phonological disyllabic minimality constraint specific to verbs. According to this analysis, because the first-person prefix *s-* in (114) is non-syllabic the form *he-* is affixed, not to contribute a meaning to the verb-form, but to create a phonologically acceptable disyllabic verb-form. By contrast, the corresponding second-person imperfective form is *nejen* ‘you sing’, wherein the syllabic second-person-singular prefix *ne-* obviates the need for peg *he-*.

for a first-person-singular paradigm is similar, as illustrated by the corresponding first-person pair *hests 'agh* 'I cry' vs. *hits 'agh* 'I cried'. Here too, we observe that the aspectual distinction is marked by the difference in the form of the agreement marker. Perhaps more striking yet are the implications of this change for paradigms in which these alternations in vowel-height and nasality are absent, verbs belonging to my proposed *a*-subclass. Thus, we do not expect either exponent in the paradigm for the verb meaning 'sing', for example, which patterns with the *a*-subclass. Given Florence's tendency to pronounce both *ghe-* and *the-* as [hɛ] the expectation here would be homophonous imperfective and perfective verb-forms for most combinations of person and number; i.e. *hesjen* 'I am singing' homophonous with *hesjen* 'I sang' and *hejen* 's/he is singing' with *hejen* 's/he sang'. Interestingly, in a production of the first-person perfective form of this verb, Florence produces a very deliberate and clear [ʏɛ]- ensuring that a contrast remains, while in the third-person perfective form she has produced *hijjen* once again ensuring a contrast with imperfective *hejen* but in this instance through a non-historical application of N, in the absence of [ʏ]. By comparison, in forms instantiating DA 'sit', a stative verb belonging to the *b*-class and retaining other formal differences to mark the distinction (N and a root-tone alternation) Florence produces forms *heda* 's/he is sitting', *hɪdɑ* 's/he sat', and *hida* 'I sat', all with [h]. Melanie, on the other hand produces the expected *hejen* and *ghejen* forms for the verb meaning 'sing' and pronounces forms like *theda* with the historical [θ]. As I have already noted, however, in less "careful" connected speech, I perceive these fricatives to be [h] in Melanie's productions as well. It would thus appear that this is a change in progress in Melanie's generation as well, which has further progressed in Florence's speech. Given Florence's tendency to produce all such prefixes as *he-* (where they are retained at all), it is interesting to consider what role this formative *he-* might be taken to play in Florence's grammar; the near

universal neutralization of both *the-*, *ghe-* and inceptive *te-* to [hɛ], all likewise homophonous now with “peg” *he-*, results in a great many verb-forms displaying [hɛ] in an identical morphotactic position, surely obscuring any obvious correlation to inflectional meanings of aspect or agreement. Both for the purposes of linguistic description, and from the perspective of the language-learner, it would seem challenging to attribute a particular function to this formative.

6.2.2 “N” IN SECOND-PERSON VERB-FORMS

I consider one final point of interest observed in Florence’s speech²⁹, which is the unexpected implementation of what seems best described as the use of “nasalization” to mark second-person-singular subject agreement. As was described in the account of disjunct boundary effects in Chapter 1, morphological expression of second-person-singular subject agreement has been described as taking one of two forms depending on the phonological context. Word-initially (or adjacent to the disjunct boundary), we observe the agreement prefix *ne-*, while the presence of a preceding conjunct prefix conditions selection of a prefix *j-* instead. The first exponent, *ne-*, is obviously amenable to an affixal treatment, as is the latter *j-*, assuming similar arguments to those presented in my account of N (Chapter 5). Bearing this in mind, however, the following pairs of verb-forms feature an unexpected pattern of exponence.

²⁹ I have no comparable second-person forms produced by Melanie St. Pierre. As such I cannot speak to whether or not this is a feature unique to Florence’s generation or is present in Melanie’s speech as well.

- (115) a. *ʔáshél*
 ʔa-Ø-s-shél
 TH-IPFV-1.SG.SBJ-throw.IPFV
 ‘I’m throwing (the apple)’
 b. *ʔáshél*
 ʔa-Ø-N?-shél
 TH-IPFV-2.SG.SBJ-throw.IPFV
 ‘You’re throwing (the apple)’
- (116) a. *tl’otsiáze nát’ath*
 tl’otsiáze ná-Ø-Ø-t’ath
 onion ITER#IPFV-3.SBJ-cut.IPFV
 ‘S/he cuts the onion’
 b. *tl’otsiáze nát’ath*
 tl’otsiáze ná-Ø-N-t’ath
 onion ITER#IPFV-2.SG.SBJ-cut.IPFV
 ‘You cut the onion’

(Florence St. Pierre, 2022)

The (a) forms in both (115) and (116) are not unexpected. The (b) forms are interesting, however, as neither exhibits the expected agreement prefix. In place of both *ʔ-*, the expected form in (115b), and *ne-*, expected in (116b), we instead find a nasal feature on the penult. It is the presence of this nasal feature, rather than an affix, which serves to establish a contrast with the first- and third-person (a) forms. This pattern of exponence is interesting not only for its novelty but also for its form, which lends itself quite neatly to a treatment in terms of non-concatenative morphology.

The various features of Wollaston Lake Dene Sų́liné considered in this chapter demonstrate a number of interesting diachronic trends with implications for a grammatical model of Dene Sų́liné. The presence of H in inceptive paradigms appears to further complicate an account of this feature’s distribution. The loss of morphological contrasts to the lenition or

outright deletion of affixes has significant implications for paradigmatic contrasts and for the organization of verbs into inflection classes. Lastly, the novel occurrence of “second-person-singular N” and its non-concatenative formal qualities merits closer consideration, particularly in light of the theoretical goals of this thesis.

CHAPTER 7. DISCUSSION

The PFM and DM applications considered in Chapter 5 pose a number of interesting challenges and raise no small number of questions worthy of discussion. In this chapter I discuss a number of questions of relevance to my analysis of H and N and their import for the lexical-inferential distinction in morphological theory.

7.1 N AND THE LEXICAL-INFERENTIAL DICHOTOMY

The departure point for my examination of N as a non-concatenative process has been the account proposed by Cook (2004), which takes the nasal feature in a form like *ghitsagh* ‘s/he cried’ to be the effect of an underlying aspect prefix. In 2.1.2, I argue that a more straightforward account is available, taking N to be a primary exponent of third-person subject agreement. Though the primary motivation for my interest in H and N was their perceived non-concatenative characteristics, on closer consideration of N, I have proposed (5.3.1) that rejecting Cook’s treatment of N does not necessitate a treatment of N as a non-concatenative exponent. Taking surface forms at face-value, N can be accounted for as a segmental prefix *ɨ*- and on this account does not hold the initially-perceived interest owing to its formal characteristics.

Assuming an affixal treatment of N, a remaining complication for the formal accounts for this exponent concerns selection, accounting for the presence of N in some verbs and its absence in others. What conditions selection of this exponent over the null alternative? Applications of both frameworks in 5.3 and 5.4 illustrate that both frameworks’ accounts of selection share certain similarities, largely owing to their shared realizational characteristics. I have considered, for example, how both frameworks capture the selection of exponents in terms of competing realizations, with competition outcomes in either framework decided based on combinations of

morphosyntactic (e.g. [pfv]) and class features (e.g. [Class-1b]). Thus, there are several ways in which the two frameworks are similar. In the interest of comparison and evaluation, however, what is of greater interest are the ways in which the frameworks differ. One conspicuous difference lies in the proposed source of the morphosyntactic features relevant for selection. Remember that in PFM the immediate source of these features is the unstructured feature set σ , part of the definition of a paradigm cell, while in DM, features originate in terminal nodes arranged in a hierarchical syntactic structure. The frameworks also differ somewhat in their proposed source of the inflection-class features relevant to selection. While both frameworks attribute inflection-class features to the lexical stem, the conceptualization of the stem is different in each. The DM stem is a VI similar to VIs realizing inflectional morphemes and, like these VIs, is selected and inserted into a terminal node by the post-syntactic process of Vocabulary Insertion. In PFM, however, selection of a stem logically precedes the realization of inflectional morphemes, as the stem is part of the definition of a paradigm cell serving as input to the Rules of Exponence defining the paradigm function.

If inflection-class features are relevant to the selection of functional exponents like N, and inflectional-class features are associated with the verb stem, then the logical precedence of stems in PFM seems, on first consideration, to provide this framework a comparative advantage in accounting for selection. Including the stem and its associated inflection-class features in the representation of a paradigm cell, such features are readily available to decide the outcome of rule competition. On the other hand, DM's attribution of the selection of functional VIs and lexical VIs to the same process of late Vocabulary Insertion is potentially problematic if the correct order of operations is not observed. This potential hitch is addressed, however, if "[t]he operation of insertion is usually taken to be cyclic...allowing stems to be inserted before

affixes.” (Siddiqi 2009: 15). Unless there is a potential argument that the assumed insertion of stems before affixes is basically stipulative in DM, it is not clear that either framework has an advantage in accounting for N’s selection in consideration of inflection-class.

The second prominent difference between PFM and DM is in the structured vs. unstructured nature of the set of features determining the outcomes of selection. I propose that in this regard, the PFM framework with its unstructured set of features is the simpler account of morphosyntactically-conditioned selection and it falls to the DM theorist to provide arguments for the explanatory value of the structured representation. In the simplest case, a DM VI is selected based solely on the morphosyntactic features occupying the terminal node to which it is inserted, without reference to that node’s hierarchical configuration or that of other morphemes in the syntactic structure. Where DM advocates propose VIs sensitive to morphosyntactic features present elsewhere in the syntactic structure, in cases of secondary exponence (Harley & Noyer 1999: 6) or “conditioned allomorphy” (Halle & Marantz 1993: 123) the structural configuration of the insertion node and conditioning node is left largely ambiguous. In their account of “conditioned allomorphy”, Halle and Marantz (1993: 123) refer to “insertion context” as the relevant factor in deciding competition between VIs. Insertion contexts are not defined in terms of hierarchical structure, however. They are somewhat ambiguously defined, using “/” notation to signify the relevant context, as with following formulation, [+ past] ↔ Ø / [+strong]_____ used in their account English strong verbs. Siddiqi (2009: 15) specifies that “[t]he Vocabulary Item may be sensitive to features in surrounding nodes, as well as to features on their loci of insertion” without providing a precise definition of “surrounding nodes” in terms of hierarchical configuration or adjacency. Harley and Noyer’s (1999) account of secondary exponence sees VI entries primarily expressing those features on the loci of insertion, but also

secondarily expressing “certain other features” (p. 6). Harley and Noyer do provide a clue to the structural configuration of primarily- and secondarily-expressed features, however, in their specification that secondarily-expressed features must have been previously discharged by the insertion of a VI primarily expressing that feature. Taken in conjunction with their assumption of cyclic insertion beginning with the most deeply embedded VIs, this definition at least affords a prediction that secondary exponence will be limited to configurations in which the secondary exponent dominates the feature relevant to its selection. As I argue in 5.4.3, however, this account of secondary exponence is problematic for N if, as I have argued, its locus of insertion does not dominate the conditioning aspect head. Based on these considerations, I do not perceive strong arguments to prefer a structured set of morphosyntactic features over an unstructured one, at least as concerns the selection of secondary exponents.

If there is reason to prefer a structured array of morphemes over an unstructured set, the most telling evidence would naturally lie in the realm of morphotactics, not secondary exponence, however. What needs to be convincingly demonstrated is that the linear arrangement of morphemes can be related to the syntactic configuration of morphemes in a principled way. I consider each framework’s account of morphotactics in section 7.2.

Before concluding discussion of N, however, I briefly consider possible implications for an account of this exponent suggested by the novel occurrence of nasality in Florence’s second-person verb-forms (introduced in 6.4.2). A possible interpretation of this nasal feature is as independent evidence for a morphological process of nasalization, employed in this case to express second-person-singular subject agreement. I would argue that compared to N in third-person forms, nasality in these forms (e.g. *ʔáshél* ‘you throw’ vs. *ʔáshél* ‘I throw’) offers itself less ambiguously to a treatment in terms of a non-concatenative morphology. How might this

independent evidence for the morphological implementation of nasalization inform the question of the best treatment of N? Morphological theorists propose that the repeated implementation of a single formal process to express a variety of meanings provides evidence for the separation of form and content, a trait that is argued to be uniquely morphological (cf. e.g. Beard & Volpe 2005: 190). Following this line of thinking, if there is independent evidence in the language for processes such as nasalization and vowel-raising, a treatment of N as a combination of these two processes may be worth reconsidering. Independent evidence for nasalization is available in Florence's novel productions and elsewhere in the language, where it is employed in root alternations expressing aspectual distinctions (e.g. *-ʔa* 'handle.round.object.IPFV' vs. *-ʔq* 'handle.round.object.PFV'; *-tsi* 'make.IPFV' vs. *-tsɿ* 'make.PFV'). Some paradigms exhibit stem alterations providing independent evidence for all three of the non-concatenative processes under consideration, i.e. tone, nasality and raising (e.g. *-kí* 'go.by.boat.IPFV' vs. *-'kɿ* 'go.by.boat.PFV' vs. *-ké* 'go.by.boat.OPT' (Cook 2004: 221)). The repeated occurrence of such patterns throughout the language in diverse morphological contexts suggests that extending their range to include N as a process of raising/nasalization is not implausible. Even were it to be conclusively determined that N as employed in third-person agreement is best treated as a segmental affix (*i-*), the frequency and variety of other ostensibly non-concatenative processes observable throughout the language recommends against a theoretical account of morphological phenomena that, by privileging affixation, predicts that such phenomena should occur only rarely if at all.

7.2 H AND THE LEXICAL-INFERENTIAL DICHOTOMY

H proves to be the more complex of the two exponents considered in my thesis, posing a challenge to accounts in both frameworks under consideration. The complexity of H is largely

due to its distributional/selectional characteristics, though its formal characteristics hold interest as well. As concerns the formal characteristics of H, where N has proven more amenable to an affixal treatment (without ruling out a non-concatenative treatment entirely), H still seems to be best suited to a treatment as a non-concatenative process. The selection of H is also more difficult to account for than that of N. Applications of both frameworks (5.3.2 and 5.4.4) reveal that the most significant challenge in accounting for the selection of H concerns the preceding-conjunct-prefix condition, a distributional characteristic of this exponent suggesting sensitivity to the phonological form of peripheral exponents. This is a type of sensitivity that seems equally challenging to account for in either framework.

As with N, it is the formal, i.e. non-concatenative, characteristics of H that led me to consider applications of the DM and PFM frameworks, testing each framework's ability to contend with instances of non-concatenative morphology. The transformative nature of PFM Rules of Exponence means that accounting for non-concatenative exponence is not problematic for this framework (at least theory-internally); doing so is a simple matter of defining a Rule of Exponence that takes a polysyllabic stem as input and returns a stem with a high-toned penult. This ease with which powerful transformative rules accommodate non-concatenative morphology has also been a target for criticism, however. (The question of restrictiveness vs. empirical coverage will be considered more closely in section 7.3.) In DM, where morphological exponence is limited to affixation, accommodating H poses a different sort of challenge, as this tonal exponent evades description in terms of a linear arrangement of segmental affixes. In 5.4.4, I considered treatment of H as a DM Readjustment Rule. With this treatment, the affixal exponent of perfective aspect is a null VI, and the observable alternation in tone is the effect of a Readjustment Rule. A problem with this account is that Readjustment Rules, like the

morphological rules of inferential frameworks, are powerful transformative rules and undermine the restrictiveness argued to be a main strength of the framework.

An alternative account of H, avoiding recourse to readjustment, is to treat H as a VI alongside the segmental prefixes defined in (86). In this case, H could be listed as a tonal affix and it would compete with other affixal VIs like *the-*. I perceive a number of potential drawbacks to this alternative, however. Firstly, including the possibility of non-segmental affixes potentially undermines the restrictiveness of the framework in a similar manner to readjustment, if non-segmental affixes are implemented freely to “transform” the phonology of stems in an unconstrained way. If such affixes are assumed to be tied to a particular terminal node through Vocabulary Insertion, however, this assumption would help constrain the range of effects predicted by affixation of this type. In this way, the phonological effects of such affixes could be restricted to segments belonging to VIs in adjacent terminal nodes, for example. A second problem I perceive in allowing non-segmental VIs is explaining the limitation of such VIs to realizations of functional morphemes. Why are such VIs limited to realizations of inflectional content? The basic equivalence of functional and lexical morphemes in the DM framework begs the question of why VIs for inflectional morphemes should systematically differ from lexical-morphemes in their form.³⁰

³⁰ This question concerning systematic differences in the forms of lexical and functional morphemes appears problematic for the DM framework in more general ways as well. By the DM assumption of “syntax all the way down” the structure of a complex word and that of syntactic phrase are equivalent as far as the syntax is concerned. In DM, whether or not a syntactic constituent is realized as a prosodic word follows from phonological characteristics of the individual VIs realizing morphemes: if VIs are listed as bound forms, then the phrase is realized as a complex word, if VIs are unbound, then what is spelled-out is a syntactic phrase. What this account does not explain is why bound morphemes in a given language are bound to begin with, and why such bound forms tend to cluster into the units we recognize (pre-theoretically) as words. An interesting question raised by this fundamentally phonological account of complex words is whether or not linguistic typology bears out the wide variety of possible patterns of “clustering” this account predicts, if bound/unbound status is basically an incidental characteristic of individual VIs.

Concerning the distributional/selectional characteristics of H, the DM and PFM applications in Chapter 5 highlight a significant challenge for both frameworks in accounting for the preceding-conjunct-prefix condition. As the preceding discussion of N has shown, realizational frameworks like DM and PFM are well equipped to deal with instances of look-ahead by referring to contextual morphosyntactic features to determine the outcome of competition between competing rules or VIs. In sections 5.3.2 and 5.4.4, I have argued that H poses a different type of look-ahead problem for both frameworks because the preceding-conjunct-prefix condition is best characterized in phonological terms, not morphosyntactic ones. In my PFM application (5.3.2), I considered a number of means of circumventing this problem, such as defining the condition in terms of morphosyntactic features, or “relocating” H to a peripheral Rule Block, but both solutions were found wanting. In my application of DM, (5.4.4) I considered an apparent strength for this framework in its ability to define the condition in terms of syntactic structure. Here again, however, the fact that it is the phonology of a prefix which serves to satisfy the condition makes the look-ahead problem rear its ugly head again. With respect to this problem there may be one point at least where a PFM account displays an advantage. Where the preceding-conjunct-prefix condition is satisfied by a discontinuous stem element (as in *néda* ‘s/he sat down’) there is no look-ahead problem for PFM, assuming that a phonological representation of the discontinuous stem is part of the paradigm cell to be realized and therefore available to determine rule competition. The situation is less clear for the DM account. If, as I have proposed in Chapter 5, discontinuous conjunct stems originate as compound verbs and their component parts are subsequently displaced via movement (see section 6.4.4.3 (93)), the problem of look-ahead may remain unresolved on the DM account if, given the principle of late insertion, the phonological form of the preceding conjunct stem

element is not made available by Vocabulary Insertion before competition between aspect VIs is resolved. As with the account of the selection of N, I am inclined to argue that an insistence on hierarchical arrangement of morphemes underlying the word demands more in the way of explanation than it provides.

Given the challenge H's distribution presents to both frameworks, it is interesting to consider the inceptive-perfective verbs produced by my Wollaston Lake consultants. These forms, introduced in 6.1.1, are interesting in that, from a synchronic perspective, a form like *hékith* 'it took off' appears to flout the problematic preceding-conjunct-prefix rule. It is interesting to consider how best to accommodate this type within the formal models examined here. The appearance of H in a form like *hékith* is not the only point on which an inceptive paradigm diverges from that of a simplex verb like *helk'éth*. The second-person forms considered in (96) and (98), *híkith* 'you took off (in a vehicle)' and *híkí* 'you left (in a boat)' also pattern like discontinuous conjunct forms by the presence of the high nasal vowel /ĩ/ marking their agreement with a second-person-singular subject. By contrast, a simplex paradigm exhibits the prefix *ne-*, e.g. *nedq* 'you drink'. In this way as well, the inceptive paradigm patterns with a discontinuous conjunct paradigm (e.g. *nídá* 'you sit down'). A possibility suggested to me by this data is an account of H's distribution in terms of inflection class, potentially solving the preceding- conjunct-prefix problem for both frameworks. Assuming speakers equate the *he-* in an inceptive form like *hékith* with the *he-* in a simplex form like *helk'éth*, then the fact that the inflectional behaviour of the former patterns with paradigms like that of *néda* could not be attributed to the presence of a preceding prefix. Instead, speakers would need to know that some structurally simplex verbs pattern like *helk'éth*, lacking H in third-person perfective and taking *ne-* in second-person imperfective forms, while others pattern like *hékith*, taking H in third-

person perfectives and *i-* in second-person forms. This suggests lumping verbs like *hékith* and *néda* into an inflectional class by virtue of their shared inflectional behaviour rather than the structure of their stems. If all instances of H could be attributed to a class feature, it would be possible to simply account for its distribution in either framework with reference to inflection-class features. However, while this might be feasible for inceptive verbs and even for DC stems, it still is not available for an explanation of simplex stems, which take *the-* in the absence of a prefix like *ye-*. In these forms at least, the preceding-conjunct-prefix condition still seems to be the best available generalization for H's distribution.

I conclude my discussion of H by briefly considering an alternative to both the PFM and DM approaches, that of the word-based approach, taking the proposal outlined by Blevins (2006) as the basis of discussion. What preceding discussion has made increasingly clear is that the selectional/distributional properties of H (and to a lesser degree N) are equally, if not more, interesting, than these exponents' formal characteristics for an evaluation of theoretical approaches to morphology. In essence, what makes this distributional behaviour of H and *the-* challenging for both realizational frameworks is that it is difficult to capture in terms of morphosyntactic features. This type of look-ahead is problematic for both PFM and DM for the way both frameworks conceive of the morphological derivation as the piecemeal, incremental, realization of subsets of the whole complement of morphosyntactic features underlying a complex word, building up the form of the complex word from the stem outward. As consideration of H reveals, this stem-outward "construction" of complex words encounters problems when it is the form of a peripheral realization that conditions a less peripheral realization. Blevins (2006: 533) considers this characteristic of both frameworks in defining a further dichotomy defined orthogonally to the lexical-inferential distinction, identifying two

types of frameworks he labels Abstractive and Constructive. For the above-described characteristics, both DM and PFM fall into the Constructive category, where Blevins advocates for the Abstractive type, which treats the word as the basic unit of morphology, and more abstract units, such as stems or exponents, as abstractions over paradigms. Where the Constructive approach deals in sub-word units, stems, and exponents (conceived as VIs or morphological rules) and constructs complex words from these sub-word units, the abstractive theory accounts for morphological productivity with reference to known word-forms and exemplary paradigms (Blevins 2006: 532). What is proposed is that in deriving an unknown paradigm cell, a speaker cross-references known word-forms of the paradigm in question with forms in stored exemplary paradigms and derives the unknown word-form by analogy. While accounting for all morphological derivation in this way does not amount to a particularly elegant account of morphological productivity, such approaches may merit closer consideration for the way they “sidestep” the look-ahead problem by permitting representations of complete word-forms to factor into the process of inflection. If the rule introducing H is modeled on complete sets of related word-forms, look-ahead is not problematic in the way it is for a rule which can only “see” the stem to which it applies.

7.3 MORPHOTACTICS, RESTRICTIVENESS, PARSIMONY AND LINGUISTIC UNIVERSALS

The primary concern of my thesis has been exponence, specifically, the ability of the DM and PFM frameworks to explain the regular correspondence of form and meaning represented by Dene Sųliné H and N. In addition to the differences in the two frameworks’ approaches to exponence, an equally interesting point of difference is in their accounts of the morphotactic arrangement of exponents within the word. DM conceptualizes the morphotactic relationship as

fundamentally syntagmatic, derived from the hierarchical arrangement of morphemes in the syntax. PFM takes morphotactics to reflect the ordering of Rule Blocks defining the Paradigm Function. These differences have interesting implications concerning the nature of morphological phenomena. DM adopts the assumption of Universal Grammar (UG) closely associated with the Generative tradition and, following from this assumption, the claim of the DM theorist is that any diversity observable in cross-linguistic morphotactics can be demonstrated to have shared syntactic underpinnings originating in UG. For PFM, claims regarding the nature of morphotactics are more modest; morphotactics are taken at face value as language-specific facts acquired by the learner through exposure to language-specific input. What is proposed to be common to languages exhibiting morphology is the organization of related word-forms in paradigms and the derivation of complex words via the operation of a Paradigm Function, with a word-form's morphotactics taken to reflect of the ordering of Rule Blocks defining this function. Because of the pronounced differences in the conceptualization of morphotactics offered by each framework, different considerations are necessary to evaluate the relative merits of each account. In one sense, the claims of the DM theorist on the nature of morphotactics are "more interesting" than those made in PFM, which simply takes surface morphotactics at face value. This also places a greater burden on the DM theorist, however, to demonstrate the framework's ability to relate surface morphotactics to underlying syntactic structures in a principled way, and to demonstrate the explanatory value of this theoretical decision. A challenge for the PFM theorist, on the other hand, is to demonstrate that no cross-linguistic similarities in morphotactic configuration remain unexplained given that framework's conceptualization of morphotactics as fundamentally language-specific.

My application of DM to analyses of H and N in Chapter 5 was in no small part concerned with accounting for non-isomorphism between assumed universals of syntactic structure and the observable morphotactic facts of Dene Sų́liné. In my application I have followed the proposals put forward by Harley (2011) in her account of the similar morphotactic facts of Navajo, employing a combination of head-movement, merger-under-adjacency and VI-specific linearization. In Chapter 5, I demonstrated the possibility of deriving surface morphotactics from syntactic structure using these tools. The important question I have left largely unaddressed is whether this derivational process is appealing as a theoretical account of Dene Sų́liné's verbal morphology. Given the complexity of the various mechanisms by which surface morphotactics are argued to be derived, the framework seems to struggle with descriptive adequacy: does the framework offer advantages in explanatory power to make up for this added complexity?

I will suggest that the argued appeal of the DM framework may be described with respect to three chief facets: parsimony, restrictiveness, and the validation of proposed linguistic universals. On the first point, that of parsimony, the claim is that a grammar in which a single component, the syntax, accounts for the structure of all linguistic expressions, from the clause down to the word, is more parsimonious than a grammar with autonomous Syntax and Morphological components operating according to distinct principles (Siddiqi 2019: 152). The argument with respect to restrictiveness is that a theory deriving all structures with a single process, that of syntagmatic, affixal combination, is a highly restrictive theory and capable, therefore, of meaningful prediction and explanation in a way that an insufficiently-constrained theory is not (Siddiqi 2019: 152). Lastly, DM offers a means of reconciling seemingly “non-compliant” linguistic data, such as Dene verbal morphology, with commonly assumed universals

of linguistic structure. Though the discussion is not explicitly couched in DM terms, Harley's (2011) stated goal is to demonstrate that "particularly flagrant cases of Mirror Principle violations" (p. 2) exhibited by languages like Navajo can be accommodated by syntactocentric frameworks. In short, in light of challenging data presented by languages like Navajo and Dene Sų́líné, rather than re-evaluating proposed universals, or questioning the assumed symmetry of syntactic and morphological structure, tools such as head-movement and merger-under-adjacency are meant to demonstrate that non-conformity is only "skin-deep". Proposed universals are sound.

It may be true that a grammar accounting for all morphosyntactic structures with a single unified principle of syntagmatic combination is a more parsimonious one, but the validity of this claim rests on successful demonstration that such a grammar is in fact equally capable of accounting for both phrase-building and word-building. Have my applications of DM to Dene Sų́líné's verbal morphology validated this claim? Through repeated applications of head movement and merger it may be possible to derive Dene surface morphotactics from an underlying syntactic structure conforming to proposed linguistic universals. It is not clear that the vision of the grammar proposed to accomplish this derivation is as parsimonious as DM advocates claim, however. Claims of parsimony based on "one simple process" (Siddiqi 2019: 152) appear rather specious when we consider that the one simple process of syntagmatic combination must be supplemented with head-movement, MUA, fission, fusion, morpheme addition, impoverishment, and readjustment in order to account for the descriptive facts of the world's diverse morphological systems.

I will also argue that there are aspects of Harley's analysis of Navajo that call into question its ability to account for the descriptive facts of Dene morphology, even with the

inclusion of these additional processes, like MUA. One puzzling aspect of this analysis, given Harley's interest in and familiarity with the DM framework (e.g. Harley & Noyer 1999, Harley & Noyer 2000; Choi & Harley 2019 etc.) is in the way it apparently fails to conform to one of the key assumptions of the DM framework: late insertion. What I find problematic for Harley's account of Navajo (and by extension for my application to Dene Sų́líné) is the reference to VI-stipulated linearization in accounting for the linearization outcomes of both head-movement and merger-under-adjacency. For head-movement at least, taken to be an operation of the syntax proper, in accordance with principle of late insertion, this linearization information should not be available to determine the different outcomes of movement, right-adjunction in the case of the movement from V to *v* and left adjunction in the case of the movement of Asp to AgrS. I perceive a further problem in Harley's account of linearization outcomes in her attribution of the reversal of the merged complex *v* and AgrS heads (see e.g. (73)) to the fact that one morpheme in the complex AgrS head (Harley's *d*- adverbial prefix) is listed as a prefix; this is meant to force the complex head to linearize to the left of the complex *v* head. What is left unexplained in this case, however, is why the prefixal status of this element takes precedence over the classifier occupying the the *v* head, which is also prefixal. It is unclear what would decide linearization outcomes in such instances of competing prefixes/suffixes.

One final issue I perceive in the DM account of derived morphotactics is that of learnability. Where syntactic structures commonly attributed to movement (such as English WH-questions) often occur alongside constructions with moved element in-situ (e.g. *What did you eat?* vs. *I ate **an everything bagel.***) thereby furnishing evidence of movement for the learner, the inflexible and invariable morphotactics of Dene Sų́líné words furnishes no such evidence. In this case, the only argument to explain acquisition of such movement lies in the assumption of an

underlying innate universal structure, compelling the learner to attribute any “displacement” observed in surface structures to movement. This is, in fact, the conclusion drawn by Harley; based on her assumption that “the general order of the extended projection is provided by UG” she proposes that, for the language-learner, “mismatches between morpheme order and the extended projection can motivate the application of these limited additional mechanisms [i.e. MUA etc.]” (2011: 185-186). This type of argumentation is seemingly very difficult to falsify, however, given the power of the full range of mechanisms (movement, merger, morpheme addition, fusion, fission, impoverishment) posited by the DM theorist. Spencer (2019: 214–215) provides similar arguments, targeting the feasibility of the Mirror Principle in light of just the sort of “flagrant violations” examined by Harley, demonstrating that, even for linguistic data adhering quite closely to the Mirror Principle, the DM principles proposed to account for surface morphotactics fail to determine expected acquisition outcomes. Furthermore, it has been observed that language-learners in fact demonstrate conservatism in the acquisition of movement, systematically undergeneralizing licit rules of movement in the absence of positive evidence (Westergaard 2014: 32–34). This observed tendency seriously undermines Harley’s proposal regarding the acquisition of Dene morphotactics, offering counter-evidence to her assumption that mismatches between assumed universals and surface structure constitute sufficient evidence for acquisition of the proposed movements.

If positive evidence of movement in linguistic input is crucial to a learner’s acquisition and implementation of movement rules, then it is unclear how a Dene Sųlíné learner should acquire the proposed rules of movement and merger in the absence of any such positive evidence in the linguistic input available to them. Furthermore, Westergaard’s observations suggest that, given the absence of positive evidence of movement, and assuming the validity of the proposed

underlying universal phrase structure and its relationship to surface morphotactics, we would in fact predict that Dene-learners might fail to implement the proposed movements, producing verb-forms with morphotactics directly reflecting the basic structure of the assumed underlying phrase. I do not have child acquisition data from Dene Sųliné to confirm that this type of “error” does not occur; however, I would be very surprised if this type of production were to be observed, given the abundant positive evidence of the language’s verbal morphotactics that is available to learners. Existing research on Dene language-acquisition supports my skepticism, in a study of Navajo acquisition, Courtney and Saville-Troike (2002: 649) observed that “none of the Navajo children ever made any errors in the sequencing of prefixes within the verb complex. There was not a single instance of inverted order among prefixes in the production of any of the children; the ordering of constituent positions within the inflected word was inviolate.” What this evidence suggests to me is that the morphotactic facts Dene-learners acquire are those available to them in the input: the learner acquires and produces the morphotactic arrangements heard in the language spoken around them. This evidence does not support the “reverse engineering” of the universal phrase through movement and merger proposed by Harley.

I find claims of restrictiveness to be similarly problematic. The transformational morphological rules employed by PFM are very powerful; if there is nothing to constrain the quality of the phonological transformations such rules effect or the extent to which they transform a stem to which they apply, then such rules would seem to predict any conceivable transformation as morphological exponents. As long as DM permits Readjustment Rules to effect the same types of transformations, however, claims on the greater restrictiveness of that framework are difficult to uphold. If Readjustment Rules were abolished, the framework may be more constrained in its predictions than an inferential one like PFM; however, when the whole

suite of tools (e.g. fission, fusion etc.) available to derive surface forms is taken into consideration, the framework remains quite powerful. A quick thought experiment suggests some potentially interesting avenues of investigation: taking a phrase structure such as [WP [XP [YP [ZP [AP]]]]] to be basic and considering only the processes of head-movement, merger-under-adjacency and VI-specific linearization, how many of the total (120) logically possible morphotactic arrangements (e.g. WXYZA, XWYZA...) does DM predict? Assuming both head-movement and merger-under-adjacency are strictly local, i.e. heads may only move to the directly dominating head or merge with the head of their complement presumably rules out a considerable number of these logical possibilities, but the framework still remains very powerful, particularly when we consider the other possible operations as well.

The flip-side of the restrictiveness question is whether or not a restrictive theory has adequate empirical coverage. Siddiqi (2019: 152) provides an interesting comment on the question of restrictiveness vs. empirical coverage when he writes: “restriction is typically to be preferred until sacrificing it increases a theory’s explanatory power (not just its descriptive power). Because of this difference in elegance and restrictiveness, item-and-arrangement models are still preferred by many practitioners despite their weaker empirical coverage”. Explanation being the goal of scientific inquiry, this sentiment may appear reasonable. However, insufficient empirical coverage on the part of a theory of grammar should also call into question claims that what that theory does successfully account for amounts to a linguistic universal.

The preceding discussion seems to recommend caution in weighing claims that DM is capable of an elegant and satisfying account of Dene Sūliné morphotactics. How does PFM fare? As I have suggested, the claims of the PFM theorists with respect to morphotactics are more grounded, with morphotactics considered from a language-specific perspective, rather than a

universal one. The chief challenge to this claim would be in evidence of unexplained cross-linguistic similarities in morphotactic configurations. Linguists have observed such similarities; take Bybee's (1985) accounts of cross-linguistic tendencies in the relative ordering of functional affixes, for example. It is not clear that such cross-linguistic tendencies need to be taken as evidence for something like the Mirror Principle, however, or the equivalence of morphology and syntax, if their repeated occurrence cross-linguistically can be accounted for based on semantic grounds, for example, which to me seems plausible. An interesting point made by both Speas (1991: 189) and Rice (2000: 369) in their accounts of Dene morphology is the fact that, disregarding their position relative to the root, the morphotactic arrangement of Dene inflectional markers does parallel proposed universals, something the authors contend is a suspicious coincidence if surface morphotactics is unrelated to universal phrase structure. The explanation proposed by both authors is to derive the reversed order through movement, but alternative explanations may be available without attributing the order to this type of derivation. One possibility is that the reversed ordering reflects historical origins in some manner of inflected auxiliary, where the reversed order of these exponents is a reflection of their historical sources as suffixes to this auxiliary. This seems to be an interesting possibility and has been incorporated in different forms in analyses proposed by linguists like McDonough (2000a) and Cinque (1999: 68). It may be possible to account for this otherwise coincidental fact of morphotactic ordering in this way, without necessarily taking it to have continued significance to the synchronic grammar.

CHAPTER 8. CONCLUSION

My (linguistic) goals in undertaking the present study of Dene Sųlíné's "non-segmental" exponents, H and N, were twofold. Firstly, dissatisfied with existing accounts of these exponents, I have sought to test the suitability of a treatment as processes of non-concatenative morphology. Secondly, in light of the interest of non-concatenative morphology to linguistic theory, I have sought to evaluate the relative strengths and weaknesses of two theoretical frameworks representing a divide in thinking in the field, the inferential framework of Paradigm Function Morphology and a lexical framework, Distributed Morphology, my hope being that this investigation would shed light on the most promising means of thinking about and explaining morphological phenomena. My investigation of these exponents has raised interesting questions concerning the ability of both frameworks to explain these types of phenomena, and has suggested possibilities for future research.

Concerning my first goal, as regards H, I contend that a non-concatenative treatment of this exponent is the most promising and, as such, that an inferential account of morphology holds the most promise as an explanatory framework. It may be possible to accommodate H as a non-concatenative exponent within the DM framework. However, this requires a treatment employing null-affixation and readjustment in which I find little appeal. The existence of morphological phenomena such as H, best captured in terms of non-concatenative, non-affixal processes, are difficult to accommodate within theoretical frameworks attempting to reduce morphology to the syntagmatic arrangement of discrete morphemes. The existence of such processes follows quite naturally, however, from the distinctly relational and paradigmatic qualities attributed to morphological knowledge by inferential theorists, with learners acquiring such transformative processes through observations of finite sets of paradigmatically related

words (e.g., *yeltsi* ‘s/he makes it’ but *yéltsi* ‘s/he made it’). As regards N, the situation is less clear; this exponent proves more amenable than H to a treatment in terms of affixation, though one far less abstract than that proposed by Cook (2004). This said, independent evidence for both processes of nasalization and raising elsewhere in the language suggest that a treatment of this exponent as a non-concatenative process may merit further investigation.

Applications of DM and PFM to H and N suggest that selectional considerations, particularly those pertaining to H, present a challenge to both frameworks. The descriptive facts of Dene Sų́líné presented here and the tested theoretical applications point to a specific challenge for both frameworks owing to their shared conceptualization of the morphological derivation as proceeding from meaning to form and as constructing the complex word from the stem outward. Though resolving problems of morphological “look-ahead” with reference to morphosyntactic conditioning is arguably a strength of realizational frameworks like DM and PFM, both frameworks are challenged to provide a satisfactory account when instances of look-ahead are best captured with reference to phonological form, not content. An interesting question raised by my investigation is how best to account for this type of look-ahead problem. I have briefly considered the possibility of word-based approaches to morphology, such as that proposed by Blevins (2006), in resolving this type of problem, suggesting possibilities for future research.

In addition to the linguistic goals of my research project, the communication of which has been the primary object of my writing, I feel a keen responsibility that the work I have undertaken here should hold value for the Dene Sų́líné community. It is a fact, however, that the question which keeps Dene Sų́líné community members up at night is likely not, “inferential or lexical?” but “How will we ensure that future generations of Dene continue to speak our language?” As such, I have found myself in a challenging spot, in striving to meet both the

requirements for the completion of an academic degree in theoretical linguistics while upholding the ethical responsibilities of linguist conducting research on an Indigenous language and those I hold as a citizen of a country with a tragic history of programmatic forced assimilation, and ongoing systemic racism. While striving to meet my research goals, I have been in active collaboration with my primary consultant, Florence St. Pierre, to undertake a project in educational materials design, to assist in her community's language education efforts. Although the specific theoretical goals of my research hold very little promise to turn the tide of language loss, it is my hope that some of the descriptive facts considered, such as inflectional-class organization, will prove useful to the design of education materials in the near term.

Furthermore, advancement in our understanding of the nature of morphological phenomena and development of theory capable of capturing the diversity exhibited by the world's morphological systems may hold unforeseen utility in informing pedagogical practice for communities striving to support transmission of linguistic knowledge to future generations.

REFERENCES

- Ackerman, Farrell. 2003. Morphosemantic mismatches and realization-based lexicalism. In Francis, Elaine J. & Michaelis, Laura A. (eds.), *Mismatch: Form-function incongruity and the architecture of grammar*, 83–116. Stanford: CSLI Publications.
- Anderson, Stephen R. 1995. *A-morphous morphology*. Cambridge: Cambridge Univ. Press.
- Aronoff, Mark. 1994. *Morphology by itself*. Cambridge, MA: MIT Press.
- Arppe, Antti & Cox, Christopher & Hulden, Mans & Lachler, Jordan & Moshagen, Sjur N. & Silfverberg, Miika & Trosterud, Trond. 2017. Computational modelling of verbs in Dene languages: The case of Tsuut'ina. *Working papers in Dene languages 2016* 51–69.
- Baker, Mark C. 1988. *Incorporation: a theory of grammatical function changing* (A Chicago Original Paperback). Chicago: University of Chicago Press.
- Beard, Robert & Volpe, Mark. 2005. Lexeme-morpheme base morphology. In Štekauer, Pavol & Lieber, Rochelle (eds.), *Handbook of word-formation* (Studies in Natural Language and Linguistic Theory v. 64), 189–205. Dordrecht, The Netherlands: Springer.
- Blevins, James P. 2006. Word-Based Morphology. *Journal of Linguistics*. Cambridge University Press 42(3). 531–573.
- Bonami, Olivier & Stump, Gregory. 2016. Paradigm Function Morphology. In Hippisley, Andrew & Stump, Gregory (eds.), *The Cambridge Handbook of Morphology*, 449–481. 1st edn. Cambridge University Press. (doi:10.1017/9781139814720.017) (https://www.cambridge.org/core/product/identifier/9781139814720%23CT-bp-17/type/book_part) (Accessed August 23, 2022.)
- Bond, Oliver. 2016. Negation through reduplication and tone: implications for the Lexical Functional Grammar/Paradigm Function Morphology interface. *Journal of Linguistics* 52(2). 277–310. (doi:10.1017/S0022226715000134)
- Bortolin, Leah. 1998. *Aspect and the Chipewyan verb*. Calgary: University of Calgary. (M.A. thesis.)
- Bybee, Joan L. 1985. *Morphology: A study of the relation between meaning and form*. John Benjamins.
- Chomsky, Noam. 2015. *The minimalist program*. 20th anniversary edition. Cambridge, Massachusetts: The MIT Press.
- Cinque, Guglielmo. 1999. *Adverbs and functional heads: a cross-linguistic perspective*. New York: Oxford University Press.
- Cook, Eung-Do. 1984. *A Sarcee grammar*. Vancouver: UBC Press.
- Cook, Eung-Do. 1989. Is phonology going haywire in dying languages? Phonological variations in Chipewyan and Sarcee. *Language in Society* 235–255.
- Cook, Eung-Do. 1995. Is There Convergence in Language Death? Evidence from Chipewyan and Stoney. *Journal of Linguistic Anthropology* 5(2). 217–231. (doi:10.1525/jlin.1995.5.2.217)
- Cook, Eung-Do. 2004. *A Grammar of Dëne Sųliné*. Winnipeg: Algonquian and Iroquoian Linguistics.
- Cook, Eung-Do. 2006. The patterns of consonantal acquisition and change in Chipewyan (Dëne Sųliné). *International Journal of American Linguistics* 72(2). 236–263.
- Courtney, Ellen H. & Saville-Troike, Muriel. 2002. Learning to construct verbs in Navajo and Quechua. *Journal of Child Language* 29(3). 623–654. (doi:10.1017/S0305000902005160)

- Elford, Marjorie & Elford, Leon W. 1998. *Dene (Chipewyan) dictionary*. Prince Albert, SK: Northern Canada Mission Distributors.
- Folli, Raffaella & Harley, Heidi. 2007. Causation, Obligation, and Argument Structure: On the Nature of Little v. *Linguistic Inquiry* 38(2). 197–238. (doi:10.1162/ling.2007.38.2.197)
- Gessner, Suzanne. 2005. Properties of tone in Dëne Sųliné. In Hargus, Sharon & Rice, Keren (eds.), *Athabaskan prosody* (Amsterdam Studies in the Theory and History of Linguistic Science v. 269), 229–247. Amsterdam ; Philadelphia: John Benjamins.
- Goddard, P.E. 1912. *Texts and Analysis of Cold Lake Dialect, Chipewyan* (Anthropological Papers of the American Museum of Natural History). The Trustees.
(<https://books.google.ca/books?id=2kGWiOpZ0TAC>)
- Hale, Ken. 2001. Navajo Verb Stem Position and the Bipartite Structure of the Navajo Conjoint Sector. *Linguistic Inquiry* 32(4). 678–693. (doi:10.1162/002438901753373041)
- Halle, Morris & Marantz, Alec. 1993. Distributed Morphology and the pieces of inflection. In Hale, Kenneth L. & Keyser, Samuel Jay & Bromberger, Sylvain (eds.), *The View from building 20: essays in linguistics in honor of Sylvain Bromberger* (Current Studies in Linguistics 24), vol. 111–176. Cambridge, Mass: MIT Press.
- Hargus, Sharon & Tuttle, Siri G. 1997. Augmentation as Affixation in Athabaskan Languages. *Phonology*. Cambridge University Press 14(2). 177–220.
- Harley, Heidi. 2011. Affixation and the mirror principle. In Folli, Raffaella & Ulbrich, Christiane (eds.), *Interfaces in linguistics: new research perspectives* (Oxford Studies in Theoretical Linguistics no. 31), 166–186. Oxford ; New York, NY: Oxford University Press.
- Harley, Heidi & Noyer, Rolf. 1999. Distributed morphology. *Glott International* 4(4). 3–9.
- Harley, Heidi & Noyer, Rolf. 2000. Formal versus encyclopedic properties of vocabulary: Evidence from nominalisations. In Peeters, Bert (ed.), *The Lexicon-Encyclopedia interface*, 349–374. Bingley: Emerald Group.
- Henry, Dave. 1980. Word shortening in Snowdrift Chipewyan. University of Calgary.
(doi:10.11575/PRISM/29020) (<https://prism.ucalgary.ca/handle/1880/51289>) (Accessed January 23, 2022.)
- Holden, Josh. 2013. *Benasni-I remember: Dëne Sųliné oral histories with morphological analysis* (Brill's Studies in the Indigenous Languages of the Americas 4). Leiden ; Boston: Brill.
- Holden, Josh. 2020. Indigenous universities and language reclamation: Lessons in balancing Linguistics, L2 teaching, and language frameworks from Blue Quills University. In Silva, Wilson de Lima & Riesterberg, Katherine J. (eds.), *Challenges of Language Documentation and Conservation: Proceedings of the 2018 Symposium on American Indian Languages*, vol. 20, 20–37. Honolulu: University of Hawai'i Press.
- Holden, Joshua. 2007. Aspect, Mood and Tense Inflection in Dene Sųliné. *Proceedings of the 3rd International Conference on Meaning-Text Theory*, 179–188.
- Holden, Joshua. 2010. *A Lexical Semantic Study of Dene Sųliné, an Athabaskan Language*. Montreal: University of Montreal. (PhD dissertation.)
- Jaker, Alessandro. 2020. On the historical source of a ~ u alternations in Dëne Sųliné optative paradigms. *Glossa: a journal of general linguistics* 5(1). 1–33.
- Jaker, Alessandro & Welch, Nicholas & Rice, Keren. 2019. The Na-Dene Languages. In Siddiqi, Daniel & Barrie, Michael & Gillon, Carrie & Haugen, Jason D. & Mathieu, Eric (eds.), *The Routledge handbook of North American languages* (Routledge Handbooks in Linguistics), 473–503. New York: Routledge.

- Jehn, Richard Douglas. 1980. Aspects of current phonological change in Snowdrift Chipewyan. University of Calgary. (doi:10.11575/PRISM/29013) (<https://prism.ucalgary.ca/handle/1880/51288>) (Accessed January 23, 2022.)
- Jensen, John T. & Stong-Jensen, Margaret. 1984. Morphology Is in the Lexicon! *Linguistic Inquiry*. The MIT Press 15(3). 474–498.
- Jung, Dagmar & Klein, Mark & Stoll, Sabine. 2018. Language Transition(s): School Responses to Recent Changes in Language Choice in a Northern Dene Community (Canada). In Wigglesworth, Gillian & Simpson, Jane & Vaughan, Jill (eds.), *Language Practices of Indigenous Children and Youth*. London: Palgrave Macmillan UK. (doi:10.1057/978-1-137-60120-9) (<http://link.springer.com/10.1057/978-1-137-60120-9>) (Accessed January 23, 2022.)
- Kari, James M. 1979. *Athabaskan verb theme categories : Ahtna*. Fairbanks: Alaska Native Language Center, University of Alaska.
- Kasyon, Mary Jane. 1997. *Dene (Chipewyan) language classification verbs*. Prince Albert, Sask.: Northern Canada Mission Distributors.
- Kaulbeck, Brent & Harnum, Betty & Cook, Eung-Do & Fabien, Lawrence & Unka, Tommy & Fabien, Christine & Mandeville, Harvey et al. 2012. Dëne dédliné yatié ?erehtl'ischo denínu kué yatié Chipewyan dictionary. South Slave Divisional Education Council.
- Kingston, John. 2005. The phonetics of Athabaskan tonogenesis. In Hargus, Sharon & Rice, Keren (eds.), *Athabaskan prosody*, 137–184. Amsterdam ; Philadelphia: John Benjamins.
- Kramer, Ruth. 2016. Syncretism in paradigm function morphology and distributed morphology. In Siddiqi, Daniel & Harley, Heidi (eds.), *Morphological metatheory*, 95–120. Amsterdam: John Benjamins. (doi:10.1075/la.229.04kra) (<https://benjamins.com/catalog/la.229.04kra>) (Accessed February 15, 2023.)
- Krauss, Michael. 1982. Proto-Athapaskan *k in Chipewyan: Philological evidence. *International Journal of American Linguistics* 48(1). 73–82.
- Li, Fang-Kuei. 1933. A list of Chipewyan stems. *International Journal of American Linguistics*. Columbia University Press 7(3/4). 122–151.
- Li, Fang-Kuei. 1946. Chipewyan. *Linguistic structures of native America*, 398–423. New York: The Viking Fund.
- Lieber, Rochelle. 1992. *Deconstructing morphology: word formation in syntactic theory*. Chicago: University of Chicago Press.
- McDonough, Joyce. 2000a. Athapaskan redux: Against the position class as a morphological category. In Dressler, Wolfgang U. & Rennison, John R. & Pöchtrager, Markus A. & Pfeiffer, Oskar E. (eds.), *Morphological Analysis in Comparison*, 155–178. Philadelphia: John Benjamins.
- McDonough, Joyce. 2000b. On a bipartite model of the Athabaskan verb. In Fernald, Theodore B. & Platero, Paul R. (eds.), *The Athabaskan languages: perspectives on a Native American language family* (Oxford Studies in Anthropological Linguistics 24), 139–166. Oxford [England] New York: Oxford University Press.
- McDonough, Joyce & Tucker, Benjamin V. 2012. *Replicating Goddard: A contemporary airflow and EGG study of Dene SuLiné*. University of Rochester Working Papers in the Language Sciences.
- Mel'čuk, Igor A. 1981. Meaning-Text Models: A Recent Trend in Soviet Linguistics. *Annual Review of Anthropology*. Annual Reviews 10(1). 27–62. (doi:10.1146/annurev.an.10.100181.000331)

- Mielke, Jeff & Zsiga, Elizabeth & Boersma, Paul. 2011. Phonological elements. In Cohn, A. & Fougeron, C. & Huffman, M. (eds.), *Oxford Handbook of Laboratory Phonology*, 184–195. Oxford: Oxford University Press.
- Pollock, Jean-Yves. 1989. Verb Movement, Universal Grammar, and the Structure of IP. *Linguistic Inquiry*. The MIT Press 20(3). 365–424.
- Pomino, Natascha & Remberger, Eva-Maria. 2019. Verbal Suppletion in Romance Synchrony and Diachrony: The Perspective of Distributed Morphology. *Transactions of the Philological Society* 117(3). 471–497. (doi:10.1111/1467-968X.12170)
- Rice, Keren. 1998. Slave (Northern Athapaskan). In Spencer, Andrew & Zwicky, Arnold M. (eds.), *The Handbook of Morphology*, 648–689. Oxford: Blackwell.
- Rice, Keren. 2000. *Morpheme Order and Semantic Scope: Word Formation in the Athapaskan Verb*. 1st edn. Cambridge University Press. (doi:10.1017/CBO9780511663659) (<https://www.cambridge.org/core/product/identifier/9780511663659/type/book>) (Accessed November 11, 2021.)
- Rice, Keren D. 1978. A note on Fort Resolution Chipewyan. *International Journal of American Linguistics*. Chicago: University of Chicago Press 44(2). 144–145.
- Rice, Keren D. & Hargus, Sharon. 1989. Conjugation and Mode in Athapaskan Languages: Evidence for Two Position. In Cook, Eung-Do & Rice, Keren D. (eds.), *Athapaskan Linguistics Current Perspectives on a Language Family*. Berlin: Mouton de Gruyter.
- Rice, Sally. 2006. Radical construction grammar meets the Dene verb. University of New Mexico. (Presented at the 7th High Desert Linguistics Society Conference, University of New Mexico.)
- Rice, Sally. 2014. Corporeal Incorporation and Extension in Dene Sųliné (Athapaskan) Lexicalization. In Brenzinger, Matthias & Kraska-Szlenk, Iwona (eds.), *The Body in Language*, 71–97. BRILL. (doi:10.1163/9789004274297_006) (https://brill.com/view/book/edcoll/9789004274297/B9789004274297_006.xml) (Accessed January 23, 2022.)
- Rice, Sally & Libben, Gary & Derwing, Bruce. 2002. Morphological Representation in an Endangered, Polysynthetic Language. *Brain and Language* 81(1–3). 473–486. (doi:10.1006/brln.2001.2540)
- Scollon, Ronald. 1979a. 236 years of variability in Chipewyan consonants. *International Journal of American Linguistics*. University of Chicago Press 45(4). 332–342.
- Scollon, Ronald. 1979b. Variable data and linguistic convergence: Texts and contexts in Chipewyan. *Language in Society* 8(2–3). 223–243. (doi:10.1017/S0047404500007442)
- Siddiqi, Daniel. 2009. *Syntax within the word: economy, allomorphy, and argument selection in distributed morphology* (Linguistik Aktuell = Linguistics Today v. 138). Amsterdam ; Philadelphia: John Benjamins.
- Siddiqi, Daniel. 2019. Distributed Morphology. In Audring, J. & Masini, F. (eds.), *Oxford Handbook of Morphological Theory*, 142–165. Oxford: Oxford University Press.
- Speas, Peggy. 1991. Functional heads and the mirror principle. *Lingua* 84(2). 181–214. (doi:10.1016/0024-3841(91)90070-L)
- Spencer, Andrew. 2004. Generalized paradigm function morphology. University of Essex, ms. (<https://www.researchgate.net/publication/246300014>)
- Spencer, Andrew. 2019. Manufacturing consent over Distributed Morphology. *Word Structure* 12(2). 208–259. (doi:10.3366/word.2019.0146)

- Steele, Susan. 1995. Towards a Theory of Morphological Information. *Language*. Linguistic Society of America 71(2). 260–309. (doi:10.2307/416164)
- Stump, Gregory. 2016a. *Inflectional paradigms: content and form at the syntax-morphology interface* (Cambridge Studies in Linguistics 149). Cambridge ; New York: Cambridge University Press.
- Stump, Gregory. 2016b. Paradigms at the interface of a lexeme's syntax and semantics with its inflectional morphology. In Siddiqi, Daniel & Harley, Heidi (eds.), *Morphological metatheory*, 27–58. Amsterdam: John Benjamins. (doi:10.1075/la.229.04kra) (<https://benjamins.com/catalog/la.229.04kra>) (Accessed February 15, 2023.)
- Stump, Gregory. 2021. Conditional exponence. In Moradi, Sedigheh & Haag, Marcia & Rees-Miller, Janie & Petrovic, Andrija & Aronoff, Mark (eds.), *All things morphology: its independence and its interfaces* (Amsterdam Studies in the Theory and History of Linguistic Science. Series IV, Current Issues in Linguistic Theory Volume 353), 255–278. Amsterdam ; Philadelphia: John Benjamins.
- Stump, Gregory T. 1997. Template morphology and inflectional morphology. In Booij, G. E & Marle, Jaap van & Minto, Henry (eds.), *Yearbook of morphology 1996*. Dordrecht ; London: Kluwer Academic Publishers.
- Stump, Gregory T. 2001. *Inflectional morphology: A theory of paradigm structure*. Cambridge: Cambridge University Press.
- Svenonius, Peter & Bye, Patrik. 2011. Non-concatenative morphology as epiphenomenon. (Manuscript).
- Thiering, Martin & Schiefenhövel, Wulf. 2016. Spatial concepts in non-literate societies: Language and practice in Eipo and Dene Chipewyan. In Schemmel, Matthias (ed.), *Spatial thinking and external representation: towards a historical epistemology of space* (Max Planck Research Library for the History and Development of Knowledge. Studies 8). Berlin: Edition Open Access, Max Planck Institute for the History of Science.
- Trommer, Jochen. 1999. Morphology consuming syntax's resources: Generation and parsing in a minimalist version of Distributed Morphology. 469–80.
- Westergaard, Marit. 2014. Linguistic variation and micro-cues in first language acquisition. *Linguistic Variation* 14(1). 26–45.
- Wiens, Jeanette Rhoda Peters. 2014. *Code-Switching and Language Ideology in a Northern Dene Community*. ProQuest Dissertations and Theses. Ann Arbor: The University of Regina (Canada). (M.A.) (<https://ezproxy.lib.ucalgary.ca/login?url=https://www.proquest.com/dissertations-theses/code-switching-language-ideology-northern-dene/docview/2528554786/se-2?accountid=9838>)
- Wilhelm, Andrea. 2003a. *The Grammaticization of Telicity and Durativity in Dëne (Chipewyan) and German*. Calgary: University of Calgary. (Ph. D. Thesis.)
- Wilhelm, Andrea. 2003b. Quasi-Telic Perfective Aspect in Dene Suline (Chipewyan). *Proceedings from Semantics and Linguistic Theory* 13. 310–327.
- Wilhelm, Andrea. 2008. Bare nouns and number in Dëne Sūliné. *Natural Language Semantics* 16. 39–68.

APPENDIX A: ELICITATION MATERIAL EXAMPLES

